Appendix A

Notice of Preparation and Scoping Letters

DATE FILED & POSTED

CLERK OF THE BOARD
APR 21 2009
COUNTY OF
SAN BERNARDINO

April 20, 2009

RE: **NOTICE OF PREPARATION FOR THE SAN BERNARDINO VALLEY COLLEGE MASTER PLAN PROJECT**

The San Bernardino Community College District (SBCCD) is coordinating the preparation of the Program Environmental Impact Report (PEIR) for the San Bernardino Valley College (SBVC) Master Plan Project. The SBVC Master Plan site is located in San Bernardino, California.

In order to address the SBVC's academic program, support functions, and future student enrollment growth, the Master Plan estimates that the demolition, renovation, and construction of various academic buildings, infrastructure improvements, campus wide landscaping, and associated parking are required.

The Environmental Checklist Form (Initial Study), completed April 2009, identified the potential for significant impacts relative to the issue areas as follows: Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards/Hazardous Materials, Hydrology/Water Quality, Noise, Public Services, Transportation/Traffic, and Utilities/Service Systems. The Initial Study serves to focus the scope of the PEIR. The Initial Study is available for review at the address below or at www.sbccd.org.

This notice is a request for environmental information that you or your organization believes should be addressed in the PEIR. To ensure that all environmental issues are fully identified and adequately addressed, the SBCCD encourages interested parties to submit written comments. Written comments regarding the scope and content information of the PEIR, or any questions regarding the PEIR, should be postmarked no later than May 21, 2009 to:

Steven Lohr, Ed.D.
Facilities, Planning and Administrative Services
San Bernardino Community College District
114 South Del Rosa Drive
San Bernardino, CA 92408
909-382-4010
909-382-0144 fax
kgoodric@sbccd.cc.ca.us

Additionally, a scoping meeting will be held on May 5, 2009 from 4 p.m. to 6 p.m. at San Bernardino Valley College in the Administration/Student Services Building, Second Floor, Room AD207. Parking will be available in Student Lot 3 (which is located at the southeast corner of Esperanza St. and Mount Vernon Ave.) and Student Lot 5 (which is located along the south side of Esperanza St., east of Mount Vernon Ave.). The purpose of the meeting is to provide information on the Master Plan, the CEQA process, and to solicit information on environmental issues that should be addressed in the PEIR.

Scoping Letters

May 21, 2009

Mr. Steve Lohr, Ed. D.
Facilities, Planning and Administrative Services
San Bernardino Community College District
114 South Del Rosa Drive
San Bernardino, CA 92408

SUBJECT: NOTICE OF PREPARATION – SAN BERNARDINO VALLEY COLLEGE MASTER PLAN PROJECT

Dear Mr. Lohr:

The City of Colton appreciates the opportunity to review the Notice of Preparation (NOP) and provide input on the scope and contents of the Draft Program EIR that is being prepared for the San Bernardino Valley College Master Plan project. We understand the Master Plan is being prepared to address the following issues: (1) Replace existing buildings that are susceptible to damage during future seismic events; (2) Construct new buildings and facilities to accommodate future 2030 student enrollment; and (3) Improve the college's site plan and layout to be more efficient and to comply with setback requirements that have been established for the San Jacinto Fault, which runs through the college site.

We request that the following be addressed in the Draft EIR.

1. **Provide Construction Management Plan:** The NOP indicates that the Master Plan could be implemented within three phases or horizons. The first phase could be completed by 2010; the second phase, by 2020; and the third phase, by 2030. The EIR should provide a Preliminary Construction Management Plan which would describe how construction would proceed in the future. A Preliminary Construction Management Plan could describe construction-related activities, anticipated construction equipment and truck routes, hours, etc. and would provide Colton staff with a "heads up" of how to prepare for future construction. This is critical to the City, especially since the college site is located with a residential neighborhood.

2. **Evaluate Construction-Related Impacts:** As discussed, since the college is located within a residential neighborhood, construction activities would result in environmental impacts relating to generation of dust, noise, traffic, etc. The EIR should thoroughly evaluate air quality, noise, and traffic impacts resulting during future construction of Master Plan buildings, facilities, and improvements.

3. **Discuss Adequacy of Proposed Parking in Accommodating Master Plan:** Though the Master Plan shows that two parking structures will be eventually developed with the Master Plan, the total number of parking spaces is not indicated. Our concern is that sufficient parking is not provided and therefore, students would be forced to park on neighboring streets. The EIR should identify the number of total parking spaces to be provided and assess whether enough parking will be provided to accommodate future 2030 student enrollment projections.

4. **Provide Additional Detail and Exhibits of Proposed Buildings and Landscaping Improvements:** Given that the college campus is surrounded by existing residences, the Draft EIR must thoroughly describe and provide architectural elevations and exhibits of proposed buildings and improvements. Our concern is to ensure that the buildings' architecture and treatments are compatible with the surrounding residential neighborhoods. In addition, proposed

CIVIC CENTER
650 N. La Cadena Drive
Colton, CA 92324
(909) 370-5099

landscaping treatments, screening, etc. along Esperanza Street, Mount Vernon Avenue, Grant Avenue, and K Street must also be described and supported with exhibits. Views along these roadways from strategic vantage points would also be helpful. Our request for architectural elevations, view plans, and other graphic exhibits would help the reader in fully understanding what is being proposed with the Master Plan.

5. **Correct General Plan Discussions and Discuss Land Use Compatibility:** Table 1 of the NOP provides Colton General Plan designations for neighboring areas south and west of the college site. The stated General Plan designations, however, are incorrect. Please revise the Table to indicate that areas to the south are designated General Commercial, Medium Density Residential, and High Density Residential; and areas to the west are designated General Commercial and Low Density Residential. The EIR should discuss each of these Colton General Plan designations and how the Master Plan project could potentially affect the established residential neighborhoods within Colton.

6. **Explain Project Coordination with Colton:** The EIR must explain how future construction will be coordinated with the City of Colton, including review and approval of construction management documents, building plans, permits, improvement plans, etc.

7. **Project Hydrology:** The proposed projects have been designed to augment the groundwater and would result in an overall beneficial effect. However, recharge projects could alter groundwater quality locally. The proposed projects could impede surface water storm flows. In addition, construction activities could expose soils to storm water erosion. The EIR should assess potential effects of the proposed projects on local hydrology and water quality and will develop mitigation measures to reduce the level of impact where possible.

8. **Project Traffic:** Construction and operation of the proposed project could affect City of Colton street traffic and regional transportation plans. We request that EIR include additional analysis of resultant traffic impacts specifically on Colton streets. The EIR should also evaluate the potential for the project to affect and develop mitigation measures to reduce potential impacts to the existing businesses, bus routes and pedestrian routes. Alternative alignments should also be considered as part of the project. We would request these items to be evaluated for potential impacts.

We again appreciate the opportunity to provide comments on the EIR and Master Plan and request that the San Bernardino Community College District continue to involve the City of Colton in the environmental clearance and project review processing for the Master Plan project. We would also appreciate receipt of all environmental and project documents that are prepared by the District in the future. Please contact us at (909) 370-5035 if you have any questions.

Sincerely,

CITY OF COLTON

Mark Nuaimi
Assistant City Manager

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

RECEIVED
APR 27 2009
SBCCD
FACILITIES AND PLANNING

April 24, 2009

Mr. Steven Lohr, Ed. D
Facilities, Planning and Administrative Services
San Bernardino Community College District
114 South Del Rosa Drive
San Bernardino, CA 92408

Dear Mr. Lohr:

Notice of Preparation of a Draft Environmental Impact Report (Draft EIR) for the San Bernardino Valley College Master Plan Project

The South Coast Air Quality Management District (SCAQMD) appreciates the opportunity to comment on the above-mentioned document. The SCAQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the draft environmental impact report (EIR). Please send the SCAQMD a copy of the Draft EIR upon its completion. **In addition, please send with the draft EIR all appendices or technical documents related to the air quality analysis and electronic versions of all air quality modeling and health risk assessment files. Electronic files include spreadsheets, database files, input files, output files, etc., and does not mean Adobe PDF files. Without all files and supporting air quality documentation, the SCAQMD will be unable to complete its review of the air quality analysis in a timely manner. Any delays in providing all supporting air quality documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. Alternatively, the lead agency may wish to consider using the California Air Resources Board (CARB) approved URBEMIS 2007 Model. This model is available on the SCAQMD Website at: www.urbemis.com.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis.

The SCAQMD has developed a methodology for calculating PM2.5 emissions from construction and operational activities and processes. In connection with developing PM2.5 calculation methodologies, the SCAQMD has also developed both regional and localized significance thresholds. The SCAQMD requests that the lead agency quantify PM2.5 emissions and compare the results to the recommended PM2.5 significance thresholds. Guidance for calculating PM2.5 emissions and PM2.5 significance thresholds can be found at the following internet address: http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html.

In addition to analyzing regional air quality impacts the SCAQMD recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LST's can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the proposed project, it is recommended that the lead agency perform a localized significance analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at http://www.aqmd.gov/ceqa/handbook/LST/LST.html.

It is recommended that lead agencies for projects generating or attracting vehicular trips, especially heavy-duty diesel-fueled vehicles, perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis") can be found on the SCAQMD's CEQA web pages at the following internet address: http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html. An analysis of all toxic air contaminant impacts due to the decommissioning or use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate significant adverse air quality impacts. To assist the Lead Agency with identifying possible mitigation measures for the project, please refer to Chapter 11 of the SCAQMD CEQA Air Quality Handbook for sample air quality mitigation measures. Additional mitigation measures can be found on the SCAQMD's CEQA web pages at the following internet address: www.aqmd.gov/ceqa/handbook/mitigation/MM_intro.html Additionally, SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook contain numerous measures for controlling construction-related emissions that should be considered for use as CEQA mitigation if not otherwise required. Other measures to reduce air quality impacts from land use projects can be found in the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. This document can be found at the following internet address: http://www.aqmd.gov/prdas/aqguide/aqguide.html. In addition, guidance on sitting incompatible land uses can be found in the California Air Resources Board's Air Quality and Land Use Handbook: A Community Perspective, which can be found at the following internet address: http://www.arb.ca.gov/ch/handbook.pdf. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's World Wide Web Homepage (http://www.aqmd.gov).

The SCAQMD is willing to work with the Lead Agency to ensure that project-related emissions are accurately identified, categorized, and evaluated. Please call Daniel Garcia, Air Quality Specialist, CEQA Section, at (909) 396-3304 if you have any questions regarding this letter.

Sincerely,

Steve Smith

Steve Smith, Ph.D.
Program Supervisor, CEQA Section
Planning, Rule Development and Area Sources

SS:DG:AK
SBC090422-05AK
Control Number

Linda S. Adams
Secretary for
Environmental Protection

Department of Toxic Substances Control

Maziar Movassaghi, Acting Director
5796 Corporate Avenue
Cypress, California 90630

Arnold Schwarzenegger
Governor

May 7, 2009

Mr. Steven Lohr
San Bernardino Community College Master Plan
114 S. Del Rosa Drive
San Bernardino, California 92410
kgoodric@sbccd.cc.ca.us

NOTICE OF PREPARATION FOR A PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE SAN BERNARDINO VALLEY COLLEGE MASTER PLAN PROJECT (SCH# 2009041098), SAN BERNARDINO COUNTY

Dear Mr. Lohr:

The Department of Toxic Substances Control (DTSC) has received your submitted Initial Study and Notice of Preparation (NOP) for a subsequent Program Environmental Impact Report (PEIR) No. 507 for the above-mentioned Project. The following project description is stated in your document: "San Bernardino Valley College (SBVC) is an 87-acre community college campus in the San Bernardino Community College District (SBCCD). The proposed project estimates that various academic buildings, infrastructure improvements, and associated parking are required to meet the planning challenges related to the fault and folding zone, which creates an 18-acre unbuildable area on the campus. Improvements are also proposed to support the future enrollment needs through 2030. SBVC is located at 701 South Mount Vernon Avenue in the City of San Bernardino. The campus is bounded by Esperanza Street to the north, K Street to the east, Grant Avenue to the south, and Mount Vernon Avenue to the west. SBVC is a developed area surrounded by a mix of residential, commercial, and industrial land uses." DTSC has the following comments:

1) The EIR should identify the current or historic uses at the project site that may have resulted in a release of hazardous wastes/substances, and any known or potentially contaminated sites within the proposed Project area. For all identified sites, the EIR should evaluate whether conditions at the site may pose a threat to human health or the environment. Following are the databases of some of the pertinent regulatory agencies:

- National Priorities List (NPL): A list maintained by the United States Environmental Protection Agency (U.S.EPA).

- Envirostor: A Database primarily used by the California Department of Toxic Substances Control, accessible through DTSC's website (see below).

- Resource Conservation and Recovery Information System (RCRIS): A database of RCRA facilities that is maintained by U.S. EPA.

- Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS): A database of CERCLA sites that is maintained by U.S.EPA.

- Solid Waste Information System (SWIS): A database provided by the California Integrated Waste Management Board which consists of both open as well as closed and inactive solid waste disposal facilities and transfer stations.

- Leaking Underground Storage Tanks (LUST) / Spills, Leaks, Investigations and Cleanups (SLIC): A list that is maintained by Regional Water Quality Control Boards.

- Local Counties and Cities maintain lists for hazardous substances cleanup sites and leaking underground storage tanks.

- The United States Army Corps of Engineers, 911 Wilshire Boulevard, Los Angeles, California, 90017, (213) 452-3908, maintains a list of Formerly Used Defense Sites (FUDS).

2) The EIR should identify the mechanism to initiate any required investigation and/or remediation for any site that may be contaminated, and the government agency to provide appropriate regulatory oversight. If necessary, DTSC would require an oversight agreement in order to review such documents. Please see comment No. 11 below for more information.

3) All environmental investigations, sampling and/or remediation for the site should be conducted under a Workplan approved and overseen by a regulatory agency that has jurisdiction to oversee hazardous substance cleanup. The findings of any investigations, including any Phase I or II Environmental Site Assessment Investigations should be summarized in the document. All sampling results in which hazardous substances were found should be clearly summarized in a table.

4) Proper investigation, sampling and remedial actions overseen by the respective regulatory agencies, if necessary, should be conducted at the site prior to the new development or any construction. All closure, certification or remediation approval reports by these agencies should be included in the EIR.

5) If buildings or other structures, asphalt or concrete-paved surface areas are being planned to be demolished, an investigation should be conducted for the presence of other related hazardous chemicals, lead-based paints or products, mercury, and asbestos containing materials (ACMs). If other hazardous chemicals, lead-based paints or products, mercury or ACMs are identified, proper precautions should be taken during demolition activities. Additionally, the contaminants should be remediated in compliance with California environmental regulations and policies.

6) Project construction may require soil excavation or filling in certain areas. Sampling may be required. If soil is contaminated, it must be properly disposed and not simply placed in another location onsite. Land Disposal Restrictions (LDRs) may be applicable to such soils. Also, if the project proposes to import soil to backfill the areas excavated, sampling should be conducted to ensure that the imported soil is free of contamination.

7) Human health and the environment of sensitive receptors should be protected during the construction or demolition activities. If it is found necessary, a study of the site and a health risk assessment overseen and approved by the appropriate government agency and a qualified health risk assessor should be conducted to determine if there are, have been, or will be, any releases of hazardous materials that may pose a risk to human health or the environment.

8) If it is determined that hazardous wastes are, or will be, generated by the proposed operations, the wastes must be managed in accordance with the California Hazardous Waste Control Law (California Health and Safety Code, Division 20, Chapter 6.5) and the Hazardous Waste Control Regulations (California Code of Regulations, Title 22, Division 4.5). If it is determined that hazardous wastes will be generated, the facility should also obtain a United States Environmental Protection Agency Identification Number by contacting (800) 618-6942. Certain hazardous waste treatment processes or hazardous materials, handling, storage or uses may require authorization from the local Certified Unified Program Agency (CUPA). Information about the requirement for authorization can be obtained by contacting your local CUPA.

9) If during construction/demolition of the project, the soil and/or groundwater contamination is suspected, construction/demolition in the area should cease and appropriate health and safety procedures should be implemented.

10) If the site was used for agricultural, livestock or related activities, onsite soils and groundwater might contain pesticides, agricultural chemical, organic waste or other related residue. Proper investigation, and remedial actions, if necessary, should be conducted under the oversight of and approved by a government agency at the site prior to construction of the project.

11) DTSC can provide guidance for cleanup oversight through an Environmental Oversight Agreement (EOA) for government agencies, or a Voluntary Cleanup Agreement (VCA) for private parties. For additional information on the EOA or VCA, please see www.dtsc.ca.gov/ SiteCleanup/Brownfields, or contact Ms. Maryam Tasnif-Abbasi, DTSC's Voluntary Cleanup Coordinator, at (714) 484-5489.

If you have any questions regarding this letter, please contact Mr. Rafiq Ahmed, Project Manager, at rahmed@dtsc.ca.gov or by phone at (714) 484-5491.

Sincerely,

Greg Holmes
Unit Chief
Brownfields and Environmental Restoration Program - Cypress Office

cc: Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044
state.clearinghouse@opr.ca.gov

CEQA Tracking Center
Department of Toxic Substances Control
Office of Environmental Planning and Analysis
1001 I Street, 22nd Floor, M.S. 22-2
Sacramento, California 95814
nritter@dtsc.ca.gov

CEQA# 2572

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

ARNOLD SCHWARZENEGGER
GOVERNOR

CYNTHIA BRYANT
DIRECTOR

Notice of Preparation

April 21, 2009

To: Reviewing Agencies

Re: San Bernardino Valley College Master Plan
SCH# 2009041098

Attached for your review and comment is the Notice of Preparation (NOP) for the San Bernardino Valley College Master Plan draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Steven Lohr
San Bernardino Community College District
114 S. Del Rosa Drive
San Bernardino, CA 92410

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Assistant Deputy Director & Senior Planner, State Clearinghouse

Attachments
cc: Lead Agency

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SBCCD
FACILITIES AND PLANNING

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2009041098
Project Title San Bernardino Valley College Master Plan
Lead Agency San Bernardino Community College District

Type NOP Notice of Preparation

Description The proposed project is the adoption and implementation of the San Bernardino Valley College Master Plan. The Master Plan estimates that the demolition, renovation, and construction of various academic buildings, infrastructure and landscape improvements, and additional parking are required in order to address SBVC's academic program, support functions, and future student enrollment growth through 2030. This program of potential development is organized in three phases referred to as Horizons.

Lead Agency Contact

Name Steven Lohr
Agency San Bernardino Community College District
Phone 909-382-4010 **Fax**
email
Address 114 S. Del Rosa Drive
City San Bernardino **State** CA **Zip** 92410

Project Location

County San Bernardino
City San Bernardino
Region
Cross Streets Esperanza Street, Mount Vernon Avenue, K Street, Grant Avenue
Lat / Long 34° 05' 15" N / 117° 18' 39" W
Parcel No. 0141-131-12-0000,0141-131-13-0000,0141-131-14-0000,0141-131-15-0000,141-131-16-0000,...
Township **Range** **Section** **Base**

Proximity to:

Highways I-215 & I-10
Airports No
Railways BNSF; UPRR;Metrolink
Waterways Santa Ana River, Lytle Creek
Schools Middle College High
Land Use Community College/Public Facilities/Public-Quasi Public

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Schools/Universities; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Landuse

Reviewing Agencies Resources Agency; Department of Conservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Game, Region 6; Native American Heritage Commission; California Highway Patrol; Caltrans, District 8; Integrated Waste Management Board; Department of Toxic Substances Control; Regional Water Quality Control Board, Region 8

Date Received 04/21/2009 **Start of Review** 04/21/2009 **End of Review** 05/21/2009

Note: Blanks in data fields result from insufficient information provided by lead agency.

NOP Distribution List

County: San Bernardino

SCH# 2009041098

Resources Agency

- [ ] **Resources Agency**
  Nadell Gayou
- [ ] **Dept. of Boating & Waterways**
  Mike Sotelo
- [ ] **California Coastal Commission**
  Elizabeth A. Fuchs
- [ ] **Colorado River Board**
  Gerald R. Zimmerman
- [ ] **Dept. of Conservation**
  Rebecca Salazar
- [ ] **California Energy Commission**
  Dale Edwards
- [ ] **Cal Fire**
  Allen Robertson
- [ ] **Office of Historic Preservation**
  Wayne Donaldson
- [ ] **Dept of Parks & Recreation**
  Environmental Stewardship Section
- [ ] **Central Valley Flood Protection Board**
  Jon Yego
- [ ] **S.F. Bay Conservation & Dev't. Comm.**
  Steve McAdam
- [ ] **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou
- [ ] _____
  Conservancy

Fish and Game

- [ ] **Depart. of Fish & Game**
  Scott Flint
  Environmental Services Division
- [ ] **Fish & Game Region 1**
  Donald Koch
- [ ] **Fish & Game Region 1E**
  Laurie Harnsberger
- [ ] **Fish & Game Region 2**
  Jeff Drongesen
- [ ] **Fish & Game Region 3**
  Robert Floerke
- [ ] **Fish & Game Region 4**
  Julie Vance
- [ ] **Fish & Game Region 5**
  Don Chadwick
  Habitat Conservation Program
- [x] **Fish & Game Region 6**
  Gabrina Gatchel
  Habitat Conservation Program
- [ ] **Fish & Game Region 6 I/M**
  Gabrina Getchel
  Inyo/Mono, Habitat Conservation Program
- [ ] **Dept. of Fish & Game M**
  George Isaac
  Marine Region

Other Departments

- [ ] **Food & Agriculture**
  Steve Shaffer
  Dept. of Food and Agriculture
- [ ] **Depart. of General Services**
  Public School Construction
- [ ] **Dept. of General Services**
  Anna Garbeff
  Environmental Services Section
- [ ] **Dept. of Public Health**
  Bridgette Binning
  Dept. of Health/Drinking Water

Independent Commissions,Boards

- [ ] **Delta Protection Commission**
  Linda Flack
- [ ] **Office of Emergency Services**
  Dennis Castrillo
- [ ] **Governor's Office of Planning & Research**
  State Clearinghouse
- [ ] **Native American Heritage Comm.**
  Debbie Treadway
- [ ] **Public Utilities Commission**
  Leo Wong
- [ ] **Santa Monica Bay Restoration**
  Guangyu Wang
- [ ] **State Lands Commission**
  Marina Brand
- [ ] **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Business, Trans & Housing

- [ ] **Caltrans - Division of Aeronautics**
  Sandy Hesnard
- [ ] **Caltrans - Planning**
  Terri Pencovic
- [x] **California Highway Patrol**
  Scott Loetscher
  Office of Special Projects
- [ ] **Housing & Community Development**
  CEQA Coordinator
  Housing Policy Division

Dept. of Transportation

- [ ] **Caltrans, District 1**
  Rex Jackman
- [ ] **Caltrans, District 2**
  Marcelino Gonzalez
- [ ] **Caltrans, District 3**
  Bruce de Terra
- [ ] **Caltrans, District 4**
  Lisa Carboni
- [ ] **Caltrans, District 5**
  David Murray
- [ ] **Caltrans, District 6**
  Michael Navarro
- [ ] **Caltrans, District 7**
  Elmer Alvarez
- [x] **Caltrans, District 8**
  Dan Kopulsky
- [ ] **Caltrans, District 9**
  Gayle Rosander
- [ ] **Caltrans, District 10**
  Tom Dumas
- [ ] **Caltrans, District 11**
  Jacob Armstrong
- [ ] **Caltrans, District 12**
  Chris Herre

Cal EPA

Air Resources Board

- [ ] Airport Projects
  Jim Lerner
  - [ ] Transportation Projects
    Douglas Ito
  - [ ] Industrial Projects
    Mike Tollstrup
- [x] **California Integrated Waste Management Board**
  Sue O'Leary
- [ ] **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- [ ] **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [ ] **State Water Resouces Control Board**
  Steven Herrera
  Division of Water Rights
- [x] **Dept. of Toxic Substances Control**
  CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- [ ] **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] **RWQCB 3**
  Central Coast Region (3)
- [ ] **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] **RWQCB 5S**
  Central Valley Region (5)
  - [ ] **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- [ ] **RWQCB 6**
  Lahontan Region (6)
  - [ ] **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- [ ] **RWQCB 7**
  Colorado River Basin Region (7)
- [x] **RWQCB 8**
  Santa Ana Region (8)
- [ ] **RWQCB 9**
  San Diego Region (9)

- [ ] **Other** _____

Last Updated on 03/24/2009

SAN BERNARDINO COMMUNITY COLLEGE DISTRICT

Program Environmental Impact Report for the Crafton Hills College Master Plan

COMMENTS

Please use this page to submit your input on the scope of the environmental impacts to be analyzed in the Draft Program EIR being prepared for the Master Plan. Your comments are an important part of creating a comprehensive EIR. When making your comments, please be as specific as possible.

Name Tim DeLand

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All comments must be received by May 21, 2009.

Comments

Please provide your comments below. If you need additional space, please use the reverse side of this sheet. Thank you.

I attended the scoping meeting on 5/5/09 as a representative of San Bernardino City Unified School District. I encourage the planning effort to consider the partial vacation of Esperanza Street between Valley College and the future Middle College High School as consistent with its Horizon 2 and Horizon 3 plans. SBCUSD wishes to continue its collaborative efforts with Valley College to ensure a consistent educational vision between Middle College High School and the College. Please continue to keep the SBCUSD vision in mind when moving forward. Thanks.

Appendix B

Air Quality Technical Report

Air Quality Technical Report

for the

San Bernardino Valley College Master Plan

Submitted To:

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August 7, 2009

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1.0 INTRODUCTION

This report presents an assessment of potential air quality impacts associated with implementation of the San Bernardino Valley College (SBVC) Master Plan. San Bernardino Valley College (SBVC) is an 87-acre community college campus in the San Bernardino Community College District (SBCCD). It is one of three facility locations in the SBCCD, which also includes Crafton Hills College, located approximately 16 miles east in the City of Yucaipa, and the SBCCD administrative offices, Professional Development Center, and Applied Technology Training Center. The SBVC Master Plan area is located in the City of San Bernardino area. SBVC is located at 701 South Mount Vernon Avenue in the City of San Bernardino. The campus is bounded by Esperanza Street to the north, K Street to the east, Grant Avenue to the south, and Mount Vernon Avenue to the west. The Master Plan area is easily accessed from I-215, located 0.5 mile to the east and I-10, located 1.5 miles to the south. SBVC is surrounded by single-family residential developments to the north and east, and commercial developments to the south and west.

The master planning process identified three significant challenges at SBVC: the San Jacinto Fault and its impact on existing and future buildings; the loss of campus organization as a result of the fault; and the disintegration of campus identity from demolition of buildings (Steinberg Architects 2009). The goals of the Master Plan are to meet these challenges.

The San Jacinto fault has a tremendous impact at SBVC. On the campus, two lines of the fault run parallel to each other and have a required 50-foot setback to either side, creating a zone in which no structures are allowed. Additionally, a folding zone exists to the northeast of the fault, caused by the relative movement of two tectonic plates underneath the earth's surface. It is not recommended that new structures be built within the folding zone. The unbuildable zone created by the fault and folding zones is approximately 18 acres.

The original campus consisted of a traditional framework of buildings arranged around open landscape quads and hardscape plazas. Structures were parallel and perpendicular to the City street grid, typically two stories in height and in the mission revival style. Buildings constructed in the 1960s and 1970s were more utilitarian in style, but in configuration reinforced the network

of quads and plazas. When the fault was discovered, the necessary demolition destroyed the original framework of the campus. Because of structural engineering recommendations, new buildings were placed either parallel or perpendicular to the fault and folding zones, making them skewed in relation to existing buildings that were oriented to the street grid. With the network of quads and plazas defined by the original buildings gone, the logical sequence of circulation was lost.

Because new construction should not be within the fault or folding zones, the first replacement buildings were located in available space on campus, primarily parking lots at the edges of campus. This has led to a perceived separation between the north and south sides of campus, which are divided by the 18-acre unbuildable zone.

1.1 Project Goals

The Master Plan will create connections that link and unify the campus and community to foster a positive memorable experience and identity through the following planning principles (Steinberg Architects 2009):

- **Student-centered Culture**
  - Large central gathering place
  - Distinct districts
  - Sufficient parking
  - Serve the West Valley population

- **Hierarchy of Elements**
  - Campus edges/transitions from the campus to the community
  - Delineation of primary and secondary campus entrances
  - Variety of exterior spaces

- **Access**
  - Vehicular/pedestrian circulation
  - Accessible paths and buildings
  - Wayfinding

- **Sustainable Design**
  - Respond to natural environment
  - Flexibility of space (long-term use)
  - Energy efficiency

- **Functional Integration**
  - Consolidate instructional divisions
  - Active and passive exterior spaces
  - Interior/exterior connections

The proposed Master Plan estimates that various academic buildings, infrastructure improvements, and associated parking are required to meet the planning challenges related to the fault and folding zone, which creates an 18-acre unbuildable area on the campus. Improvements are also required to support a future enrollment of 15,000 total students by 2020 and 17,000 total students by 2030. The Master Plan does not constitute a mandate for growth, nor is it a detailed implementation plan for development. Its adoption does not constitute a commitment to any specific project details, construction schedule, or funding priority. Rather, the Master Plan describes a program of potential development for the campus through buildout. The funding, scheduling, and details of each development project undertaken during the planning horizon will be subject to individual approval by the SBCCD. Table 1-1 shows the projected increases in student enrollment, building area, and parking over the planning period.

Table 1-1
SBVC Existing Conditions and Master Plan Projected Growth

	2008 Estimate	Horizon 1 2010	Horizon 2 2020	Horizon 3 2030
Student Enrollment (total)	12,561	13,300	15,000	17,000
Building Area (ASF)	426,550	418,888	427,454	526,731
Parking*	2,715	3,182	3,055	3,349

Notes:
ASF= Assignable square feet or the sum of all surface areas in a building that are assigned.
* Parking includes on-site and on-street parking supplies. Only the 2008 Estimate includes use of the Swap Meet.

It should be noted that SBVC is currently overbuilt; it has more square footage than required for its current enrollment. Therefore, many of the projects in the Master Plan that replace outdated buildings would also accommodate growth without a significant increase in the overall square footage of assignable space on the campus.

The Master Plan for SBVC describes the improvements to SBVC in three phases, called Horizons (Steinberg Architects 2009). The Horizons are described below.

1.2 Horizon 1

Horizon 1 targets the year 2010, and primarily consists of the construction of four buildings that replace buildings within or near the San Jacinto fault folding zone (North Hall, Physical Science, Chemistry, and Maintenance and Operations). The replacement is for seismic safety reasons, not to accommodate an increase in student population. The replacement of these buildings was initially funded by Measure P and State funding prior to the development of the Master Plan. Therefore, a CEQA IS/MND was prepared for this building replacement project in 2007.

Also included in Horizon 1 is Parking Structure 1, a multi-level, 1,250-space parking structure located on the south portion of campus with access from Grant Avenue and K Street. This parking structure facility was not included in the CEQA IS/MND prepared for the Measure P projects.

Table 1-2
Horizon 1 Projects

Horizon 1 Project	Project Description
New Buildings/Facilities	
New Maintenance and Operations Building	Physical plant space for the campus
New North Hall Replacement Building	Classrooms, labs, offices for criminal justice, humanities, humanities programs
New Media and Communications Building	Classrooms, labs, offices, media space for media and communications programs and KVCR (campus radio and television broadcasting station)
New Chemistry/Physical Science Building	Classrooms, labs offices, assembly area for chemistry and physical sciences programs
New Student Health Services Building	Clinical space; offices
New Parking Structure 1	Approximate 1,250-space parking structure up to 75 feet in height plus vertical circulation and lighting with the potential for a solar photovoltaic system, located on south side of campus with access from Grant Avenue and K Street.
Renovations	
None	
Demolitions	
Maintenance and Operations Building	After the functions of the North Hall and the Maintenance and Operations Building have been moved to newly constructed buildings, they will be demolished, allowing the construction of the new Chemistry/Physical Science Building. The demolition of these buildings were analyzed in a separate IS/MND.
North Hall Building	
Chemistry/Physical Science Buildings	
Infrastructure Improvements	
Storm Drain; Sanitary Sewer; Water Distribution and Fire Protection; Heating, Ventilation, and Air Conditioning; Electrical; Natural Gas; Telecommunications; Sitework; Access Improvements; Signage; Landscape/Hardscape; Solar Photovoltaic	Infrastructure will be extended on campus to connect new buildings.

1.3 Horizon 2

Horizon 2 targets the year 2020 and is defined by the replacement of structures identified in the assessment study as in the worst condition: the Liberal Arts Building, Gymnasiums and Pools, and Technical Building (Table 1-3). The existing Liberal Arts Building would be demolished and replaced with a new Liberal Arts Building. The old gymnasiums would be demolished and replaced with two new gymnasium buildings in roughly the same area. The softball field would be relocated, the baseball field would be resurfaced, and a new soccer field would be constructed along K Street. The track and football field would remain in their current locations, but new home and visitor stands would be added.

The new Technical Building would anchor the northeast corner of the campus and provide the program and campus with public visibility and access, improving the edge of the campus in this location. The old Technical Building would be demolished and an approximately 200 to 250 space parking lot would be constructed in that location.

Table 1-3
Horizon 2 Projects

Horizon 2 Project	Project Description
New Buildings/Facilities	
New Gymnasiums 1 and 2	Offices for athletics, health services and physical education divisions. Locker rooms, weight rooms, and physical education/athletics spaces.
New Technical Building	Classrooms, labs, and offices for applied technology.
New Softball Field	Construct new softball field on existing open space south of College Ave. and north of the track.
New Soccer Field	Construct new soccer field on location of existing softball field west of K Street and east of the track.
New Liberal Arts Building	Classrooms, labs, offices for social science/human development, and computing services
New Home and Visitor Stands at Track/Football Field	Home stands would be constructed on the west side of the track/football field and visitor's stands would be constructed on the east side of the track/football field
Renovations	
Baseball Field	Resurface existing baseball field
West Drop Off Reconfiguration	Reconfigure Parking Lot 2 to provide a drop off space
Business Building Renovation	Architectural finish upgrades, building system upgrades, and remodeling
Auditorium Renovation	Architectural finish upgrades, handicap-accessible upgrades
Demolitions	
Technical Building	Functions moved to new Technical Building. Site converted to surface parking lot.
Liberal Arts Building	Functions incorporated into new Liberal Arts Building. Replaced with a new Liberal Arts Building.
Snyder Gymnasium and Women's Gymnasium	Functions incorporated into new Gymnasiums 1 and 2. Replaced with landscaped open space, new home stands, and new Gymnasiums 1 and 2.
Middle College	Middle College relocated off site per the goals of the San Bernardino City Unified School District.
Infrastructure Improvements	
Central Plant	New/additional central plant and potentially a thermal energy storage system and other energy systems will be constructed to serve the campus.
Storm Drain; Sanitary Sewer; Water Distribution and Fire Protection; Heating, Ventilation, and Air Conditioning; Electrical; Natural Gas; Telecommunications; Sitework; Access Improvements; Signage; Landscape/Hardscape; Solar Photovoltaic	Infrastructure will be extended on campus to connect new and existing buildings.

1.4 Horizon 3

Horizon 3 targets the year 2030 and represents the full buildout of the campus (Table 1-4). A new Performing Arts Building would be constructed adjacent to Grant Avenue. Two new office and classroom buildings would be constructed to support academic functions that have not yet been assigned. A multi-level approximate 1,100 space parking structure (Parking Structure 2) with tennis courts on the top level would be constructed at the parking lot that was formerly the site of the old Technical Building.

The Planetarium would be demolished, and its function incorporated into one of the new or existing buildings. A new outdoor stage and backdrop for the existing Greek Theater would be built at its old location.

Table 1-4
Horizon 3 Projects

Horizon 3 Project	Project Description
New Buildings/Facilities	
Performing Arts	Performing arts facility
New Building 1	Replace classrooms, labs, and offices in existing Business Building and provide for accommodation of future growth.
New Building 2	Offices, classrooms, and labs for future growth.
New Parking Structure 2	1,100-space parking structure up to 47 feet in height plus vertical circulation, tennis courts, and lighting with access from Esperanza Street
New Campus Entry	New Campus Entry
Renovations	
Greek Theater	New stage and backdrop
Demolitions	
Planetarium	Functions incorporated into new or existing building. Replaced with open space/new Greek Theater backdrop
Business Building	Functions incorporated into New Building 1. Replaced with new Building 1 and landscaped open space.
Infrastructure Improvements	
Storm Drain; Sanitary Sewer; Water; Heating, Ventilation, and Air Conditioning; Electrical; Gas; Telecommunications; Sitework; Access Improvements; Signage; Landscape/Hardscape; Solar Photovoltaic	Provide service to new and existing buildings

This Air Quality Technical Report includes an evaluation of existing conditions in the project vicinity, an assessment of potential impacts associated with project construction, and an evaluation of project operational impacts. The analysis was prepared pursuant to the California Environmental Quality Act (CEQA). The analysis addresses criteria air pollutant impacts and toxic air contaminant health impacts associated with the Project.

2.0 ENVIRONMENTAL SETTING AND REGULATORY FRAMEWORK

2.1 Climate and Meteorology

The climate of San Bernardino County is characterized by warm, dry summers and mild winters and is dominated by a semi-permanent high-pressure cell located over the Pacific Ocean. This high-pressure cell maintains clear skies for much of the year. It also drives the dominant onshore circulation and helps create two types of temperature inversions – subsidence and radiation – that contribute to local air quality degradation.

Subsidence inversions occur during warmer months, as descending air associated with the Pacific high-pressure cell comes into contact with cool marine air. The boundary between the two layers of air represents a temperature inversion that traps pollutants below it. Radiation inversions typically develop on winter nights with low wind speeds when air near the ground cools by radiation and the air aloft remains warm. A shallow inversion layer that can trap pollutants is formed between the two layers.

In the SBVC area, the nearest climatological monitoring station is located in the City of San Bernardino. The normal daily maximum temperature is 96.6 ºF in July, and the normal daily minimum temperature is 39.4 ºF in December and January, according to the Western Regional Climate Center (WRCC 2006). The normal precipitation in the San Bernardino area is 16.07 inches annually, occurring primarily from November through March.

The nearest meteorological monitoring station to the SBVC campus is located in the City of Fontana. A wind rose for the Fontana monitoring station is provided in Figure 1. The wind rose

indicates that prevailing winds are from the west-northwest, with Santa Anas from the east-southeast on occasion as well.

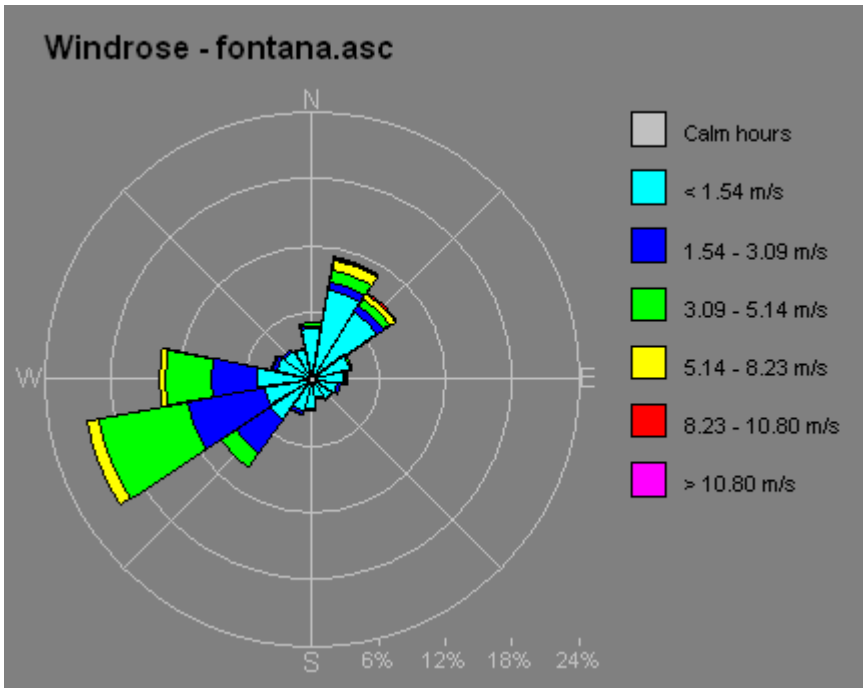

Figure 1. Wind Rose – Fontana Monitoring Station

2.2 Regulatory Setting

The proposed project will be constructed in the City of San Bernardino, within the South Coast Air Basin (SCAB) inland area. The following subsections present a summary of air quality regulatory requirements for the Project.

Federal Regulatory Setting. Air quality is defined by ambient air concentrations of specific pollutants identified by the United States Environmental Protection Agency (EPA) to be of concern with respect to health and welfare of the general public. The EPA is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the EPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the EPA established both primary and secondary standards for six primary air pollutants (called "criteria" pollutants): ozone (O_3), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), lead (Pb), and particulate

matter equal to or smaller than 10 microns in diameter (PM_{10}). Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere.

Areas that do not meet the NAAQS for a particular pollutant are considered to be "nonattainment areas" for that pollutant. The South Coast Air Basin (SCAB) has historically been considered an extreme nonattainment area for the 1-hour NAAQS for O_3, which has been rescinded. On April 15, 2004, the SCAB was designated a "severe-17" nonattainment area for the 8-hour NAAQS for O_3. The SCAB is also considered a nonattainment area for CO, PM_{10}, and $PM_{2.5}$, and is a maintenance area for NO_2. The SCAB is in attainment/unclassifiable for the NAAQS for SO_2 and lead.

Due to its status as a nonattainment area for the 8-hour NAAQS for O_3 and a nonattainment area for the new NAAQS for $PM_{2.5}$, the South Coast Air Quality Management District (SCAQMD) is required to develop and submit a new attainment plan for submittal to EPA in 2007 describing plans and programs for attainment of the NAAQS. The SCAQMD is in the process of preparing its update to the Air Quality Management Plan, which will provide the basis for the State Implementation Plan and attainment of the NAAQS.

State Regulatory Setting. The California Air Resources Board (ARB) is the agency responsible for regulation of air quality in the State of California. The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. The ARB has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six criteria pollutants through the California Clean Air Act of 1988, and also has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. The SCAB is currently classified as a nonattainment area under the CAAQS for O_3, $PM_{2.5}$, and PM_{10}.

The ARB is the state regulatory agency with authority to enforce regulations to both achieve and maintain the NAAQS and CAAQS. The ARB is responsible for the development, adoption, and enforcement of the state's motor vehicle emissions program, as well as the adoption of the

CAAQS. The ARB also reviews operations and programs of the local air districts, and requires each air district with jurisdiction over a nonattainment area to develop its own strategy for achieving the NAAQS and CAAQS. The local air district has the primary responsibility for the development and implementation of rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, development of air quality management plans, and adoption and enforcement of air pollution regulations.

Local Regulatory Setting. The SCAQMD is the local agency responsible for the administration and enforcement of air quality regulations for the SCAB. The SCAQMD has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county SCAB, the Mojave Desert Air Basin (MDAB) and the Riverside County portions of the Salton Sea Air Basin (SSAB). The SCAQMD develops and administers local regulations for stationary air pollutant sources within the SCAB, and also develops plans and programs to meet attainment requirements for the NAAQS and the CAAQS. In addition, the SCAQMD, along with the ARB, maintains and operates ambient air quality monitoring stations at numerous locations throughout the SCAB that monitor the ambient air quality.

The SCAQMD is responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SCAB. As discussed above, the SCAQMD is in the process of developing its Air Quality Management Plan (AQMP) for the SCAB. The AQMP outlines the SCAQMD's plans and control measures designed to attain the state air quality standards for O_3. The AQMP serves as the air basin's input to the State Implementation Plan (SIP), which is required under the Federal Clean Air Act for areas that are out of attainment of air quality standards.

The AQMP includes information from the ARB and the Southern California Association of Governments (SCAG), including mobile and area source emissions, as well as information regarding projected growth in the SCAB, to project future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. The ARB mobile source emission projections and SCAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County as part of the

development of the County's General Plan. As such, projects that propose development that is consistent with the growth anticipated by the general plans would be consistent with the AQMP. If a project proposes development that is greater than that anticipated in the AQMP, the project might be in conflict with the AQMP and SIP, and might have a potentially significant impact on air quality.

The following specific descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on EPA (2005a) and CARB (2001).

Ozone. O_3 is considered a photochemical oxidant, which is a chemical that is formed when reactive organic gases (ROG) and NOx, both byproducts of combustion, react in the presence of ultraviolet light. Ozone is considered a respiratory irritant and prolonged exposure can reduce lung function, aggravate asthma, and increase susceptibility to respiratory infections. Children and those with existing respiratory diseases are at greatest risk from exposure to ozone.

Carbon monoxide. CO is a product of combustion, and the main source of CO in the SCAB is from motor vehicle exhaust. CO is an odorless, colorless gas. CO affects red blood cells in the body by binding to hemoglobin and reducing the amount of oxygen that can be carried to the body's organs and tissues. CO can cause health effects to those with cardiovascular disease, and can also affect mental alertness and vision.

Nitrogen dioxide. NO_2 is also a by-product of fuel combustion, and is formed both directly as a product of combustion and in the atmosphere through the reaction of nitrogen oxide (NO) with oxygen. NO_2 is a respiratory irritant and may affect those with existing respiratory illness, including asthma. NO_2 can also increase the risk of respiratory illness.

Fine particulate matter. Particulate matter, or PM_{10}, refers to particulate matter with an aerodynamic diameter of 10 microns or less. Fine particulate matter, or $PM_{2.5}$, refers to particulate matter with an aerodynamic diameter of 2.5 microns or less. Particulate matter in this size range has been determined to have the potential to lodge in the lungs and contribute to

respiratory problems. PM_{10} and $PM_{2.5}$ arise from a variety of sources, including road dust, diesel exhaust, combustion, tire and brake wear, construction operations, and windblown dust. PM_{10} and $PM_{2.5}$ can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases such as asthma and chronic bronchitis. $PM_{2.5}$ is considered to have the potential to lodge deeper in the lungs.

Sulfur dioxide. SO_2 is a colorless, reactive gas that is produced from the burning of sulfur-containing fuels such as coal and oil, and by other industrial processes. Generally, the highest concentrations of SO_2 are found near large industrial sources. SO_2 is a respiratory irritant that can cause narrowing of the airways leading to wheezing and shortness of breath. Long-term exposure to SO_2 can cause respiratory illness and aggravate existing cardiovascular disease.

Lead. Lead (Pb) in the atmosphere occurs as particulate matter. Lead has historically been emitted from vehicles combusting leaded gasoline, as well as from industrial sources. With the phase-out of leaded gasoline, large manufacturing facilities are the sources of the largest amounts of lead emissions. Lead has the potential to cause gastrointestinal, central nervous system, kidney, and blood diseases upon prolonged exposure. Lead is also classified as a probable human carcinogen.

Sulfates. Sulfates are the fully oxidized ionic form of sulfur. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO_2) during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features. The CARB's sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, due to fact that they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide. H_2S is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation. Breathing H_2S at levels above the standard would result in exposure to a very disagreeable odor. In 1984, a CARB committee concluded that the ambient standard for H_2S is adequate to protect public health and to significantly reduce odor annoyance.

Vinyl Chloride. Vinyl chloride, a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer, in humans.

Table 2-1 presents a summary of the ambient air quality standards adopted by the federal and California Clean Air Acts.

Table 2-1
Ambient Air Quality Standards

POLLUTANT	AVERAGE TIME	CALIFORNIA STANDARDS		NATIONAL STANDARDS		
		Concentration	Method	Primary	Secondary	Method
Ozone	1 hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	--	--	Ethylene Chemiluminescence
	8 hour	0.070 ppm[1] (137 $\mu g/m^3$)		0.075 ppm (147 $\mu g/m^3$)	0.075 ppm (147 $\mu g/m^3$)	
Carbon Monoxide	8 hours	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
Nitrogen Dioxide (NO_2)	Annual Average	0.030 ppm (56 $\mu g/m^3$)	Gas Phase Chemiluminescence	0.053 ppm (100 $\mu g/m^3$)	0.053 ppm (100 $\mu g/m^3$)	Gas Phase Chemiluminescence
	1 hour	0.18 ppm (338 $\mu g/m^3$)		--	--	
Sulfur Dioxide (SO_2)	Annual Average	--	Ultraviolet Fluorescence	0.03 ppm (80 $\mu g/m^3$)	--	Pararosaniline
	24 hours	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (365 $\mu g/m^3$)	--	
	3 hours	--		--	0.5 ppm (1300 $\mu g/m^3$)	
	1 hour	0.25 ppm (655 $\mu g/m^3$)		--	--	
Respirable Particulate Matter (PM_{10})	24 hours	50 $\mu g/m^3$	Gravimetric or Beta Attenuation	150 $\mu g/m^3$	150 $\mu g/m^3$	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 $\mu g/m^3$		--	--	
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 $\mu g/m^3$	Gravimetric or Beta Attenuation	15 $\mu g/m^3$	--	Inertial Separation and Gravimetric Analysis
	24 hours	--		35 $\mu g/m^3$	--	
Sulfates	24 hours	25 $\mu g/m^3$	Ion Chromatography	--	--	--
Lead	30-day Average	1.5 $\mu g/m^3$	Atomic Absorption	--	--	Atomic Absorption
	Calendar Quarter	--		1.5 $\mu g/m^3$	1.5 $\mu g/m^3$	
	3-Month Rolling Averge	--		0.15 $\mu g/m^3$	0.15 $\mu g/m^3$	
Hydrogen Sulfide Vinyl Chloride	24 hours	0.010 ppm (26 $\mu g/m^3$)	Gas Chromatography	--	--	--

ppm= parts per million
$\mu g/m^3$ = micrograms per cubic meter
mg/m^3= milligrams per cubic meter
Source: California Air Resources Board September 2009

2.3 Existing Ambient Air Quality

The closest ambient air quality monitoring station to the project is the site at 4th Street in San Bernardino. The nearest monitoring station that measures SO_2 is the Riverside-Rubidoux station. Ambient concentrations of criteria pollutants measured at these monitoring stations during the period 2006-2008 are presented in Table 2-2. Ambient air concentrations were compared with the CAAQS and NAAQS. The data indicate that the area is in compliance with both CAAQS and NAAQS for CO, NO_2, and SO_2. The state 8-hour CO standard was not exceeded during this three-year period. Exceedances of the NAAQS for ozone were recorded several times per year in the 2006-2008 time period. One exceedance of the NAAQS for PM_{10} was recorded in 2007 during the southern California fire event in October of that year. Exceedances of the CAAQS for ozone PM_{10} and $PM_{2.5}$ standards have been recorded at the San Bernardino monitoring station.

2.4 Toxic Air Contaminants

Cancer Risk. One of the primary health risks of concern due to exposure to toxic air contaminants (TACs) is the risk of contracting cancer. The carcinogenic potential of TACs is a particular public health concern because it is currently believed by many scientists that there is no "safe" level of exposure to carcinogens, that is, any exposure to a carcinogen poses some risk of causing cancer. Health statistics show that one in four people will contract cancer over their lifetime, or 250,000 in a million, from all causes, including diet, genetic factors, and lifestyle choices.

Noncancer Health Risks. Unlike carcinogens, for most noncarcinogens it is believed that there is a threshold level of exposure to the compound below which it will not pose a health risk. The California Environmental Protection Agency (CalEPA) and California Office of Environmental Health Hazard Assessment (OEHHA) have developed reference exposure levels (RELs) for noncarcinogenic TACs that are health-conservative estimates of the levels of exposure at or below which health effects are not expected. The noncancer health risk due to exposure to a

TAC is assessed by comparing the estimated level of exposure to the REL. The comparison is expressed as the ratio of the estimated exposure level to the REL, called the hazard index (HI).

Table 2-2
Background Air Quality Data
(2006 – 2008)
ppm (unless otherwise indicated)

Pollutant	Averaging Time	2006	2007	2008	NAAQS	CAAQS	Monitoring Station
Ozone	8 hour	0.126	0.121	0.122	0.075	0.070	San Bernardino
	1 hour	0.154	0.153	0.157	-	0.08	San Bernardino
PM_{10}	Annual Arithmetic Mean	46.0	52.4	42.7	-	20 $\mu g/m^3$	San Bernardino
	24 hour	92	219	76	150 $\mu g/m^3$	50 $\mu g/m^3$	San Bernardino
$PM_{2.5}$	Annual Arithmetic Mean	22.2	21.9	17.4	15 $\mu g/m^3$	12 $\mu g/m^3$	San Bernardino
	24 hour	73.9	93.4	106.2	35 $\mu g/m^3$	-	San Bernardino
NO_2	Annual	0.026	0.026	0.026	0.053	0.030	San Bernardino
	1 hour	0.101	0.118	0.098	-	0.18	San Bernardino
CO	8 hour	4.45	3.24	2.45	9	9.0	San Bernardino
	1 hour	5.1	4.1	3.8	35	20	San Bernardino
SO_2	Annual	0.002	0.003	0.003	0.03	-	Riverside
	24 hour	0.012	0.015	0.011	0.14	0.04	Riverside
	3 hour	0.015	0.016	0.012	0.05[1]	-	Riverside
	1 hour	0.018	0.017	0.024	-	0.25	Riverside

[1]Secondary NAAQS
N/A = not available from current website data
Source: www.arb.ca.gov (all pollutants except 1-hour CO and 1-hour and 3-hour SO_2)
www.epa.gov/air/data/monvals.html (1-hour CO and 1-hour and 3-hour SO_2)

3.0 SIGNIFICANCE CRITERIA

The SCAQMD has adopted significance thresholds in its SCAQMD CEQA Air Quality Handbook (SCAQMD 1993) for air quality that define whether or not a project could have a significant impact. These thresholds are arranged in three parts starting with the broadest and narrowing to the most specific. The general thresholds are derived from Appendix G of the state CEQA guidelines, and indicate that a project could have potentially significant impacts if it would:

a. Conflict with or obstruct implementation of the applicable air quality plan
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation
c. Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including release emissions which exceed quantitative thresholds for ozone precursors).
d. Expose sensitive receptors[5] to substantial pollutant concentrations including air toxics such as diesel particulates. As adopted by the SCAQMD in their CEQA Air Quality handbook (Chapter 4), a sensitive receptor is a person in the population who is particularly susceptible to health effects due to exposure to an air contaminant than is the population at large. Sensitive receptors (and the facilities that house them) in proximity to localized CO sources, toxic air contaminants or odors are of particular concern.
e. Create objectionable odors affecting a substantial number of people; or
f. Release substantial quantities of air contaminants beyond the boundaries of the premises upon which the stationary source emitting the contaminants is located.

The second level of significance set forth in the SCAQMD's significance thresholds presents quantitative emissions thresholds by which to evaluate whether a project's impacts could have a significant impact on air quality. The quantitative emission thresholds are included in Table 3-1.

Table 3-1
Air Quality Significance Thresholds

Pollutant	Construction	Operation
Criteria Pollutants Mass Daily Thresholds		
NO_x	100 lbs/day	55 lbs/day
ROG	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
TAC, AHM, and Odor Thresholds		
Toxic Air Contaminants (TACs)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Hazard Index ≥ 1.0 (project increment) Hazard Index ≥ 3.0 (facility-wide)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants		
PM_{10} 24-hour PM_{10} annual geometric mean	2.5 $\mu g/m^3$ 1.0 $\mu g/m^3$	
Sulfate 24-hour average	1 $\mu g/m^3$	
CO 1-hour average CO 8-hour average	1.1 mg/m^3 0.50 mg/m^3	

$\mu g/m^3$ = microgram per cubic meter; pphm = parts per hundred million; mg/m^3 = milligram per cubic meter; ppm = parts per million; TAC = toxic air contaminant; AHM = Acutely Hazardous Material

In addition, the SCAQMD has adopted its Localized Significance Threshold (LST) methodology (SCAQMD 2003), which provides guidance for evaluating the significance of impacts associated with construction and operation using a dispersion model-based approach. The LST methodology is based on dispersion modeling used to back-calculate the emissions that would result in an exceedance of an air quality standard. LSTs provide area-specific emission thresholds above which a project could have a significant adverse impact on the ambient air quality.

SBVC is located in Source-Receptor Area 34, the Central San Bernardino Valley area. Table 3-2 presents the LSTs for the Central San Bernardino Valley area.

Table 3-2
Localized Significance Thresholds
Central San Bernardino Valley

Size of Source	Distance to Receptor, meters				
	25	**50**	**100**	**200**	**500**
Allowable NOx Emissions, lbs/day					
1 acre	172	216	310	495	970
2 acres	251	291	385	558	1,016
5 acres	438	438	550	718	1,154
Allowable CO Emissions, lbs/day					
1 acre	407	653	1,341	3,467	15,541
2 acres	582	883	1,690	3,998	16,474
5 acres	1,155	1,406	2,508	5,311	18,844
Allowable PM_{10} Construction Emissions, lbs/day					
1 acre	4	12	109	206	302
2 acres	7	21	118	215	312
5 acres	14	44	141	239	337
Allowable PM_{10} Operational Emissions, lbs/day					
1 acre	1	3	26	49	73
2 acres	2	5	28	52	75
5 acres	3	11	34	57	81
Allowable $PM_{2.5}$ Construction Emissions, lbs/day					
1 acre	3	5	9	23	98
2 acres	4	6	12	26	104
5 acres	8	10	17	35	120
Allowable $PM_{2.5}$ Operational Emissions, lbs/day					
1 acre	1	2	3	6	24
2 acres	1	2	3	7	25
5 acres	2	3	5	9	29

In the event that emissions exceed these thresholds, modeling would be required to demonstrate that the project's total air quality impacts result in ground-level concentrations that are below the State and Federal Ambient Air Quality Standards (shown in Table 2-1), including appropriate background levels (shown in Table 2-2).

In addition to impacts from criteria pollutants, project impacts may include emissions of pollutants identified by the state and federal government as toxic air contaminants (TACs) or Hazardous Air Pollutants (HAPs).

With regard to evaluating whether a project would have a significant impact on sensitive receptors, air quality regulators typically define sensitive receptors as schools (Preschool-12th Grade), hospitals, resident care facilities, residences or day-care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. Any project which has the potential to directly impact a sensitive receptor located within one mile and results in a health risk greater than ten in one million would be deemed to have a potentially significant impact.

The impacts associated with construction and operation of the project were evaluated for significance based on these significance criteria.

4.0 CONSTRUCTION IMPACTS

Construction activities, including soil disturbance dust emissions and combustion pollutants from on-site construction equipment and from off-site trucks hauling dirt, cement or building materials, will create a temporary addition of pollutants to the local airshed. These emissions are quite variable in both time and space and differ considerably among various construction projects. Such emission levels can, therefore, only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts. Because of their temporary nature, construction activity impacts have often been considered as having a less-than-significant air quality impact. However, the cumulative impact from all simultaneous construction in the basin is a major contributor to the overall pollution burden, especially for particulate matter (PM_{10}). A number of current SCAQMD strategies thus focus on dust control and on using cleaner off-road equipment to reduce the role of construction in the poor air quality of the region.

Three types of dust emissions may be associated with construction. Large particulates are generated that settle out again rapidly in close proximity to the source. A fraction of the material is small enough to remain suspended in the air semi-indefinitely. The size cut-off for these total suspended particulates (TSP) is around 30 microns in diameter. An even lesser fraction of TSP is small enough to enter deep lung tissue. The size cut-off for particulate matter that is deeply respirable is 10 microns or less and is called PM_{10}. The ambient air quality standard is for PM_{10}. The PM_{10} fraction of TSP is assumed to be around 50 percent. Fine particulate matter, which is considered particulate matter that is 2.5 microns or less, is called $PM_{2.5}$. Depending on the type of source, $PM_{2.5}$ is a fraction of the PM_{10} emissions ranging from 21 percent to 99 percent (SCAQMD 2006).

As discussed in Section 1.0, the SBVC Master Plan involves the development or redevelopment of the Campus. The proposed project will involve a number of projects proposed for Horizon 1, Horizon 2, and Horizon 3. Each Horizon involves demolition of existing campus buildings and the construction of additional buildings to replace those facilities that will be demolished. For the purpose of this analysis, it was assumed that the demolition would occur following construction of the buildings proposed for each Horizon, so that activities and functions could be moved from the old buildings into new buildings. For conservative purposes, the overall construction horizons were compressed to facilitate evaluation of a maximum emission scenario.

Construction emissions were estimated using the URBEMIS Model, Version 9.2.4 (Rimpo and Associates 2007) and construction equipment estimates based on default values in the model. Tables 4-1 through 4-3 provide a summary of the emission estimates for the individual construction phases for each Horizon of the Master Plan. It was assumed that dust control measures (watering three times daily) would be employed to reduce emissions of fugitive dust during site grading and cut and fill operations. Refer to Appendix A for URBEMIS outputs. Comparison with the LSTs was made assuming each site would be five acres and 100 meters from the nearest receptor.

Table 4-1
Estimated Construction Emissions – Horizon 1
Lbs/day

Emission Source	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Total Construction Emissions, lbs/day						
Mass Grading						
Fugitive Dust	-	-	-	-	2.13	0.45
Heavy Equipment Exhaust	3.00	24.99	12.46	-	1.25	1.15
Worker Trips	0.03	0.06	1.05	0.00	0.01	0.01
TOTAL	**3.03**	**25.05**	**13.51**	**0.00**	**3.39**	**1.61**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*
Trenching						
Heavy Equipment Exhaust	2.06	17.69	8.22	0.00	0.88	0.81
Worker Trips	0.03	0.06	1.05	0.00	0.01	0.01
TOTAL	**2.09**	**17.75**	**9.27**	**0.00**	**0.89**	**0.82**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*
Building Construction						
Building Heavy Equipment Exhaust	3.65	16.55	11.20	0.00	1.19	1.10
Building Vendor Trips	0.17	1.92	1.51	0.00	0.09	0.08
Building Worker Trips	0.28	0.53	9.04	0.00	0.08	0.04
Architectural Coatings Offgassing	21.57	-	-	-	-	-
Architectural Coatings Worker Trips	0.01	0.02	0.26	0.00	0.00	0.00
Asphalt Offgassing	0.03	-	-	-	-	-
Asphalt Heavy Equipment Exhaust	2.64	15.97	9.18	0.00	1.39	1.27
Asphalt On-Road Diesel Emissions	0.01	0.13	0.05	0.00	0.01	0.01
Asphalt Worker Trips	0.07	0.12	2.10	0.00	0.02	0.01
TOTAL	**28.43**	**35.24**	**33.34**	**0.00**	**2.78**	**2.51**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*
Demolition						
Fugitive Dust - Demolition	-	-	-	-	13.17	2.74
Heavy Equipment Exhaust	1.05	7.22	4.58	0.00	0.55	0.50
On-Road Diesel Emissions	0.96	12.21	4.70	0.02	0.55	0.47
Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00
TOTAL	**2.04**	**19.49**	**10.26**	**0.02**	**14.28**	**3.71**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*
Maximum Daily Emissions	**30.52**	**61.80**	**44.52**	**0.02**	**5.64**	**3.63**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*

Table 4-2
Estimated Construction Emissions – Horizon 2
Lbs/day

Emission Source	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Total Construction Emissions, lbs/day						
Mass Grading						
Fugitive Dust	-	-	-	-	3.36	0.70
Heavy Equipment Exhaust	2.83	23.44	11.96	-	1.17	1.08
Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00
TOTAL	**2.86**	**23.50**	**12.94**	**0.00**	**4.54**	**1.78**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*
Trenching						
Heavy Equipment Exhaust	1.80	15.24	8.01	0.00	0.73	0.67
Worker Trips	0.03	0.05	0.91	0.00	0.01	0.01
TOTAL	**1.83**	**15.29**	**8.92**	**0.00**	**0.74**	**0.68**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*
Building Construction						
Building Heavy Equipment Exhaust	2.88	13.91	10.20	0.00	0.93	0.86
Building Vendor Trips	0.15	1.61	1.47	0.00	0.08	0.08
Building Worker Trips	0.34	0.64	11.35	0.02	0.13	0.07
Architectural Coatings Offgassing	34.11	-	-	-	-	-
Architectural Coatings Worker Trips	0.01	0.02	0.34	0.00	0.00	0.00
Asphalt Offgassing	0.05	-	-	-	-	-
Asphalt Heavy Equipment Exhaust	2.19	13.60	8.91	0.00	1.15	1.05
Asphalt On-Road Diesel Emissions	0.01	0.14	0.06	0.00	0.01	0.01
Asphalt Worker Trips	0.05	0.09	1.69	0.00	0.02	0.01
TOTAL	**39.79**	**30.01**	**34.02**	**0.02**	**2.32**	**2.08**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*
Demolition						
Fugitive Dust - Demolition	-	-	-	-	15.17	3.16
Heavy Equipment Exhaust	0.84	5.95	4.33	0.00	0.39	0.36
On-Road Diesel Emissions	0.82	9.67	3.77	0.02	0.44	0.38
Worker Trips	0.02	0.04	0.79	0.00	0.01	0.01
TOTAL	**1.68**	**15.66**	**8.89**	**0.02**	**16.01**	**3.91**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*
Maximum Daily Emissions	**39.79**	**30.01**	**34.02**	**0.02**	**16.01**	**3.88**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*

Table 4-3
Estimated Construction Emissions – Horizon 3
Lbs/day

Emission Source	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Total Construction Emissions, lbs/day						
Mass Grading						
Fugitive Dust	-	-	-	-	3.19	0.67
Heavy Equipment Exhaust	1.67	11.16	9.17	-	0.49	0.45
Worker Trips	0.01	0.03	0.52	0.00	0.01	0.00
TOTAL	**1.68**	**11.19**	**9.69**	**0.00**	**3.69**	**1.12**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*
Trenching						
Heavy Equipment Exhaust	1.04	6.18	7.76	0.00	0.29	0.26
Worker Trips	0.01	0.03	0.52	0.00	0.01	0.00
TOTAL	**1.05**	**6.21**	**8.28**	**0.00**	**0.40**	**0.26**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*
Building Construction						
Building Heavy Equipment Exhaust	1.46	8.36	8.72	0.00	0.39	0.36
Building Vendor Trips	0.06	0.47	0.66	0.00	0.04	0.03
Building Worker Trips	0.11	0.23	4.74	0.02	0.12	0.07
Architectural Coatings Offgassing	29.14	-	-	-	-	-
Architectural Coatings Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00
Asphalt Offgassing	0.05	-	-	-	-	-
Asphalt Heavy Equipment Exhaust	1.38	8.70	8.54	0.00	0.62	0.57
Asphalt On-Road Diesel Emissions	0.00	0.04	0.02	0.00	0.00	0.00
Asphalt Worker Trips	0.02	0.04	0.74	0.00	0.02	0.01
TOTAL	**32.22**	**17.85**	**23.56**	**0.02**	**1.19**	**1.04**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*
Demolition						
Fugitive Dust - Demolition	-	-	-	-	4.25	0.88
Heavy Equipment Exhaust	0.54	3.74	4.00	0.00	0.18	0.17
On-Road Diesel Emissions	0.10	0.94	0.39	0.01	0.05	0.04
Worker Trips	0.01	0.02	0.37	0.00	0.01	0.01
TOTAL	**0.65**	**4.70**	**4.76**	**0.01**	**4.49**	**1.10**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*
Maximum Daily Emissions	**32.23**	**17.86**	**23.55**	**0.02**	**4.49**	**1.10**
Significance Criteria	75	100	550	150	150	55
Significant?	*No*	*No*	*No*	*No*	*No*	*No*
Localized Significance Threshold		550	2,508		141	17
Above LST?		*No*	*No*		*No*	*No*

As shown in Tables 4-1 through 4-3, the emissions associated with individual construction phases would be below the significance thresholds and LSTs for all Horizons.

Project construction would employ dust control measures (i.e., watering twice daily) and would therefore be in compliance with strategies in the Air Quality Management Plan (AQMP, SCAQMD 2003) for attaining and maintaining the air quality standards. The Project construction would therefore not conflict or obstruct the implementation of the AQMP or applicable portions of the SIP. Emissions are below the PM_{10} and $PM_{2.5}$ significance thresholds set forth by the SCAQMD. Furthermore, due to the fact that the construction phase of the project is short-term in nature, Project construction would not result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation, nor result in a cumulatively considerable net increase of PM_{10} or $PM_{2.5}$.

Diesel exhaust particulate matter is known to the state of California as carcinogenic compounds. The risks associated with exposure to substances with carcinogenic effects are typically evaluated based on a lifetime of chronic exposure, which is defined in the California Air Pollution Control Officers' Association (CAPCOA) Air Toxics "Hot Spots" Program Risk Assessment Guidelines (CAPCOA 1993) as 24 hours per day, 7 days per week, 365 days per year, for 70 years. Diesel exhaust particulate matter would be emitted during the 30 months of construction assumed for the Project from heavy equipment used in the construction process. Because diesel exhaust particulate matter is considered to be carcinogenic, long-term exposure to diesel exhaust emissions have the potential to result in adverse health impacts. Because of the short-term nature of project construction and the location of construction some distance away from residences where more frequent exposure would be possible, exposure to diesel exhaust emissions during construction would not be significant.

5.0 OPERATIONAL IMPACTS

Student population is forecasted to increase regardless of Master Plan development. The Traffic Study estimated increased ADT based on projected increases in enrollment whether the Master Plan is implemented or not.

Operational emissions were calculated using the URBEMIS Model, Version 9.2.4, to take into account area sources (energy use, landscaping, maintenance architectural coatings use) and vehicle emissions, for each Horizon.

Because the majority of the emissions are attributable to on-road vehicles, the LST methodology is not appropriate and emissions were not compared with LSTs. Tables 5-1 through 5-3 present the operational emissions estimated for each Horizon.

Table 5-1
Summary of Total Estimated Operational Emissions
Horizon 1

	Maximum Daily Emissions (lbs/day)[a]					
Emission Source	**ROG**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Area Sources	1.30	2.09	6.34	0.00	0.02	0.02
Vehicular Emissions	5.85	8.65	63.75	0.07	11.20	2.28
Total	**7.15**	**10.74**	**70.09**	**0.07**	**11.22**	**2.30**
Significance Threshold (lbs/day)	55	55	550	150	150	55
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

[a]Maximum of summer and winter emissions from URBEMIS Model runs.

Table 5-2
Summary of Total Estimated Operational Emissions
Horizon 2

	Maximum Daily Emissions (lbs/day)[a]					
Emission Source	**ROG**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Area Sources	1.50	2.05	3.26	0.00	0.01	0.01
Vehicular Emissions	15.57	24.29	177.28	0.23	38.25	7.44
Total	**17.07**	**26.34**	**180.54**	**0.23**	**38.26**	**7.45**
Significance Threshold (lbs/day)	55	55	550	150	150	55
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

[a]Maximum of summer and winter emissions from URBEMIS Model runs.

Table 5-3
Summary of Total Estimated Operational Emissions
Horizon 3

Emission Source	Maximum Daily Emissions (lbs/day)[a]					
	ROG	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Area Sources	1.43	1.95	3.17	0.00	0.01	0.01
Vehicular Emissions	18.18	25.37	201.52	0.42	69.60	13.51
Total	**19.61**	**27.32**	**204.69**	**0.42**	**69.61**	**13.52**
Significance Threshold (lbs/day)	55	55	550	150	150	55
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

[a]Maximum of summer and winter emissions from URBEMIS Model runs.

As shown in Tables 5-1 through 5-3, the emissions associated with the Master Plan would be less than the daily significance thresholds, and no significant impacts are anticipated.

The potential for cumulative impacts exists during both construction and following implementation of the Master Plan. Construction of Horizon 2 would occur while Horizon 1 operations occur; construction of Horizon 3 would occur while Horizon 1 and 2 operations occur. The maximum daily emissions would occur during construction of Horizon 3 and operation of Horizons 1 and 2. Emissions for this scenario are presented in Table 5-4.

Table 5-4
Summary of Total Estimated Construction and Operational Emissions

Emission Source	Maximum Daily Emissions (lbs/day)					
	ROG	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Horizon 3 Construction	32.23	17.86	23.55	0.02	4.49	1.10
Horizon 1 Operations	7.15	10.74	70.09	0.07	11.22	2.30
Horizon 2 Operations	17.07	26.34	180.54	0.23	38.26	7.45
Total	**56.45**	**54.94**	**274.18**	**0.32**	**53.97**	**10.85**
Significance Threshold (lbs/day)	75	100	550	150	150	55
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

As shown in Table 5-4, maximum daily emissions during simultaneous construction and operations would be below the SCAQMD's significance thresholds and impacts would be less than significant.

Projects involving increases in traffic and/or traffic congestion may result in localized increases in CO concentrations. To further evaluate whether the project would result in a significant impact, additional modeling to assess whether the increases in traffic attributable to implementation of the SBVC Master Plan would result in localized CO impacts.

The Traffic Impact Analysis evaluated whether or not there would be a decrease in the level of service at the roadways and/or intersections affected by the Project. The potential for CO "hot spots" was evaluated based on the results of the Traffic Impact Analysis. The Caltrans ITS Transportation Project-Level Carbon Monoxide Protocol (Caltrans 1998) should be followed to determine whether a CO "hot spot" is likely to form due to Project-generated traffic. In accordance with the Protocol, CO "hot spots" are typically evaluated when (a) the level of service (LOS) of an intersection or roadway decreases to a LOS E or worse; (b) signalization and/or channelization is added to an intersection; and (c) sensitive receptors such as residences, commercial developments, schools, hospitals, etc. are located in the vicinity of the affected intersection or roadway segment.

The Traffic Impact Analysis evaluated 14 intersections in the project vicinity to assess the traffic conditions for each Horizon. Because Horizon 3 would result in the most traffic, Horizon 3 traffic was modeled for the intersections for which a degradation in LOS was projected. These intersections were identified in the Traffic Impact Analysis as intersections for which the impact would be significant, and include the following:

- Esperanza Street and Mt. Vernon Avenue
- Grant Avenue and K Street
- Grant Avenue and J Street
- Grant Avenue and I Street
- Inland Center Drive and I Street
- Colton Avenue and Mt. Vernon Avenue

To evaluate the potential for CO "hot spots," the procedures in the Caltrans ITS Transportation Project-Level Carbon Monoxide Protocol (Caltrans 1998) were used. As recommended in the

Protocol, CALINE4 modeling was conducted for the intersections identified above for the scenario without Project traffic, and the Project scenarios. Modeling was conducted based on the guidance in Appendix B of the Protocol to calculate maximum predicted 1-hour CO concentrations. Predicted 1-hour CO concentrations were then scaled to evaluate maximum predicted 8-hour CO concentrations using the recommended scaling factor of 0.7 for urban locations.

Inputs to the CALINE4 model were obtained from the San Bernardino Valley College Master Plan Transportation Impact Study (Fehr and Peers 2009). As recommended in the Protocol, receptors were located at locations that were approximately 3 meters from the mixing zone, and at a height of 1.8 meters. Average approach and departure speeds were conservatively assumed to be 1 mph, and emission factors for that speed were estimated from the EMFAC2007 emissions model (ARB 2007) for Horizon 3 conditions.

In accordance with the Caltrans ITS Transportation Project-Level Carbon Monoxide Protocol, it is also necessary to estimate future background CO concentrations in the project vicinity to determine the potential impact plus background and evaluate the potential for CO "hot spots" due to the project. As a conservative estimate of background CO concentrations, the existing maximum 1-hour background concentration of CO that was measured at the San Bernardino monitoring station for the period 2006 to 2008 of 5.1 ppm was used to represent future maximum background 1-hour CO concentrations. The existing maximum 8-hour background concentration of CO that was measured at the San Bernardino monitoring station during the period from 2006 to 2008 of 4.45 ppm was also used to provide a conservative estimate of the maximum 8-hour background concentrations in the project vicinity. CO concentrations in the future may be lower as inspection and maintenance programs and more stringent emission controls are placed on vehicles.

The CALINE4 model outputs are provided in Appendix A of this report. Table 5-5 presents a summary of the predicted CO concentrations (impact plus background) for the intersections evaluated. As shown in Table 5-5, the predicted CO concentrations would be substantially below the 1-hour and 8-hour NAAQS and CAAQS for CO shown in Table 2-1 of this report.

Therefore, no exceedances of the CO standard are predicted, and the project would not cause or contribute to a violation of this air quality standard.

Table 5-5
CO "Hot Spots" Evaluation
Predicted CO Concentrations, ppm

Intersection	Long Term plus Project	
Maximum 1-hour Concentration Plus Background, ppm CAAQS = 20 ppm; NAAQS = 35 ppm; Background 5.1 ppm		
	am	***pm***
Esperanza Street and Mt. Vernon Avenue	5.8	6.0
Grant Avenue and K Street	5.6	5.6
Grant Avenue and J Street	5.5	5.6
Grant Avenue and I Street	5.7	5.8
Inland Center Drive and I Street	6.2	6.2
Colton Avenue and Mt. Vernone Avenue	5.8	6.1
Maximum 8-hour Concentration Plus Background, ppm CAAQS = 9.0 ppm; NAAQS = 9 ppm; Background 4.45 ppm		
Esperanza Street and Mt. Vernon Avenue	5.08	
Grant Avenue and K Street	4.80	
Grant Avenue and J Street	4.80	
Grant Avenue and I Street	4.94	
Inland Center Drive and I Street	5.22	
Colton Avenue and Mt. Vernone Avenue	5.15	

Toxic air contaminants (TACs) may be emitted from processes at SBVC, including laboratory/classroom chemical use and chemicals used for maintenance purposes. Implementation of the Master Plan will involve movement of laboratory and classroom spaces, but would not likely result in increases in use of chemicals. Increased enrollment may result in some increased use of laboratory chemicals; however, emissions of TACs would be minor and would not result in a significant impact.

6.0 GLOBAL CLIMATE CHANGE

6.1 Introduction to Global Climate Change Issues

Global Climate Change (GCC) refers to changes in average climatic conditions on Earth as a whole, including temperature, wind patterns, precipitation and storms. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), which are known as greenhouse gases (GHGs). These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere. Gases that trap heat in the atmosphere are often called greenhouse gases, analogous to a greenhouse. GHGs are emitted by both natural processes and human activities. The accumulation of GHGs in the atmosphere regulates the Earth's temperature. Without these natural GHGs, the Earth's temperature would be about 61º Fahrenheit cooler (California Environmental Protection Agency 2006). Emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere.

GHGs have been at the center of a widely contested political, economic, and scientific debate surrounding GCC. Although the conceptual existence of GCC is generally accepted, the extent to which GHGs contribute to it remains a source of debate. The State of California has been at the forefront of developing solutions to address GCC. GCC refers to any significant change in measures of climate, such as average temperature, precipitation, or wind patterns over a period of time. GCC may result from natural factors, natural processes, and/or human activities that change the composition of the atmosphere and alter the surface and features of land.

Global climate change attributable to anthropogenic (human) emissions of GHGs (mainly CO_2, CH_4 and N_2O) is currently one of the most important and widely debated scientific, economic and political issues in the United States. Historical records indicate that global climate changes have occurred in the past due to natural phenomena (such as during previous ice ages). Some data indicate that the current global conditions differ from past climate changes in rate and magnitude.

The United Nations Intergovernmental Panel (Panel) on Climate Change constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The Panel concluded that a stabilization of GHGs at 400 to 450 ppm CO_2 equivalent concentration is required to keep global mean warming below 35.6º Fahrenheit (2º Celsius), which is assumed to be necessary to avoid dangerous climate change (Association of Environmental Professionals 2007).

State law defines greenhouse gases as any of the following compounds: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6) (California Health and Safety Code Section 38505(g).) CO_2, followed by CH_4 and N_2O, are the most common GHGs that result from human activity.

6.2 Sources and Global Warming Potentials of GHG

The State of California GHG Inventory performed by the California Air Resources Board (ARB), compiled statewide anthropogenic GHG emissions and sinks. It includes estimates for CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs. The current inventory covers the years 1990 to 2004, and is summarized in Table 6-1. Data sources used to calculate this GHG inventory include California and federal agencies, international organizations, and industry associations. The calculation methodologies are consistent with guidance from the Intergovernmental Panel on Climate Change (IPCC). The 1990 emissions level is the sum total of sources and sinks from all sectors and categories in the inventory. The inventory is divided into seven broad sectors and categories in the inventory. These sectors include: Agriculture; Commercial; Electricity Generation; Forestry; Industrial; Residential; and Transportation.

Table 6-1
State of California GHG Emissions by Sector

Sector	Total 1990 Emissions ($MMTCO_2e$)	Percent of Total 1990 Emissions	Total 2004 Emissions ($MMTCO_2e$)	Percent of Total 2004 Emissions
Agriculture	23.4	5%	27.9	6%
Commercial	14.4	3%	12.8	3%
Electricity Generation	110.6	26%	119.8	25%
Forestry (excluding sinks)	0.2	<1%	0.2	<1%
Industrial	103.0	24%	96.2	20%
Residential	29.7	7%	29.1	6%
Transportation	150.7	35%	182.4	38%
Forestry Sinks	(6.7)		(4.7)	

When accounting for GHGs, all types of GHG emissions are expressed in terms of CO_2 equivalents (CO_2e) and are typically quantified in metric tons (MT) or millions of metric tons (MMT).

GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (USEPA 2006). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. The other main greenhouse gases that have been attributed to human activity include CH_4, which has a GWP of 21, and N_2O, which has a GWP of 310. Table 6-2 presents the GWP and atmospheric lifetimes of common GHGs.

Table 6-2

Global Warming Potentials and Atmospheric Lifetimes of GHGs

GHG	Formula	100-Year Global Warming Potential	Atmospheric Lifetime (Years)
Carbon Dioxide	CO_2	1	Variable
Methane	CH_4	21	12 ± 3
Nitrous Oxide	N_2O	310	120
Sulfur Hexafluoride	SF_6	23,900	3,200

Human-caused sources of CO_2 include combustion of fossil fuels (coal, oil, natural gas, gasoline and wood). Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. Concentrations of CO_2 have increased in the atmosphere since the industrial revolution.

CH_4 is the main component of natural gas and also arises naturally from anaerobic decay of organic matter. Human-caused sources of natural gas include landfills, fermentation of manure and cattle farming. Human-caused sources of N_2O include combustion of fossil fuels and industrial processes such as nylon production and production of nitric acid.

Other GHGs are present in trace amounts in the atmosphere and are generated from various industrial or other uses.

The sources of GHG emissions, GWP, and atmospheric lifetime of GHGs are all important variables to be considered in the process of calculating CO_2e for discretionary land use projects that require a climate change analysis.

6.3 Regulatory Framework

All levels of government have some responsibility for the protection of air quality, and each level (Federal, State, and regional/local) has specific responsibilities relating to air quality regulation. GHG emissions and the regulation of GHGs is a relatively new component of air quality.

6.3.1 National and International Efforts

International and Federal legislation have been enacted to deal with GCC issues. In 1988, the United Nations and the World Meteorological Organization established the IPCC to assess the scientific, technical, and socioeconomic information relevant to understanding the scientific basis for human-induced climate change, its potential impacts, and options for adaptation and mitigation. The most recent reports of the IPCC have emphasized the scientific consensus that real and measurable changes to the climate are occurring, that they are caused by human activity, and that significant adverse impacts on the environment, the economy, and human health and welfare are unavoidable.

In October 1993, President Clinton announced his Climate Change Action Plan (CCAP), which had a goal of returning GHG emissions to 1990 levels by the year 2000. This was to be accomplished through 50 initiatives that relied on innovative voluntary partnerships between the private sector and government aimed at producing cost-effective reductions in GHG emissions. On March 21, 1994, the United States joined a number of countries around the world in signing the United Nations Framework Convention on Climate Change (UNFCCC). Under the Convention, governments agreed to gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of GCC. Recently, the United States Supreme Court declared in the court case of Massachusetts et al. vs. the Environmental Protection Agency et al., 549 C.S. 497 (2007) that the EPA does have the ability to regulate GHG emissions. In addition to the national and international efforts described above, many local jurisdictions have adopted climate change policies and programs.

Proposed Endangerment Finding. On April 17, 2009, EPA issued its proposed endangerment finding for GHG emissions. EPA is proposing to find that greenhouse gases in the atmosphere endanger the public health and welfare of current and future generations. Concentrations of greenhouse gases are at unprecedented levels compared to the recent and distant past. EPA has stated that these high atmospheric levels are the unambiguous result of human emissions, and are very likely the cause of the observed increase in average temperatures and other climatic

changes. The effects of climate change observed to date and projected to occur in the future – including but not limited to the increased likelihood of more frequent and intense heat waves, more wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea level rise, more intense storms, harm to water resources, harm to agriculture, and harm to wildlife and ecosystems – are effects on public health and welfare within the meaning of the Clean Air Act.

Proposed Mandatory GHG Reporting Rule. On March 10, 2009, in response to the FY2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110–161), EPA proposed a rule that requires mandatory reporting of greenhouse gas (GHG) emissions from large sources in the United States. The proposed rule would collect accurate and comprehensive emissions data to inform future policy decisions.

EPA is proposing that suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions submit annual reports to EPA. The gases covered by the proposed rule are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF_6), and other fluorinated gases including nitrogen trifluoride (NF_3) and hydrofluorinated ethers (HFE).

Corporate Average Fuel Economy Standards. The federal Corporate Average Fuel Economy (CAFE) standard determines the fuel efficiency of certain vehicle classes in the United States. In 2007, as part of the Energy and Security Act of 2007, CAFE standards were increased for new light-duty vehicles to 35 miles per gallon by 2020. In May 2009, President Obama announced plans to increase CAFE standards to require light-duty vehicles to meet an average fuel economy of 35.5 miles per gallon by 2016.

6.3.2 State Regulations and Standards

The following subsections describe regulations and standards that have been adopted by the State of California to address GCC issues.

Assembly Bill 32, the California Global Warming Solutions Act of 2006. In September 2006, Governor Schwartzenegger signed California AB 32, the global warming bill, into law. AB 32 directs the ARB to do the following:

- Make publicly available a list of discrete early action GHG emission reduction measures that can be implemented prior to the adoption of the statewide GHG limit and the measures required to achieve compliance with the statewide limit.
- Make publicly available a GHG inventory for the year 1990 and determine target levels for 2020.
- On or before January 1, 2010, adopt regulations to implement the early action GHG emission reduction measures.
- On or before January 1, 2011, adopt quantifiable, verifiable, and enforceable emission reduction measures by regulation that will achieve the statewide GHG emissions limit by 2020, to become operative on January 1, 2012, at the latest. The emission reduction measures may include direct emission reduction measures, alternative compliance mechanisms, and potential monetary and non-monetary incentives that reduce GHG emissions from any sources or categories of sources that ARB finds necessary to achieve the statewide GHG emissions limit.
- Monitor compliance with and enforce any emission reduction measure adopted pursuant to AB 32.

AB 32 required that by January 1, 2008, ARB determine what the statewide GHG emissions level was in 1990, and approve a statewide GHG emissions limit that is equivalent to that level, to be achieved by 2020. ARB adopted its Scoping Plan in December 2008, which provided estimates of the 1990 GHG emissions level and identified sectors for the reduction of GHG emissions. The ARB has estimated that the 1990 GHG emissions level was 427 MMT net CO_2e (ARB 2008). The ARB estimates that a reduction of 173 MMT net CO_2e emissions below

business-as-usual would be required by 2020 to meet the 1990 levels (ARB 2008). This amounts to a 15 percent reduction from today's levels, and a 30 percent reduction from projected business-as-usual levels in 2020 (ARB 2008).

Senate Bill 97. Senate Bill 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directs OPR to develop draft CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" by July 1, 2009 and directs the Resources Agency to certify and adopt the CEQA guidelines by January 1, 2010.

The Governor's Office of Planning and Research (OPR) published a technical advisory on CEQA and Climate Change on June 19, 2008. The guidance did not include a suggested threshold, but stated that the OPR has asked CARB to, "recommend a method for setting thresholds which will encourage consistency and uniformity in the CEQA analysis of greenhouse gas emissions throughout the state." The OPR does recommend that CEQA analyses include the following components:

- Identify greenhouse gas emissions
- Determine Significance
- Mitigate Impacts

In April, the OPR published its proposed revisions to CEQA to address GHG emissions. The amendments to CEQA indicate the following:

- Climate action plans and other greenhouse gas reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.
- Local governments are encouraged to quantify the greenhouse gas emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. The section also recommends consideration of several qualitative factors that may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. OPR does not set or dictate specific thresholds of significance. Consistent with existing CEQA Guidelines, OPR encourages local governments to develop and publish their own thresholds of significance for GHG impacts assessment.

- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.
- New amendments include guidelines for determining methods to mitigate the effects of greenhouse gas emissions in Appendix F of the CEQA Guidelines.
- OPR is clear to state that "to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation."
- OPR's emphasizes the advantages of analyzing GHG impacts on an institutional, programmatic level. OPR therefore approves tiering of environmental analyses and highlights some benefits of such an approach.
- Environmental impact reports (EIRs) must specifically consider a project's energy use and energy efficiency potential.

Executive Order S-3-05. Executive Order S-3-05, signed by Governor Schwartzenegger on June 1, 2005, calls for a reduction in GHG emissions to 1990 levels by 2020 and for an 80 percent reduction in GHG emissions by 2050. Executive Order S-3-05 also calls for the California EPA (CalEPA) to prepare biennial science reports on the potential impact of continued GCC on certain sectors of the California economy. The first of these reports, "Our Changing Climate: Assessing Risks to California", and its supporting document "Scenarios of Climate Change in California: An Overview" were published by the California Climate Change Center in 2006.

California Code of Regulations Title 24. Although not originally intended to reduce greenhouse gas emissions, California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The GHG emission inventory was based on Title 24 standards as of October 2005; however, Title 24 has been updated as of 2008 and standards are set to be phased in in summer 2009. Energy efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in greenhouse gas emissions. Therefore, increased energy efficiency results in decreased greenhouse gas emissions.

State Standards Addressing Vehicular Emissions. California Assembly Bill 1493 (Pavley) enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. Regulations adopted by ARB would apply to 2009 and later model year vehicles. ARB estimated that the regulation would reduce climate change emissions from light duty passenger vehicle fleet by an estimated 18% in 2020 and by 27% in 2030 (AEP 2007). In 2005, the ARB requested a waiver from EPA to enforce the regulation, as required under the Clean Air Act. Despite the fact that no waiver had ever been denied over a 40-year-period, the then Administrator of the EPA sent Governor Schwarzenegger a letter in December, 2007, indicating he had denied the waiver. On March 6, 2008 the waiver denial was formally issued in the Federal Register. Governor Schwarzenegger and several other states immediately filed suit against the federal government to reverse that decision. On January 21, 2009, ARB requested that EPA reconsider denial of the waiver. EPA scheduled a re-hearing on March 5, 2009 and is considering the case.

Executive Order S-01-07 was enacted by the Governor on January 18, 2007. Essentially, the order mandates the following: 1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and 2) that a Low Carbon Fuel Standard ("LCFS") for transportation fuels be established for California. It is assumed that the effects of the LCFS would be a 10% reduction in GHG emissions from fuel use by 2020. On April 23, 2009, ARB adopted regulations to implement the LCFS.

Senate Bill 375. Senate Bill 375 requires that regions within the state which have a metropolitan planning organization must adopt a sustainable communities strategy as part of their regional transportation plans. The strategy must be designed to achieve certain goals for the reduction of GHG emissions. The bill finds that GHG from autos and light trucks can be substantially reduced by new vehicle technology, but even so "it will be necessary to achieve significant additional greenhouse gas reductions from changed land use patterns and improved transportation. Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 provides that new CEQA provisions be enacted to "encourage developers to submit applications and local governments to make land use decisions that will help the state achieve its goals under AB 32," and that "current planning models and

analytical techniques used for making transportation infrastructure decisions and for air quality planning should be able to assess the effects of policy choices, such as residential development patterns, expanded transit service and accessibility, the walkability of communities, and the use of economic incentives and disincentives."

6.4 Global Climate Change Impacts

In this section, climate change effects of the proposed project are addressed in two contexts:

1) How does the project affect climate change? This is done by use of forecasting, preparing an emissions inventory for the project based on the project description and features incorporated in the project design.

2) How does climate change affect the project? Due to the global nature of climate change, this cannot be forecast in a project-specific manner but potential effects of global change on factors such as wildfire hazard and water supply reliability are discussed in this section.

6.4.1 Existing Conditions

Background. SBVC is currently a source of GHG emissions. These emissions include indirect emissions from energy use and water use, and direct emissions from natural gas combustion and vehicles. In addition, the undeveloped portions of the site contains natural vegetation and soils. Natural vegetation and soils temporarily store carbon as part of the terrestrial carbon cycle. Carbon is assimilated into plants and animals as they grow and then dispersed back into the environment when the die. There are two existing sources of carbon storage at the SBVC project site: natural vegetation and soils.

Natural Vegetation. Living vegetation stores carbon; however, it is difficult to assess net changes in carbon storage associated with the SBVC Master Plan. The key issue is the balance between the loss of natural vegetation and future carbon storage associated with development. For example, the project's landscaping palette will feature shrubs and trees which may provide equal or greater carbon storage on a per acre basis. The situation is further complicated by changes in fire regime. Carbon in natural vegetation is likely to be released into the atmosphere

through wildfire every 20 to 150 years. Carbon in landscaped areas will be protected from wildfire. The balance between these factors will influence the long-term carbon budget on the site.

Soils. The majority of carbon within the site is stored in the soil. Soil carbon accumulates from inputs of plant and animal matter, roots, and other living components of the soil ecosystem (e.g., bacteria, worms, etc.). Soil carbon is lost through biological respiration, erosion, and other forms of disturbance. Overall, soil carbon moves more slowly through the carbon cycle, and it offers greater potential for long-term carbon storage. Field observations suggest that urban soils can sequester relatively large amounts of carbon. Observations from across the United States suggest that cities in warmer and drier climates (such as San Bernardino County) may have slightly higher soil organic matter levels when compared to equivalent areas before development.

6.4.2 Guidelines for the Determination of Significance

Since GCC is a global phenomenon, no direct impact would be identified for an individual land development project. The following criterion is considered to establish a significance threshold for GCC impacts:

- The project will conflict with the goals and strategies of AB 32 to reduce GHGs to 1990 levels by 2020.

According to the ARB's Scoping Plan, AB 32's goal of reducing GHGs to 1990 levels by 2020 would amount to a 30% reduction in emissions below "business as usual" levels, accounting for growth in the state of California. "Business as usual" is defined as the emissions that would have occurred in the absence of reductions mandated under AB 32. Based on the latest guidelines and baseline emission calculations, for energy efficiency, "business as usual" is considered to be the equivalent of being as energy efficient as Title 24 requires as of 2005. The potential for significant impacts to global climate for the project were therefore evaluated on the basis of the project's consistency with the goals of AB 32 to reduce GHG emissions to 1990 levels by 2020,

and to implement those programs that will be required under AB 32 that are applicable to the SBVC Master Plan.

Global climate impacts are by nature cumulative; direct impacts cannot be evaluated because the impacts themselves are global rather than localized impacts. The analysis therefore addresses cumulative impacts.

6.4.3 Emissions Inventory

GHG emissions associated with Project construction were estimated using the URBEMIS Model, Version 9.2.4, which estimates emissions of CO_2. While the URBEMIS Model does not provides estimates of N_2O or CH_4, emissions of these GHG would be much lower than emissions of CO_2 and would not be anticipated to contribute substantially to emissions overall.

Construction Emissions. GHG emissions associated with Project construction were estimated using the URBEMIS Model, Version 9.2.4, which estimates emissions of CO_2. While the URBEMIS Model does not provides estimates of N_2O or CH_4, emissions of these GHG would be much lower than emissions of CO_2 and would not be anticipated to contribute substantially to emissions overall. Based on emission factors from the URBEMIS Model for heavy construction equipment and on-road vehicles, total greenhouse gases associated with construction are summarized in Table 6-3.

Table 6-3
Greenhouse Gas Emissions - Construction

Horizon	CO_2 Emissions, metric tons
Horizon 1	802
Horizon 2	1,245
Horizon 3	1,272

The total emissions are estimated at 3,319 metric tons of CO_2 total for the duration of construction. Amortized over 30 years, the annual CO_2 emissions would be 397.5 metric tons per year.

Baseline energy use was calculated as a function of kWh per square foot based on average performance for southern California buildings compliant with 2006 Title 24 standards. Electricity usage rates for the buildings were calculated based on estimated annual rates of 12.95 kilowatt-hours (kWh) per square foot, (SCAQMD 1993). Emissions associated with natural gas usage were calculated based on the SCAQMD's estimated natural gas usage per square foot (SCAQMD 1993) of 2.0 therms per square foot of space per month. Emissions were calculated based on emission factors in the California Climate Action Registry General Reporting Protocol, Version 3.0 (CCAR 2008).

Water. Water use and energy use are often closely linked. The provision of potable water to commercial users consumes large amounts of energy associated with five stages: source and conveyance, treatment, distribution, end use, and wastewater treatment. This inventory estimated that delivered water for the project will have an embodied energy of 3,519 kWh/acre foot or 0.0108 kWh/gallon (Wilkinson and Wolfe 2005).

Water usage was estimated based on an estimated water usage of 35 gallons per year per square foot (Dziegielewski 2000). Business as usual water usage, without water management strategies implemented, is estimated at 156,275,000 gallons per year.

Emissions of GHGs were calculated assuming a "business as usual" scenario, which does not account for any GHG reduction measures. Operational GHG emissions under the business as usual scenario are summarized in Table 6-4.

Table 6-4
GHG Emissions from the Project (metric tons)
Business as Usual Scenario

Emission Source	Annual Emissions (Metric tons/year)		
	CO_2	CH_4	N_2O
Operational Emissions			
Electricity Use Emissions	517	0.004	0.002
Natural Gas Use Emissions	50	0.007	0.0001
Water Usage	15	0.0001	0.00006
Vehicle Emissions	5,217	0.20	0.39
Total	**5,799**	**0.21**	**0.39**
Global Warming Potential Factor	**1**	**21**	**310**
CO_2 Equivalent Emissions	5,799	4	121
TOTAL CO_2 Equivalent Emissions	**5,924**		

According to the ARB (ARB 2007b), transportation accounts for approximately 38 percent of California's 2004 greenhouse gas emissions. Growth in California has resulted in vehicle miles traveled by California residents increasing three-fold during the period from 1975 to 2004. As shown in Table 6-4, the main source of operational greenhouse gas emissions associated with the SBVC Master Plan would be vehicular emissions. As discussed in Section 6.1, both the state of California and the federal government have adopted GHG emission reduction measures that are designed to reduce the amount of GHGs emitted from vehicles. The U.S. Congress has recently adopted legislation to require Corporate Average Fuel Economy (CAFE) standards to reach 35 miles per gallon (mpg) by the year 2020; the default EMFAC2007 average miles per gallon for vehicles traveling at 45 miles per hour is 27 miles per gallon (ARB 2007a); other speeds are less efficient and miles per gallon decreases. Thus the new CAFE standards would lead to approximately 23 percent greater fuel efficiency, which would lower GHG emissions. All of these measures will contribute to reductions in emissions of GHG from vehicle travel below the levels presented in Table 6-4.

In addition to vehicle emission reduction programs, the San Bernardino Community College District (SBCCD) has developed an Energy Action Plan (SBCCD 2009). The Energy Action Plan outlines the SBCCD's strategies to reduce energy consumption on its campuses, which will in turn reduce operational greenhouse gas emissions. The goals of the Energy Action Plan are as follows:

- Maximizing energy efficiencies to reduce both electrical consumption and peak demand,
- Minimizing operational and maintenance costs,
- Promoting renewable power sources for offsetting campus peak demand and reducing greenhouse gas emissions,
- Minimizing the operating fiscal impact from electrical rate escalation in the future, and
- Reducing the District's exposure to future carbon emission charges

The Energy Action Plan includes developing a Central Cooling Plant anticipated to reduce CO2e such that increases associated with campus growth would only be 80 metric tons additional; use of 500 kW of photovoltaic solar power; and use of solar heating for pools. Additional measures may be considered in the future as the campus develops.

According to the Transportation Impact Study, the SBVC Master Plan also incorporates access to mass transit (local buses), a bicycle network, and a pedestrian network, all of which are consistent with the goals of AB 32.

With implementation of the Energy Action Plan and state and federal vehicle emission reduction programs, plus continued access to mass transit, bicycle networks, and pedestrian access, the project would be consistent with the goals of AB 32 and would not result in a significant impact on global climate.

6.5 Potential Impacts of Global Climate Change on the Project

The Climate Scenarios Report (CCCC 2006), uses a range of emissions scenarios developed by the IPCC to project a series of potential warming ranges (i.e., temperature increases) that may

occur in California during the 21st century. Three warming ranges were identified: Lower warming range (3.0 to 5.5 degrees Fahrenheit (ºF)); medium warming range (5.5 to 8.0 ºF); and higher warming range (8.0 to 10.5 ºF). The Climate Scenarios report then presents an analysis of the future projected climate changes in California under each warming range scenario.

According to the report, substantial temperature increases would result in a variety of impacts to the people, economy, and environment of California. These impacts would result from a projected increase in extreme conditions, with the severity of the impacts depending upon actual future emissions of GHGs and associated warming. These impacts are described below.

Public Health. Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to O_3 formation are projected to increase by 25 to 35 percent under the lower warming range and 75 to 85 percent under the medium warming range. In addition, if global background O_3 levels increase as is predicted in some scenarios, it may become impossible to meet local air quality standards. An increase in wildfires could also occur, and the corresponding increase in the release of pollutants including $PM_{2.5}$ could further compromise air quality. The Climate Scenarios report indicates that large wildfires could become up to 55 percent more frequent of GHG emissions are not significantly reduced.

Potential health effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (e.g., heat rash and heat stroke). In addition, climate sensitive diseases (such as malaria, dengue fever, yellow fever, and encephalitis) may increase, such as those spread by mosquitoes and other disease-carrying insects.

Water Resources. A vast network of reservoirs and aqueducts capture and transport water throughout the State from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada mountain snowpack to supply water during the dry

spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages. In addition, if temperatures continue to rise more precipitation would fall as rain instead of snow, further reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. The State's water resources are also at risk from rising sea levels. An influx of seawater would degrade California's estuaries, wetlands, and groundwater aquifers.

Agriculture. Increased GHG and associated increases in temperature are expected to cause widespread changes to the agricultural industry, reducing the quantity and quality of agricultural products statewide. Significant reductions in available water supply to support agriculture would also impact production. Crop growth and development will change as will the intensity and frequency of pests and diseases.

Ecosystems/Habitats. Continued global warming will likely shift the ranges of existing invasive plants and weeds, thus alternating competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Continued global warming is also likely to increase the populations of and types of pests. Continued global warming would also affect natural ecosystems and biological habitats throughout the State.

Wildland Fires. Global warming is expected to increase the risk of wildfire and alter the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the State.

Rising Sea Levels. Rising sea levels, more intense coastal storms, and warmer water temperatures will increasing threaten the State's coastal regions. Under the high warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. A sea level risk of this

magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten levees and inland water systems, and disrupt wetlands and natural habitats.

7.0 CUMULATIVE IMPACTS

As discussed in Section 4.0, the short-term maximum daily construction emissions would be below the significance criteria for all criteria pollutants. These emissions would therefore not be cumulatively considerable, and would also be temporary.

Operational emissions would also be below the SCAQMD's significance criteria and would not be cumulatively considerable. Cumulative traffic was considered in the CO "hot spots" analysis, and would not cause an exceedance of the CO standard at intersections operating at LOS E or F.

The project would result in an increase in emissions of GHGs, but would be consistent with the goals of AB 32. Global climate impacts are by nature cumulative; the project's contribution would not be cumulatively considerable.

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Appendix A

URBEMIS2002 Model Outputs

Table A-1
Electricity Greenhouse Gas Emissions
San Bernardino Valley College Master Plan

Electricity

Land Use	1,000 Sqft	Usage Rate [a] (kWh\sq.ft\yr)	(KWh\year)	MWh\year
Project			0	0.00
Office	100.2	12.95	1,297,344	1297.34
Retail		13.55	0	0.00
Restaurant		47.45	0	0.00
Food Store		53.30	0	0.00
Warehouse		4.35	0	0.00
Cinema		11.55	0	0.00
High School		10.50	0	0.00
Elementary School		5.90	0	0.00
Hospital		21.70	0	0.00
Library		10.50	0	0.00
Residential (DU)		5,914	0	0.00
Total Project			**1,297,344**	**1297.34**

[a] Electricity Usage Rates from Table A9-11-A, CEQA Air Quality Handbook, SCAQMD, 1993.

GHG	lbs/MWh[b]	lbs	metric tons	CO_2E
Project				
CO_2	878.71	1139989.102	517.0899369	517.0899369
CH_4	0.0067	8.692204465	0.003942714	0.082797003
N_2O	0.0037	4.800172615	0.00217732	0.674969168
				517.85

[b] Emission factors for CO_2, CH_4, and N_2O were derived from the California Climate Action Registry General Reporting Protocol; Version 2.2, March 2007

Table A-2
Natural Gas Greenhouse Gas Emissions
San Bernardino Valley College Master Plan

Natural Gas

Land Use	1,000 Sqft	Usage Rate[c] (cu.ft\sq.ft\mo)	Total Natural Gas Usage (cu.ft\mo)	Total Natural Gas Usage (cu.ft\year)	Total Natural Gas Usage (MMBTU\year)
Project					
Office	100.2	2.0	200,362	2,404,344	2,452
Retail		2.9	-	-	-
Restaurant	0.0	4.8	-	-	-
Food Store	0.0	2.9	-	-	-
Warehouse	0.0	2.0	-	-	-
Cinema	0.0	4.8	-	-	-
High School	0.0	2.9	-	-	-
Elementary School	0.0	2.0	-	-	-
Hospital	0.0	4.8	-	-	-
Library	0.0	2.9	-	-	-
Residential (DU)	0.0	4,012	-	-	-
Total Project			200,362	**2,404,344**	**2,452**

[a] Natural Gas Usage Rates from Table A9-12-A, CEQA Air Quality Handbook, SCAQMD, 1993.

GHG	Kg/MMBtu[b]	Kg	metric tons	CO_2E (Metric Tons)
Project				
CO_2	53.06	130,125.98	59.02	59.02
CH_4	0.0059	14.47	0.0066	0.14
N_2O	0.0001	0.25	0.0001	0.03
				59.20

[b] Emission factors for CO_2, CH_4, and N_2O were derived from the California Climate Action Registry General Reporting Protocol; Version 2.2, March 2007

Table A-3
Water Use Greenhouse Gas Emissions
San Bernardino Valley College Master Plan

Water Usage

Land Use	GPY	Usage Rate (kWh\MMgal)	(KWh\year)	MWh\year
Project	3506335	10800	37,868	37.87
Total Project			**37,868**	**37.87**

[a] Electricity Usage Rates from Table A9-11-A, CEQA Air Quality Handbook, SCAQMD, 1993.

GHG	lbs/MWh[b]	lbs	metric tons	CO_2E
Project				
CO_2	878.71	33275.35758	15.093436	15.093436
CH_4	0.0067	0.253718401	0.000115085	0.002416777
N_2O	0.0037	0.140113147	6.35542E-05	0.019701803
				15.12

[b] Emission factors for CO_2, CH_4, and N_2O were derived from the California Climate Action Registry General Reporting Protocol; Version 2.2, March 2007

Table A-4
On-Road Mobile Source Greenhouse Gas Emissions
San Bernardino Valley College Master Plan

On Road Mobile Source

Land Use	Daily VMT	Annual VMT[a]
Total Project	**25,746**	**9,397,363.00**

[a] Multiplied Daily VMT by 365 to get Annual VMT
[b] Factors dervied from URBEMIS2002

San Diego County CO_2 2012 AVG Gram/Mile[c]	**555.2033571**
San Diego County CH_4 2012 AVG Gram/Mile[c]	**0.021285714**
N_2O Gram/Mile	**0.042**

GHG	Gram/Mile	Gram	metric tons	CO_2E (Metric Tons)
Project				
CO_2	555.20336	5,217,447,485.89	5,217.45	5,217.45
CH_4	0.0212857	200,029.58	0.20	4.20
N_2O	0.042	394,689.25	0.39	122.35
				5344.00

[c] Averaged EMFAC2007 fleet values for 0-65mph
[d] Emission Factor for N_2O based on EPA Tier 0 emission factor

Table A-5
EMFAC Emission Factors
San Bernardino Valley College Master Plan

EMFAC2007 Summary

CO2	
Speed	**Grams/Mile**
0	380.034
5	1208.506
10	921.045
15	727.96
20	597.577
25	513.286
30	456.373
35	419.519
40	398.388
45	390.679
50	395.658
55	414.01
60	447.979
65	501.833
AVG	**555.2033571**

CH4	
Speed	**Grams/Mile**
0	0.036
5	0.052
10	0.038
15	0.028
20	0.022
25	0.018
30	0.015
35	0.013
40	0.012
45	0.012
50	0.012
55	0.012
60	0.013
65	0.015
AVG	**0.021285714**

Pollutant Name: Carbon Dioxide
Temperature: 60F Relative Humidity: 50%

Speed MPH	ALL
0	318.518
5	1193.603
10	908.236
15	717.344
20	588.611
25	504.354
30	447.636
35	411.058
40	390.234
45	382.837
50	388.123
55	406.788
60	441.102
65	495.382

Pollutant Name: Methane
Temperature: 60F Relative Humidity: 50%

Speed MPH	ALL
0	0.033
5	0.072
10	0.054
15	0.041
20	0.033
25	0.028
30	0.024
35	0.021
40	0.02
45	0.019
50	0.019
55	0.019
60	0.021
65	0.023

CALINE4 Model Outputs

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

               JOB: Esperanza and Mt Vernon am
               RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

         U=   1.0 M/S            Z0= 100. CM           ALT=     0. (M)
       BRG= WORST CASE           VD=   .0 CM/S
      CLAS=     7 (G)            VS=   .0 CM/S
      MIXH= 1000. M              AMB=   .0 PPM
     SIGTH=   10. DEGREES       TEMP= 37.0 DEGREE (C)


 II.  LINK VARIABLES

      LINK      *  LINK COORDINATES (M)   *              EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. ES WBLA      *   150     0     0     0 *  AG     35   6.8     .0  10.0
B. ES WBRA      *   150     8     0     8 *  AG     76   6.8     .0  10.0
C. ES EBD       *     0    -6   150    -6 *  AG    443   6.8     .0  10.0
D. MV NBTA      *     6  -150     6     0 *  AG    503   6.8     .0  10.0
E. MV NBRA      *     8  -150     8     0 *  AG    112   6.8     .0  10.0
F. MV NBD       *     6     0     6   150 *  AG    579   6.8     .0  10.0
G. MV SBLA      *     0   150     0     0 *  AG    331   6.8     .0  10.0
H. MV SBTA      *    -6   150    -6     0 *  AG    924   6.8     .0  10.0
I. MV SBD       *    -6     0    -6  -150 *  AG    959   6.8     .0  10.0
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Esperanza and Mt Vernon am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	-16	-60	1.8
2. Recpt 2	*	-16	-40	1.8
3. Recpt 3	*	-16	-20	1.8
4. Recpt 4	*	-16	0	1.8
5. Recpt 5	*	-16	20	1.8
6. Recpt 6	*	-16	40	1.8
7. Recpt 7	*	-16	60	1.8
8. Recpt 8	*	18	-16	1.8
9. Recpt 9	*	18	-36	1.8
10. Recpt 10	*	18	-56	1.8
11. Recpt 11	*	38	-16	1.8
12. Recpt 12	*	58	-16	1.8
13. Recpt 13	*	16	18	1.8
14. Recpt 14	*	16	38	1.8
15. Recpt 15	*	16	58	1.8
16. Recpt 16	*	36	18	1.8
17. Recpt 17	*	56	18	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Esperanza and Mt Vernon am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	13.	.6	.0	.0	.0	.0	.0	.1	.0	.1
2. Recpt 2	14.	.7	.0	.0	.0	.0	.0	.1	.0	.2
3. Recpt 3	16.	.6	.0	.0	.0	.0	.0	.1	.1	.3
4. Recpt 4	16.	.6	.0	.0	.0	.0	.0	.1	.1	.4
5. Recpt 5	17.	.6	.0	.0	.0	.0	.0	.1	.1	.4
6. Recpt 6	161.	.6	.0	.0	.0	.1	.0	.0	.0	.3
7. Recpt 7	163.	.7	.0	.0	.0	.0	.0	.0	.0	.3
8. Recpt 8	342.	.7	.0	.0	.1	.0	.0	.2	.1	.2
9. Recpt 9	345.	.6	.0	.0	.0	.0	.0	.1	.0	.2
10. Recpt 10	347.	.6	.0	.0	.0	.1	.0	.1	.0	.2
11. Recpt 11	333.	.4	.0	.0	.1	.0	.0	.1	.0	.1
12. Recpt 12	325.	.4	.0	.0	.1	.0	.0	.0	.0	.1
13. Recpt 13	196.	.6	.0	.0	.0	.2	.0	.0	.0	.0
14. Recpt 14	196.	.6	.0	.0	.0	.0	.0	.1	.0	.0
15. Recpt 15	195.	.6	.0	.0	.0	.0	.0	.2	.0	.0
16. Recpt 16	206.	.4	.0	.0	.0	.1	.0	.0	.0	.0
17. Recpt 17	214.	.3	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Esperanza and Mt Vernon am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	(PPM) I
1. Recpt 1	.3
2. Recpt 2	.2
3. Recpt 3	.0
4. Recpt 4	.0
5. Recpt 5	.0
6. Recpt 6	.1
7. Recpt 7	.0
8. Recpt 8	.0
9. Recpt 9	.0
10. Recpt 10	.0
11. Recpt 11	.0
12. Recpt 12	.0
13. Recpt 13	.2
14. Recpt 14	.2
15. Recpt 15	.2
16. Recpt 16	.1
17. Recpt 17	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Esperanza and Mt Vernon pm
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	37.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A.	ES WBLA	*	150	0	0	0	* AG	32	6.8	.0	10.0
B.	ES WBRA	*	150	8	0	8	* AG	115	6.8	.0	10.0
C.	ES EBD	*	0	-6	150	-6	* AG	374	6.8	.0	10.0
D.	MV NBTA	*	6	-150	6	0	* AG	1064	6.8	.0	10.0
E.	MV NBRA	*	8	-150	8	0	* AG	140	6.8	.0	10.0
F.	MV NBD	*	6	0	6	150	* AG	1179	6.8	.0	10.0
G.	MV SBLA	*	0	150	0	0	* AG	234	6.8	.0	10.0
H.	MV SBTA	*	-6	150	-6	0	* AG	1101	6.8	.0	10.0
I.	MV SBD	*	-6	0	-6	-150	* AG	1133	6.8	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Esperanza and Mt Vernon pm
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	-16	-60	1.8
2. Recpt 2	*	-16	-40	1.8
3. Recpt 3	*	-16	-20	1.8
4. Recpt 4	*	-16	0	1.8
5. Recpt 5	*	-16	20	1.8
6. Recpt 6	*	-16	40	1.8
7. Recpt 7	*	-16	60	1.8
8. Recpt 8	*	18	-16	1.8
9. Recpt 9	*	18	-36	1.8
10. Recpt 10	*	18	-56	1.8
11. Recpt 11	*	38	-16	1.8
12. Recpt 12	*	58	-16	1.8
13. Recpt 13	*	16	18	1.8
14. Recpt 14	*	16	38	1.8
15. Recpt 15	*	16	58	1.8
16. Recpt 16	*	36	18	1.8
17. Recpt 17	*	56	18	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Esperanza and Mt Vernon pm
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	15.	.8	.0	.0	.0	.0	.0	.2	.0	.1
2. Recpt 2	15.	.8	.0	.0	.0	.0	.0	.3	.0	.2
3. Recpt 3	16.	.8	.0	.0	.0	.0	.0	.3	.0	.4
4. Recpt 4	17.	.8	.0	.0	.0	.0	.0	.3	.0	.4
5. Recpt 5	18.	.8	.0	.0	.0	.0	.0	.3	.0	.4
6. Recpt 6	163.	.8	.0	.0	.0	.2	.0	.0	.0	.3
7. Recpt 7	163.	.8	.0	.0	.0	.2	.0	.1	.0	.4
8. Recpt 8	342.	.8	.0	.0	.0	.0	.0	.4	.0	.2
9. Recpt 9	344.	.8	.0	.0	.0	.1	.0	.3	.0	.2
10. Recpt 10	347.	.8	.0	.0	.0	.2	.0	.2	.0	.2
11. Recpt 11	333.	.5	.0	.0	.0	.0	.0	.2	.0	.2
12. Recpt 12	326.	.4	.0	.0	.1	.0	.0	.1	.0	.1
13. Recpt 13	196.	.9	.0	.0	.0	.4	.0	.0	.0	.0
14. Recpt 14	195.	.8	.0	.0	.0	.2	.0	.3	.0	.0
15. Recpt 15	194.	.8	.0	.0	.0	.1	.0	.4	.0	.0
16. Recpt 16	204.	.5	.0	.0	.0	.2	.0	.0	.0	.0
17. Recpt 17	214.	.4	.0	.0	.0	.1	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Esperanza and Mt Vernon pm
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	(PPM) I
1. Recpt 1	.4
2. Recpt 2	.3
3. Recpt 3	.0
4. Recpt 4	.0
5. Recpt 5	.0
6. Recpt 6	.2
7. Recpt 7	.0
8. Recpt 8	.0
9. Recpt 9	.0
10. Recpt 10	.0
11. Recpt 11	.0
12. Recpt 12	.0
13. Recpt 13	.3
14. Recpt 14	.3
15. Recpt 15	.2
16. Recpt 16	.2
17. Recpt 17	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Grant and K
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	37.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. GA EBLA	*	-150	0	0	0	* AG	135	6.8	.0	10.0
B. GA EBTA	*	-150	-6	0	-6	* AG	188	6.8	.0	10.0
C. Ga EBRA	*	-150	-8	0	-8	* AG	6	6.8	.0	10.0
D. GA EBD	*	0	-6	150	-6	* AG	323	6.8	.0	10.0
E. GA WBLA	*	150	0	0	0	* AG	0	6.8	.0	10.0
F. GA WBTA	*	150	6	0	6	* AG	479	6.8	.0	10.0
G. GA WBRA	*	150	8	0	8	* AG	183	6.8	.0	10.0
H. GA WBD	*	0	6	-150	6	* AG	708	6.8	.0	10.0
I. K NBLA	*	0	-150	0	0	* AG	20	6.8	.0	10.0
J. K NBTA	*	6	-150	6	0	* AG	20	6.8	.0	10.0
K. K NBRA	*	8	-150	8	0	* AG	6	6.8	.0	10.0
L. K NBD	*	6	0	6	150	* AG	338	6.8	.0	10.0
M. K SBLA	*	0	150	0	0	* AG	129	6.8	.0	10.0
N. K SBTA	*	-6	150	-6	0	* AG	17	6.8	.0	10.0
O. K SBRA	*	-8	150	-8	0	* AG	209	6.8	.0	10.0
P. K SBD	*	-6	0	-6	-150	* AG	23	6.8	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Grant and K
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	-16	-18	1.8
2. Recpt 2	*	-16	-38	1.8
3. Recpt 3	*	-16	-58	1.8
4. Recpt 4	*	-36	-18	1.8
5. Recpt 5	*	-56	-18	1.8
6. Recpt 6	*	-18	16	1.8
7. Recpt 7	*	-38	16	1.8
8. Recpt 8	*	-58	16	1.8
9. Recpt 9	*	-18	36	1.8
10. Recpt 10	*	-18	56	1.8
11. Recpt 11	*	18	-16	1.8
12. Recpt 12	*	38	-16	1.8
13. Recpt 13	*	58	-16	1.8
14. Recpt 14	*	18	-36	1.8
15. Recpt 15	*	18	-56	1.8
16. Recpt 16	*	16	18	1.8
17. Recpt 17	*	16	38	1.8
18. Recpt 18	*	16	58	1.8
19. Recpt 19	*	36	18	1.8
20. Recpt 20	*	56	18	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Grant and K
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	13.	.4	.0	.0	.0	.0	.0	.0	.0	.1
2. Recpt 2	11.	.3	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	9.	.3	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	45.	.3	.0	.0	.0	.0	.0	.0	.0	.1
5. Recpt 5	66.	.3	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	104.	.5	.0	.0	.0	.0	.0	.2	.0	.0
7. Recpt 7	102.	.5	.0	.0	.0	.0	.0	.1	.0	.1
8. Recpt 8	101.	.5	.0	.0	.0	.0	.0	.0	.0	.2
9. Recpt 9	114.	.3	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 10	145.	.3	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 11	344.	.4	.0	.0	.0	.0	.0	.0	.0	.0
12. Recpt 12	287.	.4	.0	.0	.0	.0	.0	.0	.0	.2
13. Recpt 13	286.	.4	.0	.0	.0	.1	.0	.0	.0	.1
14. Recpt 14	348.	.3	.0	.0	.0	.0	.0	.0	.0	.0
15. Recpt 15	350.	.3	.0	.0	.0	.0	.0	.0	.0	.0
16. Recpt 16	254.	.5	.0	.0	.0	.0	.0	.0	.0	.3
17. Recpt 17	244.	.4	.0	.0	.0	.0	.0	.0	.0	.1
18. Recpt 18	208.	.3	.0	.0	.0	.0	.0	.0	.0	.0
19. Recpt 19	257.	.5	.0	.0	.0	.0	.0	.0	.0	.2
20. Recpt 20	258.	.4	.0	.0	.0	.0	.0	.0	.0	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Grant and K
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
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
5. Recpt 5	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 10	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 11	.0	.0	.0	.1	.0	.0	.0	.0
12. Recpt 12	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 13	.0	.0	.0	.0	.0	.0	.0	.0
14. Recpt 14	.0	.0	.0	.1	.0	.0	.0	.0
15. Recpt 15	.0	.0	.0	.0	.0	.0	.0	.0
16. Recpt 16	.0	.0	.0	.0	.0	.0	.0	.0
17. Recpt 17	.0	.0	.0	.0	.0	.0	.0	.0
18. Recpt 18	.0	.0	.0	.1	.0	.0	.0	.0
19. Recpt 19	.0	.0	.0	.0	.0	.0	.0	.0
20. Recpt 20	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Grant and K pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	37.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. GA EBLA	*	-150	0	0	0	* AG	109	6.8	.0	10.0
B. GA EBTA	*	-150	-6	0	-6	* AG	380	6.8	.0	10.0
C. Ga EBRA	*	-150	-8	0	-8	* AG	5	6.8	.0	10.0
D. GA EBD	*	0	-6	150	-6	* AG	597	6.8	.0	10.0
E. GA WBLA	*	150	0	0	0	* AG	3	6.8	.0	10.0
F. GA WBTA	*	150	6	0	6	* AG	379	6.8	.0	10.0
G. GA WBRA	*	150	8	0	8	* AG	136	6.8	.0	10.0
H. GA WBD	*	0	6	-150	6	* AG	565	6.8	.0	10.0
I. K NBLA	*	0	-150	0	0	* AG	9	6.8	.0	10.0
J. K NBTA	*	6	-150	6	0	* AG	5	6.8	.0	10.0
K. K NBRA	*	8	-150	8	0	* AG	6	6.8	.0	10.0
L. K NBD	*	6	0	6	150	* AG	250	6.8	.0	10.0
M. K SBLA	*	0	150	0	0	* AG	211	6.8	.0	10.0
N. K SBTA	*	-6	150	-6	0	* AG	9	6.8	.0	10.0
O. K SBRA	*	-8	150	-8	0	* AG	177	6.8	.0	10.0
P. K SBD	*	-6	0	-6	-150	* AG	17	6.8	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Grant and K pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	-16	-18	1.8
2. Recpt 2	*	-16	-38	1.8
3. Recpt 3	*	-16	-58	1.8
4. Recpt 4	*	-36	-18	1.8
5. Recpt 5	*	-56	-18	1.8
6. Recpt 6	*	-18	16	1.8
7. Recpt 7	*	-38	16	1.8
8. Recpt 8	*	-58	16	1.8
9. Recpt 9	*	-18	36	1.8
10. Recpt 10	*	-18	56	1.8
11. Recpt 11	*	18	-16	1.8
12. Recpt 12	*	38	-16	1.8
13. Recpt 13	*	58	-16	1.8
14. Recpt 14	*	18	-36	1.8
15. Recpt 15	*	18	-56	1.8
16. Recpt 16	*	16	18	1.8
17. Recpt 17	*	16	38	1.8
18. Recpt 18	*	16	58	1.8
19. Recpt 19	*	36	18	1.8
20. Recpt 20	*	56	18	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Grant and K pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	13.	.4	.0	.0	.0	.0	.0	.0	.0	.0
2. Recpt 2	11.	.3	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	9.	.3	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	74.	.4	.0	.0	.0	.1	.0	.0	.0	.0
5. Recpt 5	72.	.4	.0	.1	.0	.0	.0	.0	.0	.0
6. Recpt 6	105.	.5	.0	.0	.0	.1	.0	.2	.0	.0
7. Recpt 7	103.	.5	.0	.0	.0	.1	.0	.1	.0	.1
8. Recpt 8	102.	.5	.0	.0	.0	.1	.0	.0	.0	.2
9. Recpt 9	116.	.3	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 10	142.	.3	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 11	344.	.5	.0	.0	.0	.1	.0	.0	.0	.0
12. Recpt 12	288.	.4	.0	.0	.0	.2	.0	.0	.0	.1
13. Recpt 13	286.	.5	.0	.0	.0	.2	.0	.0	.0	.1
14. Recpt 14	348.	.3	.0	.0	.0	.0	.0	.0	.0	.0
15. Recpt 15	350.	.3	.0	.0	.0	.0	.0	.0	.0	.0
16. Recpt 16	253.	.5	.0	.0	.0	.0	.0	.0	.0	.2
17. Recpt 17	244.	.3	.0	.0	.0	.0	.0	.0	.0	.1
18. Recpt 18	210.	.3	.0	.0	.0	.0	.0	.0	.0	.0
19. Recpt 19	256.	.5	.0	.0	.0	.0	.0	.0	.0	.2
20. Recpt 20	258.	.4	.0	.0	.0	.0	.0	.0	.0	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Grant and K pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
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
5. Recpt 5	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 10	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 11	.0	.0	.0	.1	.0	.0	.0	.0
12. Recpt 12	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 13	.0	.0	.0	.0	.0	.0	.0	.0
14. Recpt 14	.0	.0	.0	.0	.0	.0	.0	.0
15. Recpt 15	.0	.0	.0	.0	.0	.0	.0	.0
16. Recpt 16	.0	.0	.0	.0	.0	.0	.0	.0
17. Recpt 17	.0	.0	.0	.0	.0	.0	.0	.0
18. Recpt 18	.0	.0	.0	.0	.0	.0	.0	.0
19. Recpt 19	.0	.0	.0	.0	.0	.0	.0	.0
20. Recpt 20	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Grant and J am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	37.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. GA EBLA	*	-150	0	0	0	* AG	33	6.8	.0	10.0
B. GA EBTA	*	-150	-6	0	-6	* AG	201	6.8	.0	10.0
C. Ga EBRA	*	-150	-8	0	-8	* AG	5	6.8	.0	10.0
D. GA EBD	*	0	-6	150	-6	* AG	249	6.8	.0	10.0
E. GA WBLA	*	150	0	0	0	* AG	2	6.8	.0	10.0
F. GA WBTA	*	150	6	0	6	* AG	725	6.8	.0	10.0
G. GA WBRA	*	150	8	0	8	* AG	50	6.8	.0	10.0
H. GA WBD	*	0	6	-150	6	* AG	756	6.8	.0	10.0
I. J NBLA	*	0	-150	0	0	* AG	3	6.8	.0	10.0
J. J NBTA	*	6	-150	6	0	* AG	6	6.8	.0	10.0
K. J NBRA	*	8	-150	8	0	* AG	3	6.8	.0	10.0
L. J NBD	*	6	0	6	150	* AG	89	6.8	.0	10.0
M. J SBLA	*	0	150	0	0	* AG	45	6.8	.0	10.0
N. J SBTA	*	-6	150	-6	0	* AG	6	6.8	.0	10.0
O. J SBRA	*	-8	150	-8	0	* AG	28	6.8	.0	10.0
P. J SBD	*	-6	0	-6	-150	* AG	13	6.8	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Grant and J am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	-16	-18	1.8
2. Recpt 2	*	-16	-38	1.8
3. Recpt 3	*	-16	-58	1.8
4. Recpt 4	*	-36	-18	1.8
5. Recpt 5	*	-56	-18	1.8
6. Recpt 6	*	-18	16	1.8
7. Recpt 7	*	-38	16	1.8
8. Recpt 8	*	-58	16	1.8
9. Recpt 9	*	-18	36	1.8
10. Recpt 10	*	-18	56	1.8
11. Recpt 11	*	18	-16	1.8
12. Recpt 12	*	38	-16	1.8
13. Recpt 13	*	58	-16	1.8
14. Recpt 14	*	18	-36	1.8
15. Recpt 15	*	18	-56	1.8
16. Recpt 16	*	16	18	1.8
17. Recpt 17	*	16	38	1.8
18. Recpt 18	*	16	58	1.8
19. Recpt 19	*	36	18	1.8
20. Recpt 20	*	56	18	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Grant and J am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	72.	.3	.0	.0	.0	.0	.0	.2	.0	.0
2. Recpt 2	11.	.2	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	10.	.2	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	73.	.3	.0	.0	.0	.0	.0	.2	.0	.0
5. Recpt 5	73.	.3	.0	.0	.0	.0	.0	.1	.0	.0
6. Recpt 6	105.	.4	.0	.0	.0	.0	.0	.3	.0	.0
7. Recpt 7	102.	.4	.0	.0	.0	.0	.0	.2	.0	.1
8. Recpt 8	102.	.4	.0	.0	.0	.0	.0	.1	.0	.2
9. Recpt 9	111.	.2	.0	.0	.0	.0	.0	.1	.0	.0
10. Recpt 10	119.	.2	.0	.0	.0	.0	.0	.1	.0	.0
11. Recpt 11	287.	.3	.0	.0	.0	.0	.0	.0	.0	.2
12. Recpt 12	286.	.3	.0	.0	.0	.0	.0	.0	.0	.2
13. Recpt 13	286.	.3	.0	.0	.0	.0	.0	.0	.0	.1
14. Recpt 14	348.	.2	.0	.0	.0	.0	.0	.0	.0	.0
15. Recpt 15	351.	.2	.0	.0	.0	.0	.0	.0	.0	.0
16. Recpt 16	254.	.4	.0	.0	.0	.0	.0	.0	.0	.3
17. Recpt 17	246.	.2	.0	.0	.0	.0	.0	.0	.0	.1
18. Recpt 18	236.	.2	.0	.0	.0	.0	.0	.0	.0	.1
19. Recpt 19	256.	.4	.0	.0	.0	.0	.0	.0	.0	.2
20. Recpt 20	257.	.4	.0	.0	.0	.0	.0	.2	.0	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Grant and J am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P
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
5. Recpt 5	*	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	*	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	*	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	*	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	*	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 10	*	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 11	*	.0	.0	.0	.0	.0	.0	.0	.0
12. Recpt 12	*	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 13	*	.0	.0	.0	.0	.0	.0	.0	.0
14. Recpt 14	*	.0	.0	.0	.0	.0	.0	.0	.0
15. Recpt 15	*	.0	.0	.0	.0	.0	.0	.0	.0
16. Recpt 16	*	.0	.0	.0	.0	.0	.0	.0	.0
17. Recpt 17	*	.0	.0	.0	.0	.0	.0	.0	.0
18. Recpt 18	*	.0	.0	.0	.0	.0	.0	.0	.0
19. Recpt 19	*	.0	.0	.0	.0	.0	.0	.0	.0
20. Recpt 20	*	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Grant and J pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	37.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. GA EBLA	*	-150	0	0	0	* AG	45	6.8	.0	10.0
B. GA EBTA	*	-150	-6	0	-6	* AG	417	6.8	.0	10.0
C. Ga EBRA	*	-150	-8	0	-8	* AG	2	6.8	.0	10.0
D. GA EBD	*	0	-6	150	-6	* AG	463	6.8	.0	10.0
E. GA WBLA	*	150	0	0	0	* AG	11	6.8	.0	10.0
F. GA WBTA	*	150	6	0	6	* AG	628	6.8	.0	10.0
G. GA WBRA	*	150	8	0	8	* AG	34	6.8	.0	10.0
H. GA WBD	*	0	6	-150	6	* AG	697	6.8	.0	10.0
I. J NBLA	*	0	-150	0	0	* AG	2	6.8	.0	10.0
J. J NBTA	*	6	-150	6	0	* AG	6	6.8	.0	10.0
K. J NBRA	*	8	-150	8	0	* AG	3	6.8	.0	10.0
L. J NBD	*	6	0	6	150	* AG	85	6.8	.0	10.0
M. J SBLA	*	0	150	0	0	* AG	43	6.8	.0	10.0
N. J SBTA	*	-6	150	-6	0	* AG	9	6.8	.0	10.0
O. J SBRA	*	-8	150	-8	0	* AG	67	6.8	.0	10.0
P. J SBD	*	-6	0	-6	-150	* AG	22	6.8	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Grant and J pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	-16	-18	1.8
2. Recpt 2	*	-16	-38	1.8
3. Recpt 3	*	-16	-58	1.8
4. Recpt 4	*	-36	-18	1.8
5. Recpt 5	*	-56	-18	1.8
6. Recpt 6	*	-18	16	1.8
7. Recpt 7	*	-38	16	1.8
8. Recpt 8	*	-58	16	1.8
9. Recpt 9	*	-18	36	1.8
10. Recpt 10	*	-18	56	1.8
11. Recpt 11	*	18	-16	1.8
12. Recpt 12	*	38	-16	1.8
13. Recpt 13	*	58	-16	1.8
14. Recpt 14	*	18	-36	1.8
15. Recpt 15	*	18	-56	1.8
16. Recpt 16	*	16	18	1.8
17. Recpt 17	*	16	38	1.8
18. Recpt 18	*	16	58	1.8
19. Recpt 19	*	36	18	1.8
20. Recpt 20	*	56	18	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Grant and J pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	72.	.4	.0	.0	.0	.2	.0	.2	.0	.0
2. Recpt 2	10.	.2	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	9.	.2	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	74.	.4	.0	.0	.0	.1	.0	.1	.0	.0
5. Recpt 5	74.	.4	.0	.1	.0	.0	.0	.1	.0	.0
6. Recpt 6	105.	.5	.0	.0	.0	.1	.0	.2	.0	.0
7. Recpt 7	104.	.5	.0	.0	.0	.1	.0	.1	.0	.1
8. Recpt 8	102.	.5	.0	.0	.0	.1	.0	.1	.0	.2
9. Recpt 9	114.	.3	.0	.0	.0	.0	.0	.1	.0	.0
10. Recpt 10	124.	.2	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 11	286.	.4	.0	.2	.0	.0	.0	.0	.0	.2
12. Recpt 12	286.	.4	.0	.0	.0	.1	.0	.0	.0	.2
13. Recpt 13	285.	.4	.0	.0	.0	.2	.0	.0	.0	.1
14. Recpt 14	294.	.2	.0	.0	.0	.0	.0	.0	.0	.1
15. Recpt 15	350.	.2	.0	.0	.0	.0	.0	.0	.0	.0
16. Recpt 16	253.	.4	.0	.1	.0	.0	.0	.0	.0	.2
17. Recpt 17	246.	.3	.0	.0	.0	.0	.0	.0	.0	.1
18. Recpt 18	236.	.2	.0	.0	.0	.0	.0	.0	.0	.0
19. Recpt 19	256.	.4	.0	.1	.0	.0	.0	.0	.0	.2
20. Recpt 20	257.	.4	.0	.0	.0	.0	.0	.1	.0	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Grant and J pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
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
5. Recpt 5	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 10	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 11	.0	.0	.0	.0	.0	.0	.0	.0
12. Recpt 12	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 13	.0	.0	.0	.0	.0	.0	.0	.0
14. Recpt 14	.0	.0	.0	.0	.0	.0	.0	.0
15. Recpt 15	.0	.0	.0	.0	.0	.0	.0	.0
16. Recpt 16	.0	.0	.0	.0	.0	.0	.0	.0
17. Recpt 17	.0	.0	.0	.0	.0	.0	.0	.0
18. Recpt 18	.0	.0	.0	.0	.0	.0	.0	.0
19. Recpt 19	.0	.0	.0	.0	.0	.0	.0	.0
20. Recpt 20	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Grant and I am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	37.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. GA EBLA	*	-150	0	0	0	* AG	13	6.8	.0	10.0
B. Ga EBRA	*	-150	-8	0	-8	* AG	237	6.8	.0	10.0
C. GA WBD	*	0	6	-150	6	* AG	1011	6.8	.0	10.0
D. J NBLA	*	0	-150	0	0	* AG	739	6.8	.0	10.0
E. J NBTA	*	6	-150	6	0	* AG	140	6.8	.0	10.0
F. J NBD	*	6	0	6	150	* AG	153	6.8	.0	10.0
G. J SBTA	*	-6	150	-6	0	* AG	16	6.8	.0	10.0
H. J SBRA	*	-8	150	-8	0	* AG	272	6.8	.0	10.0
I. J SBD	*	-6	0	-6	-150	* AG	253	6.8	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Grant and I am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	-16	-18	1.8
2. Recpt 2	-16	-38	1.8
3. Recpt 3	-16	-58	1.8
4. Recpt 4	-36	-18	1.8
5. Recpt 5	-56	-18	1.8
6. Recpt 6	-18	16	1.8
7. Recpt 7	-38	16	1.8
8. Recpt 8	-58	16	1.8
9. Recpt 9	-18	36	1.8
10. Recpt 10	-18	56	1.8
11. Recpt 11	16	-60	1.8
12. Recpt 12	16	-40	1.8
13. Recpt 13	16	-20	1.8
14. Recpt 14	16	0	1.8
15. Recpt 15	16	20	1.8
16. Recpt 16	16	40	1.8
17. Recpt 17	16	60	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Grant and I am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	12.	.4	.0	.0	.1	.0	.0	.0	.0	.1
2. Recpt 2	161.	.4	.0	.0	.0	.2	.0	.0	.0	.0
3. Recpt 3	159.	.4	.0	.0	.0	.2	.0	.0	.0	.0
4. Recpt 4	43.	.3	.0	.0	.2	.0	.0	.0	.0	.0
5. Recpt 5	51.	.3	.0	.0	.2	.0	.0	.0	.0	.0
6. Recpt 6	161.	.6	.0	.0	.2	.2	.0	.0	.0	.0
7. Recpt 7	128.	.5	.0	.0	.3	.0	.0	.0	.0	.0
8. Recpt 8	118.	.5	.0	.0	.4	.0	.0	.0	.0	.0
9. Recpt 9	167.	.5	.0	.0	.1	.2	.0	.0	.0	.0
10. Recpt 10	169.	.4	.0	.0	.0	.2	.0	.0	.0	.0
11. Recpt 11	332.	.4	.0	.0	.0	.2	.0	.0	.0	.0
12. Recpt 12	321.	.4	.0	.0	.1	.2	.0	.0	.0	.0
13. Recpt 13	289.	.5	.0	.0	.2	.1	.0	.0	.0	.0
14. Recpt 14	270.	.6	.0	.0	.4	.0	.0	.0	.0	.0
15. Recpt 15	253.	.5	.0	.0	.3	.0	.0	.0	.0	.0
16. Recpt 16	193.	.4	.0	.0	.0	.2	.0	.0	.0	.0
17. Recpt 17	191.	.3	.0	.0	.0	.1	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Grant and I am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	(PPM) I
1. Recpt 1	.0
2. Recpt 2	.1
3. Recpt 3	.1
4. Recpt 4	.0
5. Recpt 5	.0
6. Recpt 6	.0
7. Recpt 7	.0
8. Recpt 8	.0
9. Recpt 9	.0
10. Recpt 10	.0
11. Recpt 11	.0
12. Recpt 12	.0
13. Recpt 13	.0
14. Recpt 14	.0
15. Recpt 15	.0
16. Recpt 16	.0
17. Recpt 17	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Grant and I pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	37.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. GA EBLA	*	-150	0	0	0	* AG	22	6.8	.0	10.0
B. Ga EBRA	*	-150	-8	0	-8	* AG	441	6.8	.0	10.0
C. GA WBD	*	0	6	-150	6	* AG	689	6.8	.0	10.0
D. J NBLA	*	0	-150	0	0	* AG	650	6.8	.0	10.0
E. J NBTA	*	6	-150	6	0	* AG	136	6.8	.0	10.0
F. J NBD	*	6	0	6	150	* AG	158	6.8	.0	10.0
G. J SBTA	*	-6	150	-6	0	* AG	141	6.8	.0	10.0
H. J SBRA	*	-8	150	-8	0	* AG	39	6.8	.0	10.0
I. J SBD	*	-6	0	-6	-150	* AG	582	6.8	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Grant and I pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	-16	-18	1.8
2. Recpt 2	-16	-38	1.8
3. Recpt 3	-16	-58	1.8
4. Recpt 4	-36	-18	1.8
5. Recpt 5	-56	-18	1.8
6. Recpt 6	-18	16	1.8
7. Recpt 7	-38	16	1.8
8. Recpt 8	-58	16	1.8
9. Recpt 9	-18	36	1.8
10. Recpt 10	-18	56	1.8
11. Recpt 11	16	-60	1.8
12. Recpt 12	16	-40	1.8
13. Recpt 13	16	-20	1.8
14. Recpt 14	16	0	1.8
15. Recpt 15	16	20	1.8
16. Recpt 16	16	40	1.8
17. Recpt 17	16	60	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Grant and I pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	163.	.5	.0	.0	.0	.2	.0	.0	.0	.0
2. Recpt 2	161.	.5	.0	.0	.0	.2	.0	.0	.0	.0
3. Recpt 3	160.	.5	.0	.0	.0	.2	.0	.0	.0	.0
4. Recpt 4	289.	.3	.0	.2	.1	.0	.0	.0	.0	.0
5. Recpt 5	61.	.3	.0	.2	.1	.0	.0	.0	.0	.0
6. Recpt 6	164.	.7	.0	.0	.2	.2	.0	.0	.0	.0
7. Recpt 7	154.	.5	.0	.0	.2	.1	.0	.0	.0	.0
8. Recpt 8	120.	.5	.0	.0	.2	.0	.0	.0	.0	.0
9. Recpt 9	168.	.5	.0	.0	.0	.2	.0	.0	.0	.0
10. Recpt 10	170.	.4	.0	.0	.0	.1	.0	.0	.0	.0
11. Recpt 11	329.	.5	.0	.0	.0	.2	.0	.0	.0	.0
12. Recpt 12	315.	.5	.0	.0	.0	.2	.0	.0	.0	.0
13. Recpt 13	288.	.6	.0	.2	.2	.1	.0	.0	.0	.0
14. Recpt 14	268.	.6	.0	.2	.2	.0	.0	.0	.0	.0
15. Recpt 15	196.	.4	.0	.0	.0	.2	.0	.0	.0	.0
16. Recpt 16	194.	.4	.0	.0	.0	.2	.0	.0	.0	.0
17. Recpt 17	192.	.4	.0	.0	.0	.1	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Grant and I pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	(PPM) I
1. Recpt 1	.2
2. Recpt 2	.2
3. Recpt 3	.2
4. Recpt 4	.0
5. Recpt 5	.0
6. Recpt 6	.2
7. Recpt 7	.1
8. Recpt 8	.0
9. Recpt 9	.2
10. Recpt 10	.1
11. Recpt 11	.1
12. Recpt 12	.1
13. Recpt 13	.0
14. Recpt 14	.0
15. Recpt 15	.1
16. Recpt 16	.1
17. Recpt 17	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Inland Ctr and I Street am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	12.6 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. IC EBLA	*	-97	-113	0	0	* AG	93	6.8	.0	10.0
B. IC EBTA	*	-93	-113	4	0	* AG	288	6.8	.0	10.0
C. IC EBD	*	4	0	88	110	* AG	803	6.8	.0	10.0
D. IC WBTA	*	84	110	-4	0	* AG	259	6.8	.0	10.0
E. IC WBRA	*	80	110	-6	0	* AG	788	6.8	.0	10.0
F. IC WBD	*	-4	0	-100	-113	* AG	848	6.8	.0	10.0
G. I SBLA	*	0	150	0	0	* AG	515	6.8	.0	10.0
H. I SBRA	*	-4	150	-4	-4	* AG	60	6.8	.0	10.0
I. I NBD	*	4	0	4	150	* AG	881	6.8	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Inland Ctr and I Street am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	-14	0	1.8
2. Recpt 2	*	-34	-20	1.8
3. Recpt 3	*	-54	-40	1.8
4. Recpt 4	*	-60	-86	1.8
5. Recpt 5	*	-40	-63	1.8
6. Recpt 6	*	-20	-40	1.8
7. Recpt 7	*	0	-17	1.8
8. Recpt 8	*	20	6	1.8
9. Recpt 9	*	40	29	1.8
10. Recpt 10	*	60	52	1.8
11. Recpt 11	*	-14	20	1.8
12. Recpt 12	*	-14	40	1.8
13. Recpt 13	*	14	40	1.8
14. Recpt 14	*	14	60	1.8
15. Recpt 15	*	34	64	1.8
16. Recpt 16	*	54	88	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Inland Ctr and I Street am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	49.	1.1	.0	.0	.2	.1	.4	.0	.1	.0
2. Recpt 2	49.	.8	.0	.0	.2	.0	.2	.0	.0	.0
3. Recpt 3	49.	.6	.0	.0	.1	.0	.1	.1	.0	.0
4. Recpt 4	29.	.7	.0	.1	.0	.0	.0	.2	.0	.0
5. Recpt 5	28.	.7	.0	.1	.0	.0	.1	.2	.0	.0
6. Recpt 6	23.	.8	.0	.1	.0	.0	.2	.1	.0	.0
7. Recpt 7	3.	1.1	.0	.0	.0	.0	.2	.0	.3	.0
8. Recpt 8	344.	.8	.0	.0	.2	.0	.1	.0	.1	.0
9. Recpt 9	241.	.7	.0	.0	.2	.0	.1	.0	.0	.0
10. Recpt 10	235.	.6	.0	.0	.2	.0	.1	.0	.0	.0
11. Recpt 11	59.	.7	.0	.0	.2	.0	.2	.0	.1	.0
12. Recpt 12	66.	.6	.0	.0	.1	.0	.1	.0	.1	.0
13. Recpt 13	205.	.9	.0	.0	.0	.0	.2	.2	.1	.0
14. Recpt 14	201.	.7	.0	.0	.0	.0	.0	.1	.1	.0
15. Recpt 15	207.	.7	.0	.0	.1	.0	.3	.0	.0	.0
16. Recpt 16	208.	.8	.0	.0	.2	.0	.4	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Inland Ctr and I Street am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	(PPM) I
1. Recpt 1	.2
2. Recpt 2	.1
3. Recpt 3	.0
4. Recpt 4	.0
5. Recpt 5	.1
6. Recpt 6	.1
7. Recpt 7	.4
8. Recpt 8	.2
9. Recpt 9	.0
10. Recpt 10	.0
11. Recpt 11	.2
12. Recpt 12	.1
13. Recpt 13	.3
14. Recpt 14	.3
15. Recpt 15	.0
16. Recpt 16	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Inland Ctr and I Street pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	12.6 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. IC EBLA	*	-97	-113	0	0	* AG	122	6.8	.0	10.0
B. IC EBTA	*	-93	-113	4	0	* AG	363	6.8	.0	10.0
C. IC EBD	*	4	0	88	110	* AG	1038	6.8	.0	10.0
D. IC WBTA	*	84	110	-4	0	* AG	411	6.8	.0	10.0
E. IC WBRA	*	80	110	-6	0	* AG	545	6.8	.0	10.0
F. IC WBD	*	-4	0	-100	-113	* AG	479	6.8	.0	10.0
G. I SBLA	*	0	150	0	0	* AG	675	6.8	.0	10.0
H. I SBRA	*	-4	150	-4	-4	* AG	68	6.8	.0	10.0
I. I NBD	*	4	0	4	150	* AG	667	6.8	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Inland Ctr and I Street pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	-14	0	1.8
2. Recpt 2	*	-34	-20	1.8
3. Recpt 3	*	-54	-40	1.8
4. Recpt 4	*	-60	-86	1.8
5. Recpt 5	*	-40	-63	1.8
6. Recpt 6	*	-20	-40	1.8
7. Recpt 7	*	0	-17	1.8
8. Recpt 8	*	20	6	1.8
9. Recpt 9	*	40	29	1.8
10. Recpt 10	*	60	52	1.8
11. Recpt 11	*	-14	20	1.8
12. Recpt 12	*	-14	40	1.8
13. Recpt 13	*	14	40	1.8
14. Recpt 14	*	14	60	1.8
15. Recpt 15	*	34	64	1.8
16. Recpt 16	*	54	88	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Inland Ctr and I Street pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	50.	1.1	.0	.0	.3	.2	.3	.0	.1	.0
2. Recpt 2	49.	.7	.0	.0	.2	.1	.2	.0	.0	.0
3. Recpt 3	48.	.6	.0	.0	.2	.0	.1	.0	.0	.0
4. Recpt 4	30.	.7	.0	.2	.0	.0	.0	.1	.0	.0
5. Recpt 5	29.	.7	.0	.2	.0	.0	.0	.0	.0	.0
6. Recpt 6	25.	.8	.0	.1	.1	.0	.1	.0	.0	.0
7. Recpt 7	2.	1.1	.0	.0	.0	.0	.1	.0	.3	.0
8. Recpt 8	344.	.8	.0	.0	.3	.0	.1	.0	.2	.0
9. Recpt 9	243.	.7	.0	.0	.3	.0	.0	.0	.0	.0
10. Recpt 10	239.	.7	.0	.0	.3	.0	.1	.0	.0	.0
11. Recpt 11	60.	.7	.0	.0	.2	.1	.1	.0	.1	.0
12. Recpt 12	66.	.6	.0	.0	.1	.0	.0	.0	.1	.0
13. Recpt 13	204.	.8	.0	.0	.0	.0	.1	.0	.1	.0
14. Recpt 14	201.	.7	.0	.0	.0	.0	.0	.0	.2	.0
15. Recpt 15	205.	.7	.0	.0	.2	.1	.2	.0	.0	.0
16. Recpt 16	207.	.8	.0	.0	.2	.2	.3	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Inland Ctr and I Street pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	(PPM) I
1. Recpt 1	.1
2. Recpt 2	.0
3. Recpt 3	.0
4. Recpt 4	.0
5. Recpt 5	.0
6. Recpt 6	.1
7. Recpt 7	.3
8. Recpt 8	.2
9. Recpt 9	.0
10. Recpt 10	.0
11. Recpt 11	.1
12. Recpt 12	.1
13. Recpt 13	.2
14. Recpt 14	.2
15. Recpt 15	.0
16. Recpt 16	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Colton and Mt Vernon am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	37.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Col EBLA	*	-150	0	0	0	* AG	97	6.8	.0	10.0
B. Col EBTA	*	-150	-6	0	-6	* AG	133	6.8	.0	10.0
C. COL EBRA	*	-150	-8	0	-8	* AG	11	6.8	.0	10.0
D. Col EBD	*	0	-6	150	-6	* AG	233	6.8	.0	10.0
E. Col WBLA	*	150	0	0	0	* AG	98	6.8	.0	10.0
F. Col WBTA	*	150	6	0	6	* AG	152	6.8	.0	10.0
G. Col WBRA	*	150	8	0	8	* AG	59	6.8	.0	10.0
H. Col WBD	*	0	6	-150	6	* AG	245	6.8	.0	10.0
I. MV NBLA	*	0	-150	0	0	* AG	6	6.8	.0	10.0
J. MV NBTA	*	6	-150	6	0	* AG	765	6.8	.0	10.0
K. MV NBRA	*	8	-150	8	0	* AG	71	6.8	.0	10.0
L. MV NBD	*	6	0	6	150	* AG	921	6.8	.0	10.0
M. MV SBLA	*	0	150	0	0	* AG	29	6.8	.0	10.0
N. MV SBTA	*	-6	150	-6	0	* AG	727	6.8	.0	10.0
O. MV SBRA	*	-8	150	-8	0	* AG	87	6.8	.0	10.0
P. MV SBD	*	-6	0	-6	-150	* AG	836	6.8	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Colton and Mt Vernon am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	-16	-18	1.8
2. Recpt 2	*	-16	-38	1.8
3. Recpt 3	*	-16	-58	1.8
4. Recpt 4	*	-36	-18	1.8
5. Recpt 5	*	-56	-18	1.8
6. Recpt 6	*	-18	16	1.8
7. Recpt 7	*	-38	16	1.8
8. Recpt 8	*	-58	16	1.8
9. Recpt 9	*	-18	36	1.8
10. Recpt 10	*	-18	56	1.8
11. Recpt 11	*	18	-16	1.8
12. Recpt 12	*	38	-16	1.8
13. Recpt 13	*	58	-16	1.8
14. Recpt 14	*	18	-36	1.8
15. Recpt 15	*	18	-56	1.8
16. Recpt 16	*	16	18	1.8
17. Recpt 17	*	16	38	1.8
18. Recpt 18	*	16	58	1.8
19. Recpt 19	*	36	18	1.8
20. Recpt 20	*	56	18	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Colton and Mt Vernon am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	16.	.7	.0	.0	.0	.0	.0	.0	.0	.0
2. Recpt 2	15.	.7	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	13.	.7	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	24.	.4	.0	.0	.0	.0	.0	.0	.0	.0
5. Recpt 5	77.	.4	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	162.	.6	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	103.	.4	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	102.	.4	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	164.	.6	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 10	164.	.6	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 11	342.	.7	.0	.0	.0	.0	.0	.0	.0	.0
12. Recpt 12	333.	.4	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 13	285.	.4	.0	.0	.0	.0	.0	.0	.0	.0
14. Recpt 14	344.	.6	.0	.0	.0	.0	.0	.0	.0	.0
15. Recpt 15	346.	.6	.0	.0	.0	.0	.0	.0	.0	.0
16. Recpt 16	196.	.7	.0	.0	.0	.0	.0	.0	.0	.0
17. Recpt 17	196.	.7	.0	.0	.0	.0	.0	.0	.0	.0
18. Recpt 18	195.	.7	.0	.0	.0	.0	.0	.0	.0	.0
19. Recpt 19	204.	.4	.0	.0	.0	.0	.0	.0	.0	.0
20. Recpt 20	257.	.4	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Colton and Mt Vernon am peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Recpt 1	.0	.0	.0	.2	.0	.3	.0	.0
2. Recpt 2	.0	.0	.0	.2	.0	.1	.0	.2
3. Recpt 3	.0	.0	.0	.2	.0	.1	.0	.2
4. Recpt 4	.0	.0	.0	.1	.0	.1	.0	.0
5. Recpt 5	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	.0	.2	.0	.0	.0	.0	.0	.3
7. Recpt 7	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	.0	.2	.0	.0	.0	.1	.0	.2
10. Recpt 10	.0	.1	.0	.0	.0	.2	.0	.0
11. Recpt 11	.0	.0	.0	.3	.0	.2	.0	.0
12. Recpt 12	.0	.0	.0	.2	.0	.1	.0	.0
13. Recpt 13	.0	.0	.0	.0	.0	.0	.0	.0
14. Recpt 14	.0	.1	.0	.2	.0	.2	.0	.0
15. Recpt 15	.0	.2	.0	.1	.0	.1	.0	.0
16. Recpt 16	.0	.3	.0	.0	.0	.0	.0	.2
17. Recpt 17	.0	.1	.0	.2	.0	.0	.0	.2
18. Recpt 18	.0	.0	.0	.3	.0	.0	.0	.2
19. Recpt 19	.0	.1	.0	.0	.0	.0	.0	.1
20. Recpt 20	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Colton and Mt Vernon pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	37.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Col EBLA	*	-150	0	0	0	* AG	130	6.8	.0	10.0
B. Col EBTA	*	-150	-6	0	-6	* AG	231	6.8	.0	10.0
C. COL EBRA	*	-150	-8	0	-8	* AG	11	6.8	.0	10.0
D. Col EBD	*	0	-6	150	-6	* AG	501	6.8	.0	10.0
E. Col WBLA	*	150	0	0	0	* AG	98	6.8	.0	10.0
F. Col WBTA	*	150	6	0	6	* AG	169	6.8	.0	10.0
G. Col WBRA	*	150	8	0	8	* AG	157	6.8	.0	10.0
H. Col WBD	*	0	6	-150	6	* AG	282	6.8	.0	10.0
I. MV NBLA	*	0	-150	0	0	* AG	12	6.8	.0	10.0
J. MV NBTA	*	6	-150	6	0	* AG	1192	6.8	.0	10.0
K. MV NBRA	*	8	-150	8	0	* AG	127	6.8	.0	10.0
L. MV NBD	*	6	0	6	150	* AG	1479	6.8	.0	10.0
M. MV SBLA	*	0	150	0	0	* AG	143	6.8	.0	10.0
N. MV SBTA	*	-6	150	-6	0	* AG	824	6.8	.0	10.0
O. MV SBRA	*	-8	150	-8	0	* AG	101	6.8	.0	10.0
P. MV SBD	*	-6	0	-6	-150	* AG	933	6.8	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Colton and Mt Vernon pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	-16	-18	1.8
2. Recpt 2	*	-16	-38	1.8
3. Recpt 3	*	-16	-58	1.8
4. Recpt 4	*	-36	-18	1.8
5. Recpt 5	*	-56	-18	1.8
6. Recpt 6	*	-18	16	1.8
7. Recpt 7	*	-38	16	1.8
8. Recpt 8	*	-58	16	1.8
9. Recpt 9	*	-18	36	1.8
10. Recpt 10	*	-18	56	1.8
11. Recpt 11	*	18	-16	1.8
12. Recpt 12	*	38	-16	1.8
13. Recpt 13	*	58	-16	1.8
14. Recpt 14	*	18	-36	1.8
15. Recpt 15	*	18	-56	1.8
16. Recpt 16	*	16	18	1.8
17. Recpt 17	*	16	38	1.8
18. Recpt 18	*	16	58	1.8
19. Recpt 19	*	36	18	1.8
20. Recpt 20	*	56	18	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Colton and Mt Vernon pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	16.	.9	.0	.0	.0	.0	.0	.0	.0	.0
2. Recpt 2	16.	.9	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	14.	.8	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	76.	.6	.0	.0	.0	.1	.0	.0	.0	.0
5. Recpt 5	77.	.5	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	162.	.8	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	102.	.6	.0	.0	.0	.1	.0	.0	.0	.0
8. Recpt 8	101.	.5	.0	.0	.0	.1	.0	.0	.0	.0
9. Recpt 9	162.	.8	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 10	162.	.8	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 11	342.	1.0	.0	.0	.0	.1	.0	.0	.0	.0
12. Recpt 12	333.	.6	.0	.0	.0	.1	.0	.0	.0	.0
13. Recpt 13	288.	.6	.0	.0	.0	.2	.0	.0	.0	.0
14. Recpt 14	344.	.9	.0	.0	.0	.0	.0	.0	.0	.0
15. Recpt 15	347.	.9	.0	.0	.0	.0	.0	.0	.0	.0
16. Recpt 16	196.	1.0	.0	.0	.0	.0	.0	.0	.0	.0
17. Recpt 17	196.	.9	.0	.0	.0	.0	.0	.0	.0	.0
18. Recpt 18	195.	.9	.0	.0	.0	.0	.0	.0	.0	.0
19. Recpt 19	206.	.6	.0	.0	.0	.0	.0	.0	.0	.0
20. Recpt 20	254.	.5	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Colton and Mt Vernon pm peak
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Recpt 1	*	.0	.0	.0	.3	.0	.3	.0	.0
2. Recpt 2	*	.0	.0	.0	.3	.0	.2	.0	.2
3. Recpt 3	*	.0	.0	.0	.3	.0	.1	.0	.3
4. Recpt 4	*	.0	.1	.0	.0	.0	.0	.0	.1
5. Recpt 5	*	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	*	.0	.3	.0	.0	.0	.0	.0	.3
7. Recpt 7	*	.0	.0	.0	.1	.0	.1	.0	.0
8. Recpt 8	*	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	*	.0	.3	.0	.0	.0	.1	.0	.2
10. Recpt 10	*	.0	.2	.0	.0	.0	.2	.0	.0
11. Recpt 11	*	.0	.0	.0	.5	.0	.2	.0	.0
12. Recpt 12	*	.0	.0	.0	.2	.0	.1	.0	.0
13. Recpt 13	*	.0	.0	.0	.0	.0	.0	.0	.0
14. Recpt 14	*	.0	.2	.0	.3	.0	.2	.0	.0
15. Recpt 15	*	.0	.2	.0	.2	.0	.2	.0	.0
16. Recpt 16	*	.0	.4	.0	.0	.0	.0	.0	.2
17. Recpt 17	*	.0	.2	.0	.3	.0	.0	.0	.2
18. Recpt 18	*	.0	.1	.0	.4	.0	.0	.0	.2
19. Recpt 19	*	.0	.2	.0	.0	.0	.0	.0	.1
20. Recpt 20	*	.0	.0	.0	.0	.0	.0	.0	.0

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Construction Horizon 1.urb924

Project Name: San Bernardino Valley College Construction Horizon 1

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	2.39	5.93	4.63	0.00	1.98	0.37	2.36	0.42	0.34	0.76	711.80
2010 TOTALS (tons/year mitigated)	2.39	5.93	4.63	0.00	0.15	0.37	0.52	0.03	0.34	0.38	711.80
Percent Reduction	0.00	0.00	0.00	0.00	92.63	0.00	77.94	92.34	0.00	50.55	0.00
2011 TOTALS (tons/year unmitigated)	0.13	1.26	0.66	0.00	0.85	0.07	0.92	0.18	0.06	0.24	172.27
2011 TOTALS (tons/year mitigated)	0.13	1.26	0.66	0.00	0.85	0.07	0.92	0.18	0.06	0.24	172.27
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2010	2.39	5.93	4.63	0.00	1.98	0.37	2.36	0.42	0.34	0.76	711.80
Mass Grading 01/01/2010-06/30/2010	0.20	1.62	0.87	0.00	1.97	0.08	2.05	0.41	0.07	0.49	152.98
Mass Grading Dust	0.00	0.00	0.00	0.00	1.97	0.00	1.97	0.41	0.00	0.41	0.00
Mass Grading Off Road Diesel	0.19	1.61	0.80	0.00	0.00	0.08	0.08	0.00	0.07	0.07	144.95
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.02
Trenching 02/01/2010-07/31/2010	0.14	1.15	0.60	0.00	0.00	0.06	0.06	0.00	0.05	0.05	119.54
Trenching Off Road Diesel	0.13	1.15	0.53	0.00	0.00	0.06	0.06	0.00	0.05	0.05	111.45
Trenching Worker Trips	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.09
Building 03/01/2010-12/31/2010	0.45	2.09	2.39	0.00	0.01	0.14	0.15	0.00	0.13	0.13	335.68
Building Off Road Diesel	0.40	1.82	1.23	0.00	0.00	0.13	0.13	0.00	0.12	0.12	178.33
Building Vendor Trips	0.02	0.21	0.17	0.00	0.00	0.01	0.01	0.00	0.01	0.01	39.40
Building Worker Trips	0.03	0.06	0.99	0.00	0.01	0.00	0.01	0.00	0.00	0.00	117.95
Asphalt 07/01/2010-12/31/2010	0.18	1.07	0.75	0.00	0.00	0.09	0.09	0.00	0.08	0.09	101.54
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.17	1.05	0.61	0.00	0.00	0.09	0.09	0.00	0.08	0.08	83.95
Paving On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.16
Paving Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.42
Coating 07/01/2010-12/31/2010	1.42	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.07
Architectural Coating	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.07

2011	0.13	1.26	0.66	0.00	0.85	0.07	0.92	0.18	0.06	0.24	172.27
Demolition 01/01/2011-06/30/2011	0.13	1.26	0.66	0.00	0.85	0.07	0.92	0.18	0.06	0.24	172.27
Fugitive Dust	0.00	0.00	0.00	0.00	0.65	0.00	0.65	0.14	0.00	0.14	0.00
Demo Off Road Diesel	0.07	0.47	0.30	0.00	0.00	0.04	0.04	0.00	0.03	0.03	45.17
Demo On Road Diesel	0.06	0.79	0.30	0.00	0.00	0.03	0.04	0.00	0.03	0.03	119.08
Demo Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.02

Phase Assumptions

Phase: Demolition 1/1/2011 - 6/30/2011 - Default Demolition Description

Building Volume Total (cubic feet): 3136320

Building Volume Daily (cubic feet): 31363.2

On Road Truck Travel (VMT): 435.6

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

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

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Mass Grading 1/1/2010 - 6/30/2010 - Default Mass Site Grading/Excavation Description

Total Acres Disturbed: 6.11

Maximum Daily Acreage Disturbed: 1.53

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

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

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

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

Phase: Trenching 2/1/2010 - 7/31/2010 - Default Trenching Description

Off-Road Equipment:

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

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

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

Phase: Paving 7/1/2010 - 12/31/2010 - Default Paving Description

Acres to be Paved: 1.53

Off-Road Equipment:

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

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

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

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

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

Phase: Building Construction 3/1/2010 - 12/31/2010 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2010 - 12/31/2010 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

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

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

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2010	2.39	5.93	4.63	0.00	0.15	0.37	0.52	0.03	0.34	0.38	711.80
Mass Grading 01/01/2010-06/30/2010	0.20	1.62	0.87	0.00	0.14	0.08	0.22	0.03	0.07	0.10	152.98
Mass Grading Dust	0.00	0.00	0.00	0.00	0.14	0.00	0.14	0.03	0.00	0.03	0.00
Mass Grading Off Road Diesel	0.19	1.61	0.80	0.00	0.00	0.08	0.08	0.00	0.07	0.07	144.95
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.02
Trenching 02/01/2010-07/31/2010	0.14	1.15	0.60	0.00	0.00	0.06	0.06	0.00	0.05	0.05	119.54
Trenching Off Road Diesel	0.13	1.15	0.53	0.00	0.00	0.06	0.06	0.00	0.05	0.05	111.45
Trenching Worker Trips	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.09
Building 03/01/2010-12/31/2010	0.45	2.09	2.39	0.00	0.01	0.14	0.15	0.00	0.13	0.13	335.68
Building Off Road Diesel	0.40	1.82	1.23	0.00	0.00	0.13	0.13	0.00	0.12	0.12	178.33
Building Vendor Trips	0.02	0.21	0.17	0.00	0.00	0.01	0.01	0.00	0.01	0.01	39.40
Building Worker Trips	0.03	0.06	0.99	0.00	0.01	0.00	0.01	0.00	0.00	0.00	117.95
Asphalt 07/01/2010-12/31/2010	0.18	1.07	0.75	0.00	0.00	0.09	0.09	0.00	0.08	0.09	101.54
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.17	1.05	0.61	0.00	0.00	0.09	0.09	0.00	0.08	0.08	83.95
Paving On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.16
Paving Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.42
Coating 07/01/2010-12/31/2010	1.42	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.07
Architectural Coating	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.07

2011	0.13	1.26	0.66	0.00	0.85	0.07	0.92	0.18	0.06	0.24	172.27
Demolition 01/01/2011-06/30/2011	0.13	1.26	0.66	0.00	0.85	0.07	0.92	0.18	0.06	0.24	172.27
Fugitive Dust	0.00	0.00	0.00	0.00	0.65	0.00	0.65	0.14	0.00	0.14	0.00
Demo Off Road Diesel	0.07	0.47	0.30	0.00	0.00	0.04	0.04	0.00	0.03	0.03	45.17
Demo On Road Diesel	0.06	0.79	0.30	0.00	0.00	0.03	0.04	0.00	0.03	0.03	119.08
Demo Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.02

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 1/1/2010 - 6/30/2010 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Construction Horizon 1.urb924

Project Name: San Bernardino Valley College Construction Horizon 1

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	30.52	61.80	44.52	0.02	30.67	3.58	34.11	6.42	3.29	9.57	7,262.40
2010 TOTALS (lbs/day mitigated)	30.52	61.80	44.52	0.02	2.21	3.58	5.64	0.47	3.29	3.63	7,262.40
2011 TOTALS (lbs/day unmitigated)	2.04	19.48	10.25	0.02	13.24	1.04	14.28	2.76	0.96	3.72	2,670.92
2011 TOTALS (lbs/day mitigated)	2.04	19.48	10.25	0.02	13.24	1.04	14.28	2.76	0.96	3.72	2,670.92

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

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Time Slice 1/1/2010-1/29/2010 Active Days: 21	3.04	25.05	13.51	0.00	30.61	1.25	31.86	6.39	1.15	7.54	2,371.71
Mass Grading 01/01/2010-06/30/2010	3.04	25.05	13.51	0.00	30.61	1.25	31.86	6.39	1.15	7.54	2,371.71
Mass Grading Dust	0.00	0.00	0.00	0.00	30.60	0.00	30.60	6.39	0.00	6.39	0.00
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39
Time Slice 2/1/2010-2/26/2010 Active Days: 20	5.13	42.80	22.77	0.00	30.61	2.13	32.74	6.39	1.96	8.36	4,210.75
Mass Grading 01/01/2010-06/30/2010	3.04	25.05	13.51	0.00	30.61	1.25	31.86	6.39	1.15	7.54	2,371.71
Mass Grading Dust	0.00	0.00	0.00	0.00	30.60	0.00	30.60	6.39	0.00	6.39	0.00
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39
Trenching 02/01/2010-07/31/2010	2.09	17.75	9.26	0.00	0.01	0.88	0.89	0.00	0.81	0.81	1,839.03
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,714.64
Trenching Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39

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Time Slice 3/1/2010-6/30/2010 Active Days: 88	9.23	61.80	44.52	0.02	30.67	3.43	34.11	6.42	3.16	9.57	7,262.40
Building 03/01/2010-12/31/2010	4.10	19.00	21.75	0.01	0.06	1.30	1.37	0.02	1.20	1.22	3,051.66
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	0.17	1.92	1.51	0.00	0.01	0.08	0.09	0.00	0.07	0.08	358.16
Building Worker Trips	0.28	0.53	9.04	0.01	0.05	0.03	0.08	0.02	0.02	0.04	1,072.30
Mass Grading 01/01/2010-06/30/2010	3.04	25.05	13.51	0.00	30.61	1.25	31.86	6.39	1.15	7.54	2,371.71
Mass Grading Dust	0.00	0.00	0.00	0.00	30.60	0.00	30.60	6.39	0.00	6.39	0.00
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39
Trenching 02/01/2010-07/31/2010	2.09	17.75	9.26	0.00	0.01	0.88	0.89	0.00	0.81	0.81	1,839.03
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,714.64
Trenching Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39

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Time Slice 7/1/2010-7/30/2010 Active Days: 22	**30.52**	52.99	42.60	0.02	0.08	3.58	3.66	0.03	3.29	3.32	6,460.47
Asphalt 07/01/2010-12/31/2010	2.74	16.22	11.32	0.00	0.01	1.40	1.41	0.00	1.29	1.29	1,538.46
Paving Off-Gas	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.64	15.97	9.18	0.00	0.00	1.39	1.39	0.00	1.27	1.27	1,272.04
Paving On Road Diesel	0.01	0.13	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.01	17.63
Paving Worker Trips	0.07	0.12	2.10	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.79
Building 03/01/2010-12/31/2010	4.10	19.00	21.75	0.01	0.06	1.30	1.37	0.02	1.20	1.22	3,051.66
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	0.17	1.92	1.51	0.00	0.01	0.08	0.09	0.00	0.07	0.08	358.16
Building Worker Trips	0.28	0.53	9.04	0.01	0.05	0.03	0.08	0.02	0.02	0.04	1,072.30
Coating 07/01/2010-12/31/2010	21.58	0.02	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.32
Architectural Coating	21.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.32
Trenching 02/01/2010-07/31/2010	2.09	17.75	9.26	0.00	0.01	0.88	0.89	0.00	0.81	0.81	1,839.03
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,714.64
Trenching Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39

Time Slice 8/2/2010-12/31/2010 Active Days: 110	28.43	35.24	33.34	0.02	0.08	2.70	2.78	0.03	2.48	2.51	4,621.44
Asphalt 07/01/2010-12/31/2010	2.74	16.22	11.32	0.00	0.01	1.40	1.41	0.00	1.29	1.29	1,538.46
Paving Off-Gas	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.64	15.97	9.18	0.00	0.00	1.39	1.39	0.00	1.27	1.27	1,272.04
Paving On Road Diesel	0.01	0.13	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.01	17.63
Paving Worker Trips	0.07	0.12	2.10	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.79
Building 03/01/2010-12/31/2010	4.10	19.00	21.75	0.01	0.06	1.30	1.37	0.02	1.20	1.22	3,051.66
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	0.17	1.92	1.51	0.00	0.01	0.08	0.09	0.00	0.07	0.08	358.16
Building Worker Trips	0.28	0.53	9.04	0.01	0.05	0.03	0.08	0.02	0.02	0.04	1,072.30
Coating 07/01/2010-12/31/2010	21.58	0.02	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.32
Architectural Coating	21.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.32
Time Slice 1/3/2011-6/30/2011 Active Days: 129	2.04	19.48	10.25	0.02	13.24	1.04	14.28	2.76	0.96	3.72	2,670.92
Demolition 01/01/2011-06/30/2011	2.04	19.48	10.25	0.02	13.24	1.04	14.28	2.76	0.96	3.72	2,670.92
Fugitive Dust	0.00	0.00	0.00	0.00	13.17	0.00	13.17	2.74	0.00	2.74	0.00
Demo Off Road Diesel	1.05	7.22	4.58	0.00	0.00	0.55	0.55	0.00	0.50	0.50	700.30
Demo On Road Diesel	0.96	12.21	4.70	0.02	0.06	0.49	0.55	0.02	0.45	0.47	1,846.25
Demo Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.37

Phase Assumptions

Phase: Demolition 1/1/2011 - 6/30/2011 - Default Demolition Description

Building Volume Total (cubic feet): 3136320

Building Volume Daily (cubic feet): 31363.2

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On Road Truck Travel (VMT): 435.6

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

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

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Mass Grading 1/1/2010 - 6/30/2010 - Default Mass Site Grading/Excavation Description

Total Acres Disturbed: 6.11

Maximum Daily Acreage Disturbed: 1.53

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

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

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

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

Phase: Trenching 2/1/2010 - 7/31/2010 - Default Trenching Description

Off-Road Equipment:

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

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

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

Phase: Paving 7/1/2010 - 12/31/2010 - Default Paving Description

Acres to be Paved: 1.53

Off-Road Equipment:

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

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

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

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

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

Phase: Building Construction 3/1/2010 - 12/31/2010 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2010 - 12/31/2010 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

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

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

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

Time Slice 1/1/2010-1/29/2010 Active Days: 21	3.04	25.05	13.51	0.00	2.14	1.25	3.39	0.45	1.15	1.60	2,371.71
Mass Grading 01/01/2010-06/30/2010	3.04	25.05	13.51	0.00	2.14	1.25	3.39	0.45	1.15	1.60	2,371.71
Mass Grading Dust	0.00	0.00	0.00	0.00	2.13	0.00	2.13	0.45	0.00	0.45	0.00
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39
Time Slice 2/1/2010-2/26/2010 Active Days: 20	5.13	42.80	22.77	0.00	2.14	2.13	4.28	0.45	1.96	2.41	4,210.75
Mass Grading 01/01/2010-06/30/2010	3.04	25.05	13.51	0.00	2.14	1.25	3.39	0.45	1.15	1.60	2,371.71
Mass Grading Dust	0.00	0.00	0.00	0.00	2.13	0.00	2.13	0.45	0.00	0.45	0.00
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39
Trenching 02/01/2010-07/31/2010	2.09	17.75	9.26	0.00	0.01	0.88	0.89	0.00	0.81	0.81	1,839.03
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,714.64
Trenching Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39

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Time Slice 3/1/2010-6/30/2010 Active Days: 88	9.23	61.80	44.52	0.02	2.21	3.43	5.64	0.47	3.16	3.63	7,262.40
Building 03/01/2010-12/31/2010	4.10	19.00	21.75	0.01	0.06	1.30	1.37	0.02	1.20	1.22	3,051.66
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	0.17	1.92	1.51	0.00	0.01	0.08	0.09	0.00	0.07	0.08	358.16
Building Worker Trips	0.28	0.53	9.04	0.01	0.05	0.03	0.08	0.02	0.02	0.04	1,072.30
Mass Grading 01/01/2010-06/30/2010	3.04	25.05	13.51	0.00	2.14	1.25	3.39	0.45	1.15	1.60	2,371.71
Mass Grading Dust	0.00	0.00	0.00	0.00	2.13	0.00	2.13	0.45	0.00	0.45	0.00
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39
Trenching 02/01/2010-07/31/2010	2.09	17.75	9.26	0.00	0.01	0.88	0.89	0.00	0.81	0.81	1,839.03
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,714.64
Trenching Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39

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Time Slice 7/1/2010-7/30/2010 Active Days: 22	**30.52**	52.99	42.60	0.02	0.08	3.58	3.66	0.03	3.29	3.32	6,460.47
Asphalt 07/01/2010-12/31/2010	2.74	16.22	11.32	0.00	0.01	1.40	1.41	0.00	1.29	1.29	1,538.46
Paving Off-Gas	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.64	15.97	9.18	0.00	0.00	1.39	1.39	0.00	1.27	1.27	1,272.04
Paving On Road Diesel	0.01	0.13	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.01	17.63
Paving Worker Trips	0.07	0.12	2.10	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.79
Building 03/01/2010-12/31/2010	4.10	19.00	21.75	0.01	0.06	1.30	1.37	0.02	1.20	1.22	3,051.66
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	0.17	1.92	1.51	0.00	0.01	0.08	0.09	0.00	0.07	0.08	358.16
Building Worker Trips	0.28	0.53	9.04	0.01	0.05	0.03	0.08	0.02	0.02	0.04	1,072.30
Coating 07/01/2010-12/31/2010	21.58	0.02	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.32
Architectural Coating	21.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.32
Trenching 02/01/2010-07/31/2010	2.09	17.75	9.26	0.00	0.01	0.88	0.89	0.00	0.81	0.81	1,839.03
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,714.64
Trenching Worker Trips	0.03	0.06	1.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.39

Time Slice 8/2/2010-12/31/2010 Active Days: 110	28.43	35.24	33.34	0.02	0.08	2.70	2.78	0.03	2.48	2.51	4,621.44
Asphalt 07/01/2010-12/31/2010	2.74	16.22	11.32	0.00	0.01	1.40	1.41	0.00	1.29	1.29	1,538.46
Paving Off-Gas	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.64	15.97	9.18	0.00	0.00	1.39	1.39	0.00	1.27	1.27	1,272.04
Paving On Road Diesel	0.01	0.13	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.01	17.63
Paving Worker Trips	0.07	0.12	2.10	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.79
Building 03/01/2010-12/31/2010	4.10	19.00	21.75	0.01	0.06	1.30	1.37	0.02	1.20	1.22	3,051.66
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	0.17	1.92	1.51	0.00	0.01	0.08	0.09	0.00	0.07	0.08	358.16
Building Worker Trips	0.28	0.53	9.04	0.01	0.05	0.03	0.08	0.02	0.02	0.04	1,072.30
Coating 07/01/2010-12/31/2010	21.58	0.02	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.32
Architectural Coating	21.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.32
Time Slice 1/3/2011-6/30/2011 Active Days: 129	2.04	19.48	10.25	0.02	13.24	1.04	14.28	2.76	0.96	3.72	2,670.92
Demolition 01/01/2011-06/30/2011	2.04	19.48	10.25	0.02	13.24	1.04	14.28	2.76	0.96	3.72	2,670.92
Fugitive Dust	0.00	0.00	0.00	0.00	13.17	0.00	13.17	2.74	0.00	2.74	0.00
Demo Off Road Diesel	1.05	7.22	4.58	0.00	0.00	0.55	0.55	0.00	0.50	0.50	700.30
Demo On Road Diesel	0.96	12.21	4.70	0.02	0.06	0.49	0.55	0.02	0.45	0.47	1,846.25
Demo Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.37

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 1/1/2010 - 6/30/2010 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

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For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Construction Horizon 2.urb924

Project Name: SBVC Horizon 2 Construction

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

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Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2011 TOTALS (tons/year unmitigated)	0.19	1.54	0.85	0.00	3.16	0.08	3.23	0.66	0.07	0.73	155.35
2011 TOTALS (tons/year mitigated)	0.19	1.54	0.85	0.00	0.22	0.08	0.30	0.05	0.07	0.12	155.35
Percent Reduction	0.00	0.00	0.00	0.00	93.02	0.00	90.81	93.01	0.00	83.99	0.00
2012 TOTALS (tons/year unmitigated)	0.36	2.13	2.17	0.00	0.01	0.12	0.13	0.00	0.11	0.12	363.50
2012 TOTALS (tons/year mitigated)	0.36	2.13	2.17	0.00	0.01	0.12	0.13	0.00	0.11	0.12	363.50
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2013 TOTALS (tons/year unmitigated)	2.84	3.02	3.73	0.00	0.01	0.21	0.23	0.00	0.19	0.20	591.51
2013 TOTALS (tons/year mitigated)	2.84	3.02	3.73	0.00	0.01	0.21	0.23	0.00	0.19	0.20	591.51
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2014 TOTALS (tons/year unmitigated)	0.22	2.04	1.16	0.00	1.99	0.10	2.09	0.42	0.09	0.51	385.13
2014 TOTALS (tons/year mitigated)	0.22	2.04	1.16	0.00	1.99	0.10	2.09	0.42	0.09	0.51	385.13
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2011	0.19	1.54	0.85	0.00	3.16	0.08	3.23	0.66	0.07	0.73	155.35
Mass Grading 07/01/2011-12/31/2011	0.19	1.54	0.85	0.00	3.16	0.08	3.23	0.66	0.07	0.73	155.35
Mass Grading Dust	0.00	0.00	0.00	0.00	3.16	0.00	3.16	0.66	0.00	0.66	0.00
Mass Grading Off Road Diesel	0.19	1.54	0.78	0.00	0.00	0.08	0.08	0.00	0.07	0.07	147.20
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.15
2012	0.36	2.13	2.17	0.00	0.01	0.12	0.13	0.00	0.11	0.12	363.50
Trenching 01/01/2012-06/30/2012	0.12	0.99	0.58	0.00	0.00	0.05	0.05	0.00	0.04	0.04	119.53
Trenching Off Road Diesel	0.12	0.99	0.52	0.00	0.00	0.05	0.05	0.00	0.04	0.04	111.45
Trenching Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.08
Building 07/01/2012-12/31/2013	0.24	1.14	1.59	0.00	0.01	0.08	0.08	0.00	0.07	0.07	243.97
Building Off Road Diesel	0.21	0.97	0.69	0.00	0.00	0.07	0.07	0.00	0.06	0.06	106.19
Building Vendor Trips	0.01	0.12	0.10	0.00	0.00	0.00	0.01	0.00	0.00	0.00	28.21
Building Worker Trips	0.02	0.05	0.80	0.00	0.01	0.00	0.01	0.00	0.00	0.00	109.57

2013	2.84	3.02	3.73	0.00	0.01	0.21	0.23	0.00	0.19	0.20	591.51
Building 07/01/2012-12/31/2013	0.44	2.11	3.00	0.00	0.01	0.14	0.15	0.00	0.12	0.13	486.05
Building Off Road Diesel	0.38	1.81	1.33	0.00	0.00	0.12	0.12	0.00	0.11	0.11	211.57
Building Vendor Trips	0.02	0.21	0.19	0.00	0.00	0.01	0.01	0.00	0.01	0.01	56.20
Building Worker Trips	0.04	0.08	1.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01	218.27
Asphalt 07/01/2013-12/31/2013	0.15	0.91	0.70	0.00	0.00	0.08	0.08	0.00	0.07	0.07	102.20
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.14	0.90	0.59	0.00	0.00	0.08	0.08	0.00	0.07	0.07	83.95
Paving On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.83
Paving Worker Trips	0.00	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.41
Coating 07/01/2013-12/31/2013	2.25	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.27
Architectural Coating	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.27
2014	0.22	2.04	1.16	0.00	1.99	0.10	2.09	0.42	0.09	0.51	385.13
Demolition 01/01/2014-12/31/2014	0.22	2.04	1.16	0.00	1.99	0.10	2.09	0.42	0.09	0.51	385.13
Fugitive Dust	0.00	0.00	0.00	0.00	0.76	0.00	0.76	0.16	0.00	0.16	0.00
Demo Off Road Diesel	0.11	0.78	0.57	0.00	0.00	0.05	0.05	0.00	0.05	0.05	91.39
Demo On Road Diesel	0.11	1.26	0.49	0.00	0.01	0.05	0.06	0.00	0.04	0.05	277.52
Demo Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.22

Phase Assumptions

Phase: Demolition 1/1/2014 - 12/31/2014 - Default Demolition Description

Building Volume Total (cubic feet): 3612500

Building Volume Daily (cubic feet): 36125

On Road Truck Travel (VMT): 501.74

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

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

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Mass Grading 7/1/2011 - 12/31/2011 - Default Mass Site Grading/Excavation Description

Total Acres Disturbed: 9.65

Maximum Daily Acreage Disturbed: 2.41

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

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

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

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

Phase: Trenching 1/1/2012 - 6/30/2012 - Default Trenching Description

Off-Road Equipment:

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

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

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

Phase: Paving 7/1/2013 - 12/31/2013 - Default Paving Description

Acres to be Paved: 2.41

Off-Road Equipment:

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

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

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

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

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

Phase: Building Construction 7/1/2012 - 12/31/2013 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2013 - 12/31/2013 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

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

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

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2011	0.19	1.54	0.85	0.00	0.22	0.08	0.30	0.05	0.07	0.12	155.35
Mass Grading 07/01/2011-12/31/2011	0.19	1.54	0.85	0.00	0.22	0.08	0.30	0.05	0.07	0.12	155.35
Mass Grading Dust	0.00	0.00	0.00	0.00	0.22	0.00	0.22	0.05	0.00	0.05	0.00
Mass Grading Off Road Diesel	0.19	1.54	0.78	0.00	0.00	0.08	0.08	0.00	0.07	0.07	147.20
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.15
2012	0.36	2.13	2.17	0.00	0.01	0.12	0.13	0.00	0.11	0.12	363.50
Trenching 01/01/2012-06/30/2012	0.12	0.99	0.58	0.00	0.00	0.05	0.05	0.00	0.04	0.04	119.53
Trenching Off Road Diesel	0.12	0.99	0.52	0.00	0.00	0.05	0.05	0.00	0.04	0.04	111.45
Trenching Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.08
Building 07/01/2012-12/31/2013	0.24	1.14	1.59	0.00	0.01	0.08	0.08	0.00	0.07	0.07	243.97
Building Off Road Diesel	0.21	0.97	0.69	0.00	0.00	0.07	0.07	0.00	0.06	0.06	106.19
Building Vendor Trips	0.01	0.12	0.10	0.00	0.00	0.00	0.01	0.00	0.00	0.00	28.21
Building Worker Trips	0.02	0.05	0.80	0.00	0.01	0.00	0.01	0.00	0.00	0.00	109.57

2013	2.84	3.02	3.73	0.00	0.01	0.21	0.23	0.00	0.19	0.20	591.51
Building 07/01/2012-12/31/2013	0.44	2.11	3.00	0.00	0.01	0.14	0.15	0.00	0.12	0.13	486.05
Building Off Road Diesel	0.38	1.81	1.33	0.00	0.00	0.12	0.12	0.00	0.11	0.11	211.57
Building Vendor Trips	0.02	0.21	0.19	0.00	0.00	0.01	0.01	0.00	0.01	0.01	56.20
Building Worker Trips	0.04	0.08	1.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01	218.27
Asphalt 07/01/2013-12/31/2013	0.15	0.91	0.70	0.00	0.00	0.08	0.08	0.00	0.07	0.07	102.20
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.14	0.90	0.59	0.00	0.00	0.08	0.08	0.00	0.07	0.07	83.95
Paving On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.83
Paving Worker Trips	0.00	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.41
Coating 07/01/2013-12/31/2013	2.25	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.27
Architectural Coating	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.27
2014	0.22	2.04	1.16	0.00	1.99	0.10	2.09	0.42	0.09	0.51	385.13
Demolition 01/01/2014-12/31/2014	0.22	2.04	1.16	0.00	1.99	0.10	2.09	0.42	0.09	0.51	385.13
Fugitive Dust	0.00	0.00	0.00	0.00	0.76	0.00	0.76	0.16	0.00	0.16	0.00
Demo Off Road Diesel	0.11	0.78	0.57	0.00	0.00	0.05	0.05	0.00	0.05	0.05	91.39
Demo On Road Diesel	0.11	1.26	0.49	0.00	0.01	0.05	0.06	0.00	0.04	0.05	277.52
Demo Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.22

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 7/1/2011 - 12/31/2011 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Construction Horizon 2.urb924

Project Name: SBVC Horizon 2 Construction

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2011 TOTALS (lbs/day unmitigated)	2.86	23.49	12.93	0.00	48.21	1.18	49.38	10.07	1.08	11.15	2,371.69
2011 TOTALS (lbs/day mitigated)	2.86	23.49	12.93	0.00	3.36	1.18	4.54	0.70	1.08	1.78	2,371.69
2012 TOTALS (lbs/day unmitigated)	3.67	17.33	24.32	0.02	0.09	1.16	1.25	0.03	1.06	1.09	3,724.66
2012 TOTALS (lbs/day mitigated)	3.67	17.33	24.32	0.02	0.09	1.16	1.25	0.03	1.06	1.09	3,724.66
2013 TOTALS (lbs/day unmitigated)	39.79	30.01	34.02	0.03	0.11	2.20	2.31	0.04	2.02	2.06	5,322.46
2013 TOTALS (lbs/day mitigated)	39.79	30.01	34.02	0.03	0.11	2.20	2.31	0.04	2.02	2.06	5,322.46
2014 TOTALS (lbs/day unmitigated)	1.69	15.66	8.89	0.02	15.25	0.76	16.01	3.18	0.70	3.88	2,951.18
2014 TOTALS (lbs/day mitigated)	1.69	15.66	8.89	0.02	15.25	0.76	16.01	3.18	0.70	3.88	2,951.18

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Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 7/1/2011-12/30/2011 Active Days: 131	2.86	23.49	12.93	0.00	**48.21**	1.18	**49.38**	**10.07**	1.08	**11.15**	2,371.69
Mass Grading 07/01/2011-12/31/2011	2.86	23.49	12.93	0.00	48.21	1.18	49.38	10.07	1.08	11.15	2,371.69
Mass Grading Dust	0.00	0.00	0.00	0.00	48.20	0.00	48.20	10.07	0.00	10.07	0.00
Mass Grading Off Road Diesel	2.83	23.44	11.96	0.00	0.00	1.17	1.17	0.00	1.08	1.08	2,247.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.37
Time Slice 1/2/2012-6/29/2012 Active Days: 130	1.83	15.29	8.92	0.00	0.01	0.74	0.74	0.00	0.68	0.68	1,838.98
Trenching 01/01/2012-06/30/2012	1.83	15.29	8.92	0.00	0.01	0.74	0.74	0.00	0.68	0.68	1,838.98
Trenching Off Road Diesel	1.80	15.24	8.01	0.00	0.00	0.73	0.73	0.00	0.67	0.67	1,714.64
Trenching Worker Trips	0.03	0.05	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.35
Time Slice 7/2/2012-12/31/2012 Active Days: 131	3.67	17.33	24.32	0.02	0.09	1.16	1.25	0.03	1.06	1.09	3,724.66
Building 07/01/2012-12/31/2013	3.67	17.33	24.32	0.02	0.09	1.16	1.25	0.03	1.06	1.09	3,724.66
Building Off Road Diesel	3.14	14.81	10.52	0.00	0.00	1.04	1.04	0.00	0.95	0.95	1,621.20
Building Vendor Trips	0.17	1.82	1.60	0.00	0.02	0.07	0.09	0.01	0.07	0.07	430.67
Building Worker Trips	0.37	0.70	12.21	0.02	0.08	0.05	0.12	0.03	0.04	0.07	1,672.80

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Time Slice 1/1/2013-6/28/2013 Active Days: 129	3.36	16.15	23.02	0.02	0.09	1.04	1.14	0.03	0.95	0.99	3,724.49
Building 07/01/2012-12/31/2013	3.36	16.15	23.02	0.02	0.09	1.04	1.14	0.03	0.95	0.99	3,724.49
Building Off Road Diesel	2.88	13.91	10.20	0.00	0.00	0.93	0.93	0.00	0.86	0.86	1,621.20
Building Vendor Trips	0.15	1.61	1.47	0.00	0.02	0.07	0.08	0.01	0.06	0.07	430.68
Building Worker Trips	0.34	0.64	11.35	0.02	0.08	0.05	0.13	0.03	0.04	0.07	1,672.60
Time Slice 7/1/2013-12/31/2013 Active Days: 132	**39.79**	**30.01**	**34.02**	**0.03**	0.11	**2.20**	2.31	0.04	**2.02**	2.06	**5,322.46**
Asphalt 07/01/2013-12/31/2013	2.30	13.84	10.66	0.00	0.01	1.16	1.17	0.00	1.06	1.07	1,548.48
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05	1,272.04
Paving On Road Diesel	0.01	0.14	0.06	0.00	0.00	0.01	0.01	0.00	0.01	0.01	27.78
Paving Worker Trips	0.05	0.09	1.69	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.66
Building 07/01/2012-12/31/2013	3.36	16.15	23.02	0.02	0.09	1.04	1.14	0.03	0.95	0.99	3,724.49
Building Off Road Diesel	2.88	13.91	10.20	0.00	0.00	0.93	0.93	0.00	0.86	0.86	1,621.20
Building Vendor Trips	0.15	1.61	1.47	0.00	0.02	0.07	0.08	0.01	0.06	0.07	430.68
Building Worker Trips	0.34	0.64	11.35	0.02	0.08	0.05	0.13	0.03	0.04	0.07	1,672.60
Coating 07/01/2013-12/31/2013	34.12	0.02	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.50
Architectural Coating	34.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.50

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Time Slice 1/1/2014-12/31/2014 Active Days: 261	1.69	15.66	8.89	0.02	15.25	0.76	16.01	3.18	0.70	3.88	2,951.18
Demolition 01/01/2014-12/31/2014	1.69	15.66	8.89	0.02	15.25	0.76	16.01	3.18	0.70	3.88	2,951.18
Fugitive Dust	0.00	0.00	0.00	0.00	15.17	0.00	15.17	3.16	0.00	3.16	0.00
Demo Off Road Diesel	0.84	5.95	4.33	0.00	0.00	0.39	0.39	0.00	0.36	0.36	700.30
Demo On Road Diesel	0.82	9.67	3.77	0.02	0.07	0.37	0.44	0.02	0.34	0.36	2,126.56
Demo Worker Trips	0.02	0.04	0.79	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.32

Phase Assumptions

Phase: Demolition 1/1/2014 - 12/31/2014 - Default Demolition Description

Building Volume Total (cubic feet): 3612500

Building Volume Daily (cubic feet): 36125

On Road Truck Travel (VMT): 501.74

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

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

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Mass Grading 7/1/2011 - 12/31/2011 - Default Mass Site Grading/Excavation Description

Total Acres Disturbed: 9.65

Maximum Daily Acreage Disturbed: 2.41

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

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

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

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

Phase: Trenching 1/1/2012 - 6/30/2012 - Default Trenching Description

Off-Road Equipment:

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

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

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

Phase: Paving 7/1/2013 - 12/31/2013 - Default Paving Description

Acres to be Paved: 2.41

Off-Road Equipment:

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

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

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

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

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

Phase: Building Construction 7/1/2012 - 12/31/2013 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2013 - 12/31/2013 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

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

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

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 7/1/2011-12/30/2011 Active Days: 131	2.86	23.49	12.93	0.00	3.36	1.18	4.54	0.70	1.08	1.78	2,371.69
Mass Grading 07/01/2011-12/31/2011	2.86	23.49	12.93	0.00	3.36	1.18	4.54	0.70	1.08	1.78	2,371.69
Mass Grading Dust	0.00	0.00	0.00	0.00	3.36	0.00	3.36	0.70	0.00	0.70	0.00
Mass Grading Off Road Diesel	2.83	23.44	11.96	0.00	0.00	1.17	1.17	0.00	1.08	1.08	2,247.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.37
Time Slice 1/2/2012-6/29/2012 Active Days: 130	1.83	15.29	8.92	0.00	0.01	0.74	0.74	0.00	0.68	0.68	1,838.98
Trenching 01/01/2012-06/30/2012	1.83	15.29	8.92	0.00	0.01	0.74	0.74	0.00	0.68	0.68	1,838.98
Trenching Off Road Diesel	1.80	15.24	8.01	0.00	0.00	0.73	0.73	0.00	0.67	0.67	1,714.64
Trenching Worker Trips	0.03	0.05	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.35
Time Slice 7/2/2012-12/31/2012 Active Days: 131	3.67	17.33	24.32	0.02	0.09	1.16	1.25	0.03	1.06	1.09	3,724.66
Building 07/01/2012-12/31/2013	3.67	17.33	24.32	0.02	0.09	1.16	1.25	0.03	1.06	1.09	3,724.66
Building Off Road Diesel	3.14	14.81	10.52	0.00	0.00	1.04	1.04	0.00	0.95	0.95	1,621.20
Building Vendor Trips	0.17	1.82	1.60	0.00	0.02	0.07	0.09	0.01	0.07	0.07	430.67
Building Worker Trips	0.37	0.70	12.21	0.02	0.08	0.05	0.12	0.03	0.04	0.07	1,672.80

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Time Slice 1/1/2013-6/28/2013 Active Days: 129	3.36	16.15	23.02	0.02	0.09	1.04	1.14	0.03	0.95	0.99	3,724.49
Building 07/01/2012-12/31/2013	3.36	16.15	23.02	0.02	0.09	1.04	1.14	0.03	0.95	0.99	3,724.49
Building Off Road Diesel	2.88	13.91	10.20	0.00	0.00	0.93	0.93	0.00	0.86	0.86	1,621.20
Building Vendor Trips	0.15	1.61	1.47	0.00	0.02	0.07	0.08	0.01	0.06	0.07	430.68
Building Worker Trips	0.34	0.64	11.35	0.02	0.08	0.05	0.13	0.03	0.04	0.07	1,672.60
Time Slice 7/1/2013-12/31/2013 Active Days: 132	**39.79**	**30.01**	**34.02**	**0.03**	0.11	**2.20**	2.31	0.04	**2.02**	2.06	**5,322.46**
Asphalt 07/01/2013-12/31/2013	2.30	13.84	10.66	0.00	0.01	1.16	1.17	0.00	1.06	1.07	1,548.48
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05	1,272.04
Paving On Road Diesel	0.01	0.14	0.06	0.00	0.00	0.01	0.01	0.00	0.01	0.01	27.78
Paving Worker Trips	0.05	0.09	1.69	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.66
Building 07/01/2012-12/31/2013	3.36	16.15	23.02	0.02	0.09	1.04	1.14	0.03	0.95	0.99	3,724.49
Building Off Road Diesel	2.88	13.91	10.20	0.00	0.00	0.93	0.93	0.00	0.86	0.86	1,621.20
Building Vendor Trips	0.15	1.61	1.47	0.00	0.02	0.07	0.08	0.01	0.06	0.07	430.68
Building Worker Trips	0.34	0.64	11.35	0.02	0.08	0.05	0.13	0.03	0.04	0.07	1,672.60
Coating 07/01/2013-12/31/2013	34.12	0.02	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.50
Architectural Coating	34.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.50

Time Slice 1/1/2014-12/31/2014 Active Days: 261	1.69	15.66	8.89	0.02	15.25	0.76	16.01	3.18	0.70	3.88	2,951.18
Demolition 01/01/2014-12/31/2014	1.69	15.66	8.89	0.02	15.25	0.76	16.01	3.18	0.70	3.88	2,951.18
Fugitive Dust	0.00	0.00	0.00	0.00	15.17	0.00	15.17	3.16	0.00	3.16	0.00
Demo Off Road Diesel	0.84	5.95	4.33	0.00	0.00	0.39	0.39	0.00	0.36	0.36	700.30
Demo On Road Diesel	0.82	9.67	3.77	0.02	0.07	0.37	0.44	0.02	0.34	0.36	2,126.56
Demo Worker Trips	0.02	0.04	0.79	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.32

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 7/1/2011 - 12/31/2011 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Construction Horizon 3.urb924

Project Name: SBVC Horizon 3 Construction

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2020 TOTALS (tons/year unmitigated)	0.16	1.00	1.23	0.00	2.00	0.05	2.04	0.42	0.04	0.46	283.20
2020 TOTALS (tons/year mitigated)	0.16	1.00	1.23	0.00	0.14	0.05	0.19	0.03	0.04	0.07	283.20
Percent Reduction	0.00	0.00	0.00	0.00	92.87	0.00	90.76	92.76	0.00	84.18	0.00
2021 TOTALS (tons/year unmitigated)	2.45	1.76	2.46	0.00	0.01	0.10	0.11	0.00	0.09	0.10	577.18
2021 TOTALS (tons/year mitigated)	2.23	1.76	2.46	0.00	0.01	0.10	0.11	0.00	0.09	0.10	577.18
Percent Reduction	8.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022 TOTALS (tons/year unmitigated)	0.04	0.30	0.31	0.00	0.28	0.01	0.29	0.06	0.01	0.07	91.63
2022 TOTALS (tons/year mitigated)	0.04	0.30	0.31	0.00	0.28	0.01	0.29	0.06	0.01	0.07	91.63
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2020	0.16	1.00	1.23	0.00	2.00	0.05	2.04	0.42	0.04	0.46	283.20
Mass Grading 03/01/2020-06/30/2020	0.07	0.49	0.42	0.00	1.99	0.02	2.01	0.42	0.02	0.44	103.16
Mass Grading Dust	0.00	0.00	0.00	0.00	1.99	0.00	1.99	0.42	0.00	0.42	0.00
Mass Grading Off Road Diesel	0.07	0.49	0.40	0.00	0.00	0.02	0.02	0.00	0.02	0.02	97.76
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.41
Trenching 07/01/2020-09/30/2020	0.03	0.20	0.27	0.00	0.00	0.01	0.01	0.00	0.01	0.01	60.68
Trenching Off Road Diesel	0.03	0.20	0.26	0.00	0.00	0.01	0.01	0.00	0.01	0.01	56.58
Trenching Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.10
Building 10/01/2020-12/31/2021	0.06	0.31	0.53	0.00	0.00	0.02	0.02	0.00	0.01	0.02	119.35
Building Off Road Diesel	0.05	0.28	0.29	0.00	0.00	0.01	0.01	0.00	0.01	0.01	53.50
Building Vendor Trips	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.49
Building Worker Trips	0.01	0.01	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.36

2021	2.45	1.76	2.46	0.00	0.01	0.10	0.11	0.00	0.09	0.10	577.18
Building 10/01/2020-12/31/2021	0.21	1.18	1.84	0.00	0.01	0.06	0.07	0.00	0.05	0.06	471.99
Building Off Road Diesel	0.19	1.09	1.14	0.00	0.00	0.05	0.05	0.00	0.05	0.05	211.57
Building Vendor Trips	0.01	0.06	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.37
Building Worker Trips	0.01	0.03	0.62	0.00	0.01	0.01	0.02	0.00	0.01	0.01	207.05
Asphalt 07/01/2021-12/31/2021	0.10	0.58	0.61	0.00	0.00	0.04	0.04	0.00	0.04	0.04	102.10
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.09	0.57	0.56	0.00	0.00	0.04	0.04	0.00	0.04	0.04	83.95
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.74
Paving Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.40
Coating 07/01/2021-12/31/2021	2.14	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.10
Architectural Coating	2.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.10
2022	0.04	0.30	0.31	0.00	0.28	0.01	0.29	0.06	0.01	0.07	91.63
Demolition 01/01/2022-06/30/2022	0.04	0.30	0.31	0.00	0.28	0.01	0.29	0.06	0.01	0.07	91.63
Fugitive Dust	0.00	0.00	0.00	0.00	0.21	0.00	0.21	0.04	0.00	0.04	0.00
Demo Off Road Diesel	0.04	0.24	0.26	0.00	0.00	0.01	0.01	0.00	0.01	0.01	45.17
Demo On Road Diesel	0.01	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.44
Demo Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.01

Phase Assumptions

Phase: Demolition 1/1/2022 - 6/30/2022 - Default Demolition Description

Building Volume Total (cubic feet): 1012500

Building Volume Daily (cubic feet): 10125

On Road Truck Travel (VMT): 140.62

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Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

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

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Mass Grading 3/1/2020 - 6/30/2020 - Default Mass Site Grading/Excavation Description

Total Acres Disturbed: 9.16

Maximum Daily Acreage Disturbed: 2.29

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

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

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

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

Phase: Trenching 7/1/2020 - 9/30/2020 - Default Trenching Description

Off-Road Equipment:

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

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

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

Phase: Paving 7/1/2021 - 12/31/2021 - Default Paving Description

Acres to be Paved: 2.29

Off-Road Equipment:

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

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

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

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

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

Phase: Building Construction 10/1/2020 - 12/31/2021 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2021 - 12/31/2021 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

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

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

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2020	0.16	1.00	1.23	0.00	0.14	0.05	0.19	0.03	0.04	0.07	283.20
Mass Grading 03/01/2020-06/30/2020	0.07	0.49	0.42	0.00	0.14	0.02	0.16	0.03	0.02	0.05	103.16
Mass Grading Dust	0.00	0.00	0.00	0.00	0.14	0.00	0.14	0.03	0.00	0.03	0.00
Mass Grading Off Road Diesel	0.07	0.49	0.40	0.00	0.00	0.02	0.02	0.00	0.02	0.02	97.76
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.41
Trenching 07/01/2020-09/30/2020	0.03	0.20	0.27	0.00	0.00	0.01	0.01	0.00	0.01	0.01	60.68
Trenching Off Road Diesel	0.03	0.20	0.26	0.00	0.00	0.01	0.01	0.00	0.01	0.01	56.58
Trenching Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.10
Building 10/01/2020-12/31/2021	0.06	0.31	0.53	0.00	0.00	0.02	0.02	0.00	0.01	0.02	119.35
Building Off Road Diesel	0.05	0.28	0.29	0.00	0.00	0.01	0.01	0.00	0.01	0.01	53.50
Building Vendor Trips	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.49
Building Worker Trips	0.01	0.01	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.36

2021	2.23	1.76	2.46	0.00	0.01	0.10	0.11	0.00	0.09	0.10	577.18
Building 10/01/2020-12/31/2021	0.21	1.18	1.84	0.00	0.01	0.06	0.07	0.00	0.05	0.06	471.99
Building Off Road Diesel	0.19	1.09	1.14	0.00	0.00	0.05	0.05	0.00	0.05	0.05	211.57
Building Vendor Trips	0.01	0.06	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.37
Building Worker Trips	0.01	0.03	0.62	0.00	0.01	0.01	0.02	0.00	0.01	0.01	207.05
Asphalt 07/01/2021-12/31/2021	0.10	0.58	0.61	0.00	0.00	0.04	0.04	0.00	0.04	0.04	102.10
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.09	0.57	0.56	0.00	0.00	0.04	0.04	0.00	0.04	0.04	83.95
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.74
Paving Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.40
Coating 07/01/2021-12/31/2021	1.92	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.10
Architectural Coating	1.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.10
2022	0.04	0.30	0.31	0.00	0.28	0.01	0.29	0.06	0.01	0.07	91.63
Demolition 01/01/2022-06/30/2022	0.04	0.30	0.31	0.00	0.28	0.01	0.29	0.06	0.01	0.07	91.63
Fugitive Dust	0.00	0.00	0.00	0.00	0.21	0.00	0.21	0.04	0.00	0.04	0.00
Demo Off Road Diesel	0.04	0.24	0.26	0.00	0.00	0.01	0.01	0.00	0.01	0.01	45.17
Demo On Road Diesel	0.01	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.44
Demo Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.01

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 3/1/2020 - 6/30/2020 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Architectural Coating 7/1/2021 - 12/31/2021 - Default Architectural Coating Description

For Residential Architectural Coating Measures, the Residential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Residential Architectural Coating Measures, the Residential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Construction Horizon 3.urb924

Project Name: SBVC Horizon 3 Construction

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2020 TOTALS (lbs/day unmitigated)	1.71	11.18	16.16	0.02	45.81	0.49	46.30	9.57	0.45	10.02	3,616.81
2020 TOTALS (lbs/day mitigated)	1.71	11.18	16.16	0.02	3.20	0.49	3.69	0.67	0.45	1.12	3,616.81
2021 TOTALS (lbs/day unmitigated)	35.46	17.86	23.55	0.02	0.10	1.09	1.19	0.04	1.00	1.03	5,210.66
2021 TOTALS (lbs/day mitigated)	32.23	17.86	23.55	0.02	0.10	1.09	1.19	0.04	1.00	1.03	5,210.66
2022 TOTALS (lbs/day unmitigated)	0.66	4.70	4.77	0.01	4.28	0.22	4.49	0.89	0.20	1.09	1,420.58
2022 TOTALS (lbs/day mitigated)	0.66	4.70	4.77	0.01	4.28	0.22	4.49	0.89	0.20	1.09	1,420.58

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

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	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 3/2/2020-6/30/2020 Active Days: 87	1.69	11.18	9.68	0.00	**45.81**	0.49	**46.30**	**9.57**	0.45	**10.02**	2,371.58
Mass Grading 03/01/2020-06/30/2020	1.69	11.18	9.68	0.00	45.81	0.49	46.30	9.57	0.45	10.02	2,371.58
Mass Grading Dust	0.00	0.00	0.00	0.00	45.80	0.00	45.80	9.56	0.00	9.56	0.00
Mass Grading Off Road Diesel	1.67	11.16	9.17	0.00	0.00	0.49	0.49	0.00	0.45	0.45	2,247.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.03	0.52	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.27
Time Slice 7/1/2020-9/30/2020 Active Days: 66	1.05	6.20	8.28	0.00	0.01	0.29	0.30	0.00	0.27	0.27	1,838.91
Trenching 07/01/2020-09/30/2020	1.05	6.20	8.28	0.00	0.01	0.29	0.30	0.00	0.27	0.27	1,838.91
Trenching Off Road Diesel	1.04	6.18	7.76	0.00	0.00	0.29	0.29	0.00	0.26	0.26	1,714.64
Trenching Worker Trips	0.01	0.03	0.52	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.27
Time Slice 10/1/2020-12/31/2020 Active Days: 66	1.71	9.38	16.16	0.02	0.09	0.47	0.56	0.03	0.43	0.46	3,616.81
Building 10/01/2020-12/31/2021	1.71	9.38	16.16	0.02	0.09	0.47	0.56	0.03	0.43	0.46	3,616.81
Building Off Road Diesel	1.46	8.36	8.72	0.00	0.00	0.39	0.39	0.00	0.36	0.36	1,621.20
Building Vendor Trips	0.08	0.68	0.85	0.00	0.01	0.03	0.04	0.00	0.03	0.03	408.89
Building Worker Trips	0.17	0.34	6.59	0.02	0.08	0.05	0.12	0.03	0.04	0.07	1,586.72
Time Slice 1/1/2021-6/30/2021 Active Days: 129	1.63	9.07	14.12	0.02	0.09	0.46	0.55	0.03	0.42	0.45	3,616.76
Building 10/01/2020-12/31/2021	1.63	9.07	14.12	0.02	0.09	0.46	0.55	0.03	0.42	0.45	3,616.76
Building Off Road Diesel	1.46	8.36	8.72	0.00	0.00	0.39	0.39	0.00	0.36	0.36	1,621.20
Building Vendor Trips	0.06	0.47	0.66	0.00	0.01	0.02	0.04	0.00	0.02	0.02	408.98
Building Worker Trips	0.11	0.23	4.74	0.02	0.08	0.05	0.12	0.03	0.04	0.07	1,586.59

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Time Slice 7/1/2021-12/31/2021 Active Days: 132	**35.46**	**17.86**	**23.55**	**0.02**	0.10	**1.09**	1.19	0.04	**1.00**	1.03	**5,210.66**
Asphalt 07/01/2021-12/31/2021	1.45	8.78	9.30	0.00	0.01	0.63	0.64	0.00	0.58	0.58	1,546.94
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.38	8.70	8.54	0.00	0.00	0.62	0.62	0.00	0.57	0.57	1,272.04
Paving On Road Diesel	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.39
Paving Worker Trips	0.02	0.04	0.74	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.51
Building 10/01/2020-12/31/2021	1.63	9.07	14.12	0.02	0.09	0.46	0.55	0.03	0.42	0.45	3,616.76
Building Off Road Diesel	1.46	8.36	8.72	0.00	0.00	0.39	0.39	0.00	0.36	0.36	1,621.20
Building Vendor Trips	0.06	0.47	0.66	0.00	0.01	0.02	0.04	0.00	0.02	0.02	408.98
Building Worker Trips	0.11	0.23	4.74	0.02	0.08	0.05	0.12	0.03	0.04	0.07	1,586.59
Coating 07/01/2021-12/31/2021	32.38	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.95
Architectural Coating	32.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.95
Time Slice 1/3/2022-6/30/2022 Active Days: 129	0.66	4.70	4.77	0.01	4.28	0.22	4.49	0.89	0.20	1.09	1,420.58
Demolition 01/01/2022-06/30/2022	0.66	4.70	4.77	0.01	4.28	0.22	4.49	0.89	0.20	1.09	1,420.58
Fugitive Dust	0.00	0.00	0.00	0.00	4.25	0.00	4.25	0.88	0.00	0.88	0.00
Demo Off Road Diesel	0.54	3.74	4.00	0.00	0.00	0.18	0.18	0.00	0.17	0.17	700.30
Demo On Road Diesel	0.10	0.94	0.39	0.01	0.02	0.03	0.05	0.01	0.03	0.03	596.03
Demo Worker Trips	0.01	0.02	0.37	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.26

Phase Assumptions

Phase: Demolition 1/1/2022 - 6/30/2022 - Default Demolition Description

Building Volume Total (cubic feet): 1012500

Building Volume Daily (cubic feet): 10125

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On Road Truck Travel (VMT): 140.62

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

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

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Mass Grading 3/1/2020 - 6/30/2020 - Default Mass Site Grading/Excavation Description

Total Acres Disturbed: 9.16

Maximum Daily Acreage Disturbed: 2.29

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

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

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

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

Phase: Trenching 7/1/2020 - 9/30/2020 - Default Trenching Description

Off-Road Equipment:

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

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

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

Phase: Paving 7/1/2021 - 12/31/2021 - Default Paving Description

Acres to be Paved: 2.29

Off-Road Equipment:

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

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

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

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

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

Phase: Building Construction 10/1/2020 - 12/31/2021 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2021 - 12/31/2021 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

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

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

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

Time Slice 3/2/2020-6/30/2020 Active Days: 87	1.69	11.18	9.68	0.00	3.20	0.49	3.69	0.67	0.45	1.12	2,371.58
Mass Grading 03/01/2020-06/30/2020	1.69	11.18	9.68	0.00	3.20	0.49	3.69	0.67	0.45	1.12	2,371.58
Mass Grading Dust	0.00	0.00	0.00	0.00	3.19	0.00	3.19	0.67	0.00	0.67	0.00
Mass Grading Off Road Diesel	1.67	11.16	9.17	0.00	0.00	0.49	0.49	0.00	0.45	0.45	2,247.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.03	0.52	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.27
Time Slice 7/1/2020-9/30/2020 Active Days: 66	1.05	6.20	8.28	0.00	0.01	0.29	0.30	0.00	0.27	0.27	1,838.91
Trenching 07/01/2020-09/30/2020	1.05	6.20	8.28	0.00	0.01	0.29	0.30	0.00	0.27	0.27	1,838.91
Trenching Off Road Diesel	1.04	6.18	7.76	0.00	0.00	0.29	0.29	0.00	0.26	0.26	1,714.64
Trenching Worker Trips	0.01	0.03	0.52	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.27
Time Slice 10/1/2020-12/31/2020 Active Days: 66	1.71	9.38	16.16	0.02	0.09	0.47	0.56	0.03	0.43	0.46	3,616.81
Building 10/01/2020-12/31/2021	1.71	9.38	16.16	0.02	0.09	0.47	0.56	0.03	0.43	0.46	3,616.81
Building Off Road Diesel	1.46	8.36	8.72	0.00	0.00	0.39	0.39	0.00	0.36	0.36	1,621.20
Building Vendor Trips	0.08	0.68	0.85	0.00	0.01	0.03	0.04	0.00	0.03	0.03	408.89
Building Worker Trips	0.17	0.34	6.59	0.02	0.08	0.05	0.12	0.03	0.04	0.07	1,586.72
Time Slice 1/1/2021-6/30/2021 Active Days: 129	1.63	9.07	14.12	0.02	0.09	0.46	0.55	0.03	0.42	0.45	3,616.76
Building 10/01/2020-12/31/2021	1.63	9.07	14.12	0.02	0.09	0.46	0.55	0.03	0.42	0.45	3,616.76
Building Off Road Diesel	1.46	8.36	8.72	0.00	0.00	0.39	0.39	0.00	0.36	0.36	1,621.20
Building Vendor Trips	0.06	0.47	0.66	0.00	0.01	0.02	0.04	0.00	0.02	0.02	408.98
Building Worker Trips	0.11	0.23	4.74	0.02	0.08	0.05	0.12	0.03	0.04	0.07	1,586.59

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Time Slice 7/1/2021-12/31/2021 Active Days: 132	32.23	**17.86**	**23.55**	**0.02**	0.10	**1.09**	1.19	0.04	**1.00**	1.03	**5,210.66**
Asphalt 07/01/2021-12/31/2021	1.45	8.78	9.30	0.00	0.01	0.63	0.64	0.00	0.58	0.58	1,546.94
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.38	8.70	8.54	0.00	0.00	0.62	0.62	0.00	0.57	0.57	1,272.04
Paving On Road Diesel	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.39
Paving Worker Trips	0.02	0.04	0.74	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.51
Building 10/01/2020-12/31/2021	1.63	9.07	14.12	0.02	0.09	0.46	0.55	0.03	0.42	0.45	3,616.76
Building Off Road Diesel	1.46	8.36	8.72	0.00	0.00	0.39	0.39	0.00	0.36	0.36	1,621.20
Building Vendor Trips	0.06	0.47	0.66	0.00	0.01	0.02	0.04	0.00	0.02	0.02	408.98
Building Worker Trips	0.11	0.23	4.74	0.02	0.08	0.05	0.12	0.03	0.04	0.07	1,586.59
Coating 07/01/2021-12/31/2021	29.14	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.95
Architectural Coating	29.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.95
Time Slice 1/3/2022-6/30/2022 Active Days: 129	0.66	4.70	4.77	0.01	4.28	0.22	4.49	0.89	0.20	1.09	1,420.58
Demolition 01/01/2022-06/30/2022	0.66	4.70	4.77	0.01	4.28	0.22	4.49	0.89	0.20	1.09	1,420.58
Fugitive Dust	0.00	0.00	0.00	0.00	4.25	0.00	4.25	0.88	0.00	0.88	0.00
Demo Off Road Diesel	0.54	3.74	4.00	0.00	0.00	0.18	0.18	0.00	0.17	0.17	700.30
Demo On Road Diesel	0.10	0.94	0.39	0.01	0.02	0.03	0.05	0.01	0.03	0.03	596.03
Demo Worker Trips	0.01	0.02	0.37	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.26

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 3/1/2020 - 6/30/2020 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

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For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Architectural Coating 7/1/2021 - 12/31/2021 - Default Architectural Coating Description

For Residential Architectural Coating Measures, the Residential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Residential Architectural Coating Measures, the Residential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Operations Horizon 1.urb924

Project Name: San Bernardino Valley College Operations Horizon 1

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.24	0.38	1.16	0.00	0.00	0.00	445.92

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.04	1.40	11.48	0.01	2.14	0.42	1,232.23

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.28	1.78	12.64	0.01	2.14	0.42	1,678.15

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.03	0.37	0.31	0.00	0.00	0.00	444.38
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.07	0.01	0.85	0.00	0.00	0.00	1.54
Consumer Products	0.00						
Architectural Coatings	0.14						
TOTALS (tons/year, unmitigated)	0.24	0.38	1.16	0.00	0.00	0.00	445.92

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Junior college (2 yrs)	0.87	1.15	9.42	0.01	1.76	0.34	1,011.62
Medical office building	0.11	0.16	1.34	0.00	0.25	0.05	144.18
General light industry	0.06	0.09	0.72	0.00	0.13	0.03	76.43
TOTALS (tons/year, unmitigated)	1.04	1.40	11.48	0.01	2.14	0.42	1,232.23

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

7/24/2009 8:33:54 AM

Analysis Year: 2011 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Junior college (2 yrs)		4.91	1000 sq ft	124.94	613.46	5,571.71
Medical office building		36.13	1000 sq ft	2.40	86.71	793.89
General light industry		6.97	1000 sq ft	5.60	39.03	418.62
					739.20	6,784.22

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.6	0.8	99.0	0.2
Light Truck < 3750 lbs	7.3	2.7	94.6	2.7
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.6	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	64.3	35.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

7/24/2009 8:33:54 AM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Junior college (2 yrs)				5.0	2.5	92.5
Medical office building				7.0	3.5	89.5
General light industry				50.0	25.0	25.0

7/24/2009 8:33:33 AM

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Operations Horizon 1.urb924

Project Name: San Bernardino Valley College Operations Horizon 1

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.30	2.09	6.34	0.00	0.02	0.02	2,443.38

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	5.64	7.19	63.75	0.07	11.72	2.28	6,972.14

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	6.94	9.28	70.09	0.07	11.74	2.30	9,415.52

7/24/2009 8:33:33 AM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.15	2.03	1.70	0.00	0.00	0.00	2,434.95
Hearth - No Summer Emissions							
Landscape	0.37	0.06	4.64	0.00	0.02	0.02	8.43
Consumer Products	0.00						
Architectural Coatings	0.78						
TOTALS (lbs/day, unmitigated)	1.30	2.09	6.34	0.00	0.02	0.02	2,443.38

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Junior college (2 yrs)	4.74	5.91	52.27	0.06	9.63	1.87	5,723.97
Medical office building	0.57	0.84	7.46	0.01	1.37	0.27	815.81
General light industry	0.33	0.44	4.02	0.00	0.72	0.14	432.36
TOTALS (lbs/day, unmitigated)	5.64	7.19	63.75	0.07	11.72	2.28	6,972.14

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

7/24/2009 8:33:33 AM

Analysis Year: 2011 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Junior college (2 yrs)		4.91	1000 sq ft	124.94	613.46	5,571.71
Medical office building		36.13	1000 sq ft	2.40	86.71	793.89
General light industry		6.97	1000 sq ft	5.60	39.03	418.62
					739.20	6,784.22

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.6	0.8	99.0	0.2
Light Truck < 3750 lbs	7.3	2.7	94.6	2.7
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.6	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	64.3	35.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

7/24/2009 8:33:34 AM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Junior college (2 yrs)				5.0	2.5	92.5
Medical office building				7.0	3.5	89.5
General light industry				50.0	25.0	25.0

7/24/2009 8:33:45 AM

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Operations Horizon 1.urb924

Project Name: San Bernardino Valley College Operations Horizon 1

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.93	2.03	1.70	0.00	0.00	0.00	2,434.95

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	5.85	8.65	61.34	0.06	11.72	2.28	6,311.57

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	6.78	10.68	63.04	0.06	11.72	2.28	8,746.52

7/24/2009 8:33:45 AM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.15	2.03	1.70	0.00	0.00	0.00	2,434.95
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings	0.78						
TOTALS (lbs/day, unmitigated)	0.93	2.03	1.70	0.00	0.00	0.00	2,434.95

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Junior college (2 yrs)	4.86	7.11	50.33	0.05	9.63	1.87	5,181.46
Medical office building	0.64	1.01	7.18	0.01	1.37	0.27	738.51
General light industry	0.35	0.53	3.83	0.00	0.72	0.14	391.60
TOTALS (lbs/day, unmitigated)	5.85	8.65	61.34	0.06	11.72	2.28	6,311.57

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

7/24/2009 8:33:45 AM

Analysis Year: 2011 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Junior college (2 yrs)		4.91	1000 sq ft	124.94	613.46	5,571.71
Medical office building		36.13	1000 sq ft	2.40	86.71	793.89
General light industry		6.97	1000 sq ft	5.60	39.03	418.62
					739.20	6,784.22

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.6	0.8	99.0	0.2
Light Truck < 3750 lbs	7.3	2.7	94.6	2.7
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.6	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	64.3	35.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Junior college (2 yrs)				5.0	2.5	92.5
Medical office building				7.0	3.5	89.5
General light industry				50.0	25.0	25.0

7/24/2009 9:20:56 AM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Operations Horizon 2.urb924

Project Name: SBVC Horizon 2 Construction

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.27	0.37	0.59	0.00	0.00	0.00	445.50

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	2.70	3.94	31.89	0.04	6.98	1.36	4,032.82

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	2.97	4.31	32.48	0.04	6.98	1.36	4,478.32

7/24/2009 9:20:56 AM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.03	0.37	0.31	0.00	0.00	0.00	444.99
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Consumer Products	0.00						
Architectural Coatings	0.22						
TOTALS (tons/year, unmitigated)	0.27	0.37	0.59	0.00	0.00	0.00	445.50

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Junior college (2 yrs)	2.70	3.94	31.89	0.04	6.98	1.36	4,032.82
TOTALS (tons/year, unmitigated)	2.70	3.94	31.89	0.04	6.98	1.36	4,032.82

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

7/24/2009 9:20:57 AM

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Junior college (2 yrs)		11.60	1000 sq ft	210.20	2,438.32	22,146.04
					2,438.32	22,146.04

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.3	0.4	99.4	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.1	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.7	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	53.6	46.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9

7/24/2009 9:20:57 AM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Junior college (2 yrs)				5.0	2.5	92.5

7/24/2009 9:20:40 AM

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Operations Horizon 2.urb924

Project Name: SBVC Horizon 2 Construction

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.50	2.05	3.26	0.00	0.01	0.01	2,441.13

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	14.41	20.22	177.28	0.23	38.25	7.44	22,819.91

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	15.91	22.27	180.54	0.23	38.26	7.45	25,261.04

7/24/2009 9:20:40 AM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.15	2.03	1.71	0.00	0.00	0.00	2,438.32
Hearth - No Summer Emissions							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings	1.23						
TOTALS (lbs/day, unmitigated)	1.50	2.05	3.26	0.00	0.01	0.01	2,441.13

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Junior college (2 yrs)	14.41	20.22	177.28	0.23	38.25	7.44	22,819.91
TOTALS (lbs/day, unmitigated)	14.41	20.22	177.28	0.23	38.25	7.44	22,819.91

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

7/24/2009 9:20:40 AM

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Junior college (2 yrs)		11.60	1000 sq ft	210.20	2,438.32	22,146.04
					2,438.32	22,146.04

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.3	0.4	99.4	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.1	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.7	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	53.6	46.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9

7/24/2009 9:20:40 AM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Junior college (2 yrs)				5.0	2.5	92.5

7/24/2009 9:20:49 AM

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Operations Horizon 2.urb924

Project Name: SBVC Horizon 2 Construction

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.38	2.03	1.71	0.00	0.00	0.00	2,438.32

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	15.57	24.29	169.67	0.19	38.25	7.44	20,653.06

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	16.95	26.32	171.38	0.19	38.25	7.44	23,091.38

7/24/2009 9:20:49 AM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.15	2.03	1.71	0.00	0.00	0.00	2,438.32
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings	1.23						
TOTALS (lbs/day, unmitigated)	1.38	2.03	1.71	0.00	0.00	0.00	2,438.32

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Junior college (2 yrs)	15.57	24.29	169.67	0.19	38.25	7.44	20,653.06
TOTALS (lbs/day, unmitigated)	15.57	24.29	169.67	0.19	38.25	7.44	20,653.06

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

7/24/2009 9:20:49 AM

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Junior college (2 yrs)		11.60	1000 sq ft	210.20	2,438.32	22,146.04
					2,438.32	22,146.04

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.3	0.4	99.4	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.1	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.7	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	53.6	46.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Junior college (2 yrs)				5.0	2.5	92.5

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Operations Horizon 3.urb924

Project Name: SBVC Horizon 3 Operations

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.26	0.35	0.58	0.00	0.00	0.00	422.87

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	3.12	4.11	36.09	0.07	12.70	2.47	7,363.21

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	3.38	4.46	36.67	0.07	12.70	2.47	7,786.08

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.03	0.35	0.30	0.00	0.00	0.00	422.36
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Consumer Products	0.00						
Architectural Coatings	0.21						
TOTALS (tons/year, unmitigated)	0.26	0.35	0.58	0.00	0.00	0.00	422.87

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Junior college (2 yrs)	3.12	4.11	36.09	0.07	12.70	2.47	7,363.21
TOTALS (tons/year, unmitigated)	3.12	4.11	36.09	0.07	12.70	2.47	7,363.21

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2020 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

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Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Junior college (2 yrs)		22.25	1000 sq ft	199.51	4,439.10	40,318.10
					4,439.10	40,318.10

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.6	0.0	100.0	0.0
Light Truck < 3750 lbs	7.2	0.0	98.6	1.4
Light Truck 3751-5750 lbs	23.3	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.0	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	82.4	17.6
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.9	41.4	58.6	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Junior college (2 yrs)				5.0	2.5	92.5

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Operations Horizon 3.urb924

Project Name: SBVC Horizon 3 Operations

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.43	1.95	3.17	0.00	0.01	0.01	2,317.13

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	16.53	21.12	201.52	0.42	69.60	13.51	41,679.49

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	17.96	23.07	204.69	0.42	69.61	13.52	43,996.62

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.14	1.93	1.62	0.00	0.00	0.00	2,314.32
Hearth - No Summer Emissions							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings	1.17						
TOTALS (lbs/day, unmitigated)	1.43	1.95	3.17	0.00	0.01	0.01	2,317.13

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Junior college (2 yrs)	16.53	21.12	201.52	0.42	69.60	13.51	41,679.49
TOTALS (lbs/day, unmitigated)	16.53	21.12	201.52	0.42	69.60	13.51	41,679.49

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2020 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

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Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Junior college (2 yrs)		22.25	1000 sq ft	199.51	4,439.10	40,318.10
					4,439.10	40,318.10

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.6	0.0	100.0	0.0
Light Truck < 3750 lbs	7.2	0.0	98.6	1.4
Light Truck 3751-5750 lbs	23.3	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.0	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	82.4	17.6
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.9	41.4	58.6	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Junior college (2 yrs)				5.0	2.5	92.5

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\SBVC Operations Horizon 3.urb924

Project Name: SBVC Horizon 3 Operations

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.31	1.93	1.62	0.00	0.00	0.00	2,314.32

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	18.18	25.37	190.28	0.35	69.60	13.51	37,680.15

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	19.49	27.30	191.90	0.35	69.60	13.51	39,994.47

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.14	1.93	1.62	0.00	0.00	0.00	2,314.32
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings	1.17						
TOTALS (lbs/day, unmitigated)	1.31	1.93	1.62	0.00	0.00	0.00	2,314.32

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Junior college (2 yrs)	18.18	25.37	190.28	0.35	69.60	13.51	37,680.15
TOTALS (lbs/day, unmitigated)	18.18	25.37	190.28	0.35	69.60	13.51	37,680.15

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2020 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

7/24/2009 10:09:07 AM

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Junior college (2 yrs)		22.25	1000 sq ft	199.51	4,439.10	40,318.10
					4,439.10	40,318.10

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.6	0.0	100.0	0.0
Light Truck < 3750 lbs	7.2	0.0	98.6	1.4
Light Truck 3751-5750 lbs	23.3	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.0	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	82.4	17.6
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.9	41.4	58.6	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Junior college (2 yrs)				5.0	2.5	92.5

Appendix C

Biological Resources Assessment

February 2009

General Biological Resource Assessment For the Master Plan Program Environmental Impact Report of San Bernardino Valley College

Prepared for:

San Bernardino Community College District
114 South Del Rosa Drive
San Bernardino, CA 92408

Prepared by:

ECORP Consulting, Inc.
215 N. Fifth Street
Redlands, CA 92374
(909) 3007-0046

1.0 INTRODUCTION

On January 14, 2009, ECORP Consulting, Inc. conducted a biological resource assessment for the San Bernardino Valley College (SBVC) Master Plan Program Environmental Impact Report (PEIR) in San Bernardino, California. The purpose of the biological resource assessment was to evaluate the potential impacts to biological resources due to the implementation of the Master Plan. The assessment included:

- A review of state, federal, and private databases for special-status species records,
- General characterization of plant communities within the project site,
- A general inventory of plant and wildlife species, and
- An assessment of special-status species that have the potential to occur within the project area.

1.1 Regional Setting

The San Bernardino Valley College Master Plan Area is located in the City of San Bernardino near the border with the City of Colton, in San Bernardino County. The City of San Bernardino has a population of approximately 208,770 and the City of Colton has a population of approximately 52,421 (U.S. Census Bureau 2008). Average maximum temperatures are approximately 96 degrees Fahrenheit (ºF), with an average minimum temperature of 41 ºF throughout the year. Night/day temperature differences range from 33ºF in the summer to an average of 25ºF during the winter. The annual average precipitation in San Bernardino is 16.43 inches, which occurs mainly from December through April. SBVC is at an elevation of approximately 1062 feet above mean sea level.

1.2 Project Location

SBVC is located at 701 S. Mount Vernon Avenue in the City of San Bernardino. The campus is situated within San Bernardino Valley approximately 1.5 miles southwest of Downtown San Bernardino and approximately 1 mile north of the Santa Ana River. The project site is located within the USGS 7.5 minute San Bernardino South Quadrangle (Figure 1).

1.3 Project Description

The proposed project is the adoption and implementation of the San Bernardino Valley College Master Plan. The proposed Master Plan was created to unify a campus that has been divided and physically transformed by the San Jacinto Fault. As a result of this fault there is an 18-acre no-build zone in the center of campus which has required the demolition of several buildings disrupting the original layout of the campus. The Master Plan estimates that various academic buildings, infrastructure improvements, landscape improvements, and additional parking are required in order to address the college's geotechnical constraints and accommodate future growth. The Master Plan is not a detailed implementation plan for development but rather describes a program of potential development for the campus, organized in three phases referred to as Horizons.

1.4 Project Site Description

SBVC is an 87-acre community college campus. The general topography of the campus is flat with a gradual descending slope from north to south and west to east. An elevated ridge traverses the western two thirds of the campus in a northwesterly alignment coinciding with the San Jacinto Fault, Alquist-Priolo Earthquake Fault Zone. The Master Plan Area is entirely developed with structures, roads, parking lots, and landscaping. Surrounding land uses include residential to the north, commercial and residential to the south, industrial and residential to the east, and commercial and residential to the west (Figure 2).

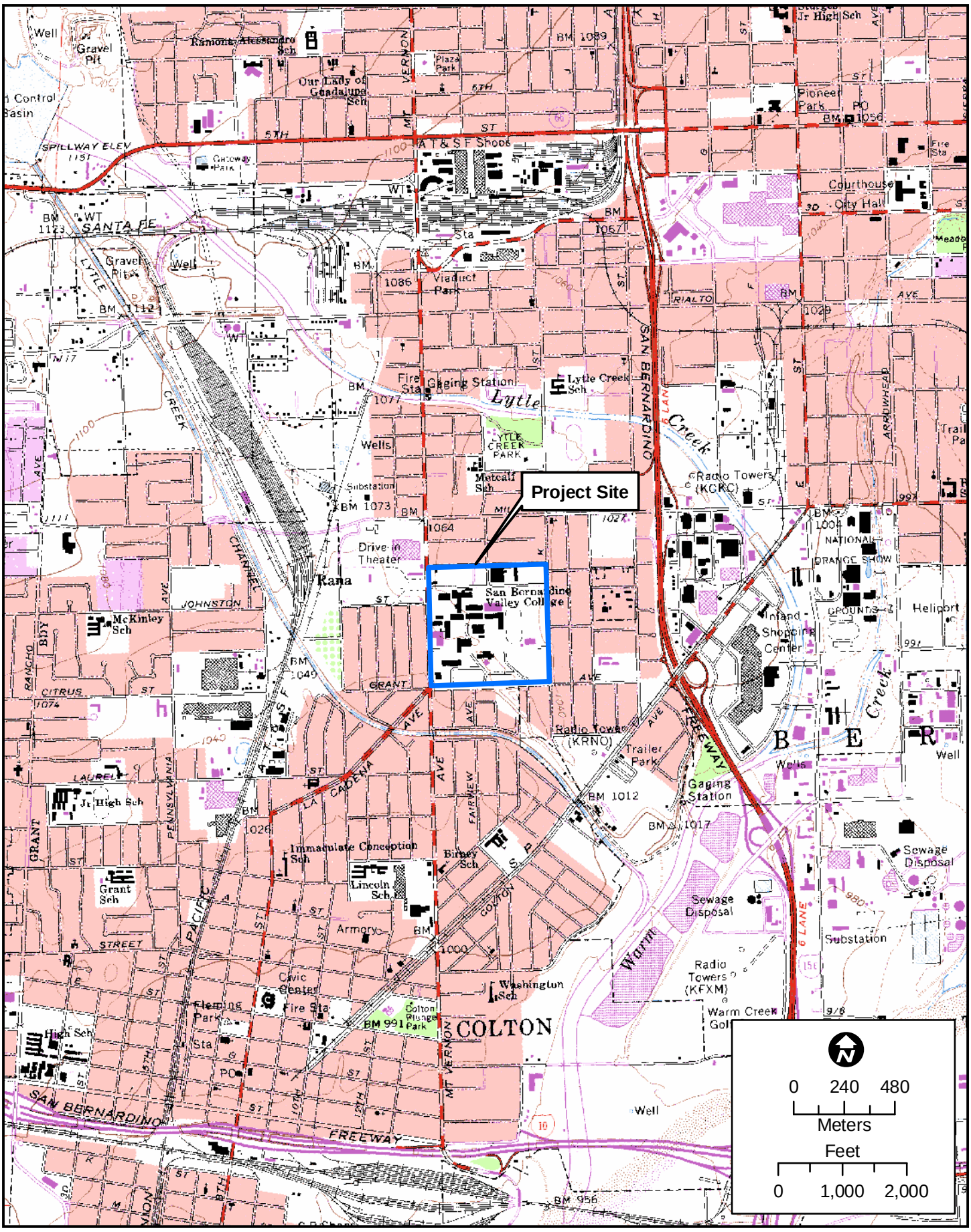

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Figure 1. San Bernardino South 7.5 Minute Quadrangle

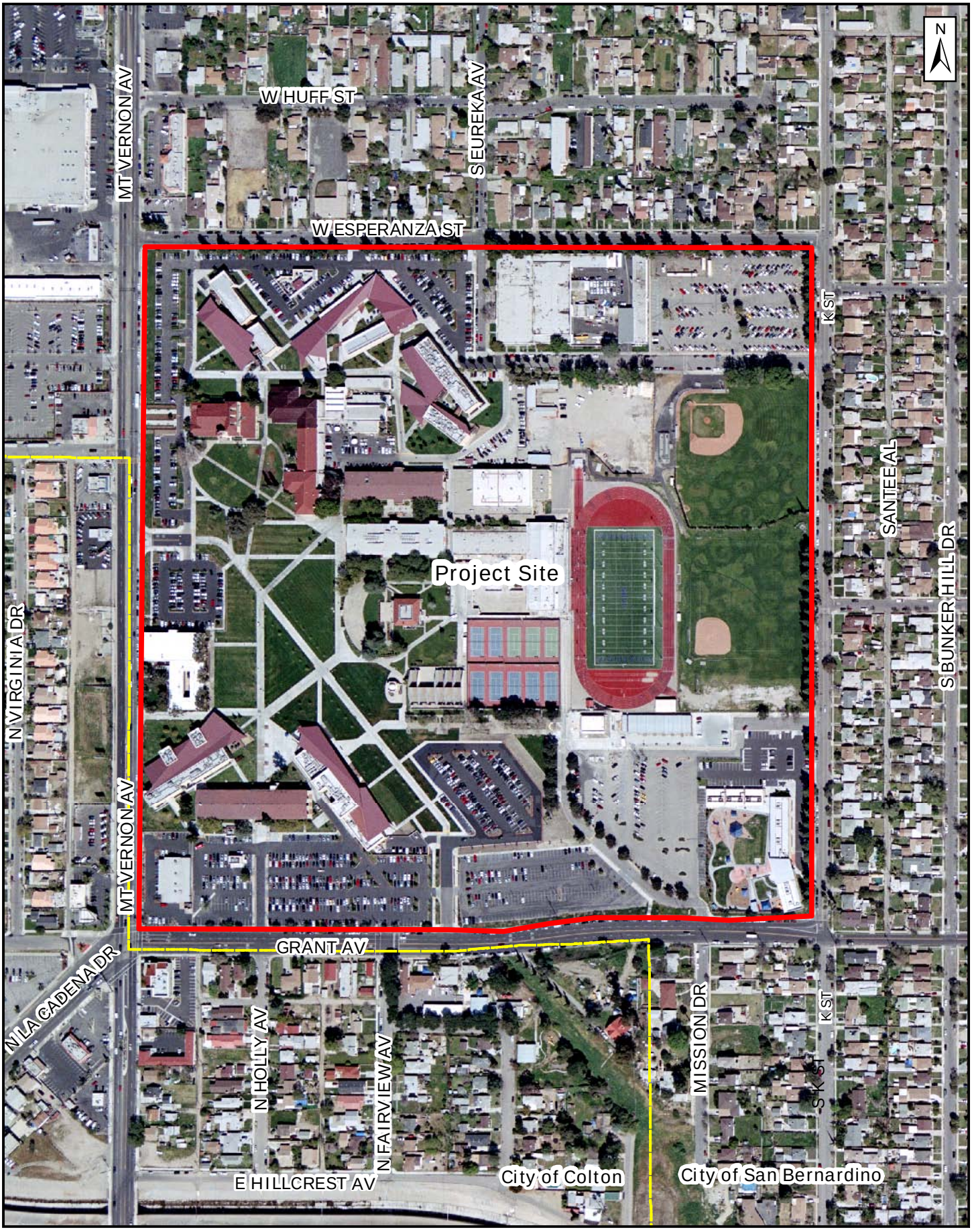

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Figure 2. Project Site

Aerial Source: U.S. Geological Survey (March 2008)

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

2.0 METHODS

2.1 Literature Search

Prior to conducting the field assessment, a biological resources literature search was conducted of the California Department of Fish and Game (CDFG) *California Native Diversity Data Base* (CNDDB 2009) and the California Native Plant Society *Online Inventory* (CNPS 2009) in order to determine if special-status species had been documented within the project site and/or the project vicinity. Search parameters for the CNDDB search included the San Bernardino South 7.5 minute quadrangle. The search parameters for the CNPS Online Inventory search included a nine quad search centered on the San Bernardino South 7.5 minute quadrangle.

Using this information and observations in the field, a list of special-status wildlife species that may have a potential to occur within the project site was developed. For the purposes of this biological assessment, special-status species are defined as plants or animals that:

- Have been designated as either rare, threatened, or endangered by CDFG or the U.S. Fish and Wildlife Service (USFWS), and are protected under either the California or Federal Endangered Species Act (ESA);
- Are candidate species being considered or proposed for listing under these same acts; or
- Are fully protected by the California Fish and Game Code, Sections 3503, 3511, 4700, 5050, and/or 5515.

Nomenclature in this report is derived from the following sources:

- *The American Ornithologists' Union (AOU) Checklist of North American Birds,* 7th edition with 50th Supplement (AOU 1998, 2009),
- *The Jepson Manual* (Hickman 1993),
- *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995),
- *Western Reptiles and Amphibians* (Stebbins 2003), and
- *Mammal Species of the World* (Wilson and Reeder 2005).

Soil types were determined using the Natural Resource Conservation Service Web Soil Survey.

2.2 Field Survey

On January 14, 2009, ECORP biologist Alfredo Aguirre conducted a biological assessment survey of the project area. To accurately survey the property, meandering transects were walked and all plant and animal species that were observed on the project site were recorded. Animal species were observed directly or by animal sign (detection of burrows, scat, tracks, etc.). Plant communities present on the project site

were characterized. Photographs were taken at the project site and weather data was recorded including time, temperature, cloud cover, and wind speed at the start and end of the survey (Table 1).

Table 1
Weather Conditions during Survey

Date	Time		Temperature		Cloud Cover (%)		Wind Speed (MPH)	
	Start	End	Min	Max	Min	Max	Min	Max
1-14-09	1030	1200	77	80	0	0	3	3

3.0 RESULTS

3.1 Site Characteristics

SBVC is located in an urban setting surrounded by a mix of residential and commercial land uses on the border between the City of San Bernardino and the City of Colton. All of the campus has been graded and developed with buildings, pavement, and landscaping. There is no native undisturbed habitat on the project site. The campus features mostly non-native ornamental plants and trees.

3.2 Soils

The entire project site is mapped as Tujunga Gravelly Loamy Sand, 0 to 9 percent slopes (USDA 2009). The Tujunga series consists of somewhat excessively drained nearly leveled to moderately sloping soils that formed on alluvial fans in granitic alluvium. The soil is brown loamy sand and pale brown coarse sand that extends to a depth of 60 inches or more. The Tujunga soils are rapidly permeable. Roots can penetrate to a depth of 60 inches or more. Runoff is very slow to slow. Surface soils on-site have been disturbed because of grading.

3.3 Plant Communities and Plants

The project site is composed of ornamental landscaping that includes introduced and native trees, landscaped lawns, and shrubs. The campus contains many mature trees located in the various open spaces throughout the campus and near older buildings.

Observed native trees include sycamore trees (*Platanus racemosa*), oak trees (*Quercus spp.*), and walnut trees (*Julgans spp.*)

Observed non-native species include: sweetgum (*Liquidambar styraciflua*), silktree (*Albizia julibrissin*), pine trees (*Pinus spp.*), redwood (*Sequoia sempervirenc*), cypress (*Cupressus spp.*), carob (*Ceratonia siliqua*), eucalyptus (*Eucalyptus spp.*), California Fan Palm (*Washingtonia filiferia*), and Southern Magnolia (*Magnolia grandiflora*). A full plant species list is included in Appendix B.

3.4 Wildlife

Most wildlife observed at the project site was associated with the ornamental trees that occur throughout the campus. Wildlife species observed include: American crow (*Corvus brachyrhynchos*), Anna's hummingbird (*Calypte anna*), mourning dove (*Zenaida macroura*), and black phoebe (*Sayornis nigricans*). A full wildlife species list is included in Appendix B.

3.5 Special-Status Species

This section summarizes the results of the literature searches for special-status plant and wildlife species that could occur on the project site. Data about all of the sensitive species that were identified in the literature search are presented in Appendix A. The review of the CNDDB and CNPS databases did not detect any records of listed or special-status plant or wildlife species directly on site. However, these databases are not all inclusive since species location may not have been disclosed nor the site previously surveyed for biological resources.

The literature search indicated that forty-four sensitive plant species, nine of which are listed as threatened or endangered, and twenty-two wildlife species, seven of which are threatened, endangered, or a species of special concern, have been recorded within the San Bernardino South Quadrangle or within the vicinity. Most of these records are from the time prior to the development around the campus. Each of these species was assessed for their potential to occur on the site based on the following criteria:

> **Present:** Species was observed on site during a site visit or focused survey.
>
> **High:** Habitat (including soils and elevation factors) occur on the site and a known occurrence has been recorded within 5 miles of the site.
>
> **Moderate:** Either habitat (including soils and elevation factors) for the species occurs on the site and a known occurrence occurs within the database search, but not within 5 miles of the site; or a known occurrence occurs within 5 miles of the site and marginal limited amounts of habitat occurs on site.
>
> **Low:** Limited habitat for the species occurs on site and a known occurrence occurs within the database search, but not within 5 miles of the site, or suitable habitat strongly associated with the species occurs on site, but no records were found within the database search.
>
> **Not Expected:** Species was found within the database search, but habitat (including soils and elevation factors) do not exist on site or the known geographic range of the species does not include the survey area.

3.6 Raptors and Other Birds with a Potential to Occur

Suitable raptor nesting habitat is present on the large mature trees on campus and in some of the buildings. All raptor species and an extensive number of migratory birds are protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code Section 3503.5. The MBTA implements various treaties between the United States and other countries, including Canada, Japan, and Mexico, for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds, their eggs, or their nests is unlawful. In order to avoid most potential impacts to these species and their nests, habitat removal activities should be limited to the bird non-breeding season (breeding occurs February 15 through September 1). The following are Federal and State protected raptors and other birds that are either present, or have the potential to be present on available habitat, in the project area:

Cooper's Hawk

The Cooper Hawk (*Accipiter cooperi*) is a California Species of Special Concern (CSC). This species inhabits woodland and mainly nests in riparian growths of deciduous trees. Potential nest sites for this species occur within the ornamental/landscaped habitat throughout the campus although no sign of active nests was observed during the field survey. Due to the Cooper's hawk tolerance of humans, adaptability to urban environments and presence of a known occurrence within 5 miles of the site, this species has a moderate potential to occur.

Red-tailed Hawk

The red-tailed hawk (*Buteo jamaicensis*) is often seen perched on power-poles along roadsides. Potential nest sites for this species occur within the larger landscaped trees throughout the campus. No active nests were observed during the field survey. Due to the red-tailed hawk's tolerance of humans and its adaptability to urban environments this species has a moderate potential to occur.

Northern Harrier

The Northern harrier (*Circus cyaneus*) is a CSC species. The breeding habitat typically associated with this species is prairie, wet meadow, and marshes. Northern harriers normally nests on the ground. This species is not expected to occur in the project site due to the lack of habitat.

White-tailed Kite

The white-tailed kite (*Elanus leucurus*) is a CSC species. The breeding habitat typically associated with this species (riparian woodland, marsh, partially cleared or cultivated fields) does not occur on the campus. Although this species may occasionally be observed flying overhead, it is not expected to nest on the campus.

American kestrel

The American kestrel (*Falco sparverius*) is often seen hovering or perched on wires in open areas with scattered trees, also in areas that are cultivated or urbanized. Potential nest sites for this species occur within the cavities of the landscaped trees throughout the campus although no nests were observed during the field survey. Due to the

kestrel's tolerance of humans and adaptability to urban environments this species has a moderate potential to occur.

Barn Owl

The barn owl (*Tyto alba*) commonly occurs within urban settings and has become habituated to roosting and nesting in palm trees, large eucalyptus trees and other domestic trees, as well as within buildings and other man-made structures containing dark, well protected overhangs or recesses. This species is likely to occur in the project area and may use existing buildings and trees on the campus for nesting and roosting, and the campus grounds and surrounding areas for foraging. No evidence of nesting was observed during the field survey.

Great Horned Owl

Great horned owls (*Bubo virginianus*) are the largest owls in southern California which have become adept to breeding and foraging within urban landscapes containing mature trees and buildings. They prey on most species found in the city, including skunks, opossums, rats, other owls and roosting birds such as pigeons, and even cats and small dogs. Great horned owls typically nest in broken tree tops and large tree cavities, but also use elevated platforms or building ledges, as well as other structures that are recessed and even in the open. Although no evidence of nesting was observed, there is suitable habitat for this species on the project site giving it a moderate potential to occur.

Peregrine falcon

Peregrine falcons (*Falco peregrinus*) are highly adaptable to urbanized landscapes containing tall buildings and mature trees, and a stable prey base which may include pigeons and other small birds, and even small mammals. This species typically nests in cliffs and other high places, and uses buildings within cities as an alternate nesting site. No nesting activity was observed during the field survey. Due to the availability of potential habitat on the campus this species has a moderate potential to occur.

American Crow

Several American crows were observed flying over the campus during the field survey. This species typically breeds in woodlands, orchards, and farmlands. Potential nest sites for this species occur within the ornamental/landscaped throughout the campus.

Cliff swallow

Cliff swallows (*Petrochelidon pyrrhonota*) are a migratory species that nests in large colonies on cliffs. They have also adapted to urban environments, increasingly nesting on buildings and under bridges. Cliff swallows require open areas where they can forage on flying insects. Although no evidence of nesting was observed, there is suitable habitat for this species, giving it a moderate potential to occur.

Barn swallow

Barn swallows (*Hirundo rustica*) are highly adaptable birds that prefer to nest under sheltered ledges with access to water and open foraging habitat. Much like cliff swallows, they generally create large colonies of mud nests. They primarily consume insects, and may opportunistically follow human created disturbance. Although no

evidence of nesting was observed, there is suitable habitat for this species, giving it a moderate potential to occur.

3.7 Bats

Western mastiff bat
The western mastiff bat (*Eumops perotis californicus*) is a CSC species that has a high potential to occur, it was previously recorded in the Biological Constraints Analysis of the North Hall Building. This species was not observed or detected during the field survey.

Western yellow bat
The western yellow bat (*Lasiurus xanthinus*) is a CSC species that has a moderate potential to occur. The western yellow bat roosts in trees particularly palms, the project site provides suitable habitat for this species. This species was not observed or detected during the field survey.

3.8 Other Species

Los Angeles pocket mouse
The Los Angeles pocket mouse (*Perognathus longimembris brevinasus*) is a CSC species that has a low potential to occur, a known occurrence occurs 2 miles to the northwest of the project site. The Los Angeles pocket mouse prefers open ground with fine sandy soils and may not dig extensive burrows, it may hide under weeds or dead leaves instead. This species was not observed or detected during the field survey.

4.0 Conclusions and Recommendations

The goal of the Master Plan is not to create a definite development plan but rather outline a potential program of development. Since project details are not definite, impacts to biological resources will need to be assessed project by project.

The majority of the sensitive plant and animal species with historic records of occurrence in the vicinity of the project site are not expected to occur on the SBVC campus due to lack of native undisturbed habitat. However, several species have adapted to live in urban settings such as the location of the SBVC campus. Potential biological constraints for the project would arise from the presence of sensitive species. Activities such as the removal of trees, shrubs, and/or structures could potentially impact the biological resources of the campus if sensitive species are present.

In order to protect the biological resources of the campus the following guidelines are recommended:

Raptors and Migratory Birds
Demolition or construction activities that require the removal of occupied trees or shrubs or other disturbances, such as constant noise and dust, shall take place outside of the bird breeding season (February 15 to September 1) to the maximum extent practicable. If construction activity occurs within the bird breeding season then pre-construction nesting surveys are recommended in order to ensure compliance with the MBTA and

CDFG Code 3503.5. If active nests are found during the breeding season then buffer zones shall be established around the active nest by a qualified biologist (typically 250 feet radius for a songbird and 500 feet radius for a raptor). Demolition and construction activities shall be avoided within the buffer zone until a qualified biologist determines that the nest(s) is no longer active. If the nest(s) must be removed the removal shall take place in the non-breeding season (September 1 to February 14).

Bats

Several trees and structures on the SBVC campus provide suitable roosting habitat for bats (palm trees, Auditorium Building, North Hall Building, etc). In order to mitigate the projects impacts on bats, a qualified bat biologist shall conduct a preconstruction survey of potential bat roosting sites prior to removal of mature trees and existing structures. If an active bat roost is detected, bat exclusionary devices shall be installed during the non-breeding season (outside of May 1 – October 1) and after bats voluntarily leave the roost for the night to forage. Demolition shall occur once the biologist deems the structure void of bats.

5.0 Literature Cited

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Appendix A: Special-Status Plant and Wildlife Species Potential of Occurrence

Scientific Name	Common Name	State Status	Federal Status	CNPS list	Potential of Occurrence
Plants					
Abronia villosa var. *aurita*	chaparral sand-verbena	none	none	1B.1	**Not Expected:** Habitat does not exist on site. Chaparral desert scrub, desert dunes.
Ambrosia monogyra	singlewhorl burrobrush	none	none	2.2	**Not Expected:** Not within elevation levels.
Ambrosia pumila	dwarf burr ambrosia	none	Endangered	1B.1	**Not Expected.** Not within elevation levels.
Arenaria paludicola	marsh sandwort	Endangered	Endangered	1B.1	**Not Expected:** No habitat on-site. Marshes and swamps.
Astragalus hornii var. hornii	Horn's milk-vetch	none	none	1B.1	**Not Expected:** Not within elevation levels and no habitat on-site. Meadows, seeps, and playas.
Berberis nevinii	Nevin's barberry	Endangered	Endangered	1B.1	**Not Expected:** Not within elevation level and no habitat on-site. Riaprian scrubs sandy or gravelly.
Brodiaea filifolia	thread-leaved brodiaea	Endangered	Threatened	1B.1	**Not Expected:** No habitat on-site. Playas, valleys, and foothill grasslands. Vernal pools often clay.
Calochortus plummerae	Plummer's mariposa lily	none	none	1B.2	**Not Expected:** No habitat on-site. Chaparral, Cismontane woodland, coastal scrub, valley and foothill grassland/granitic rocky.
Carex Camosa	bristly sedge	none	none	2.1	**Not Expected:** No habitat on-site. Marshes and swamps.
Castilleja lasiorhyncha	San Bernardino Mountains owl's-clover	none	none	1B.2	**Not Expected:** Not within elevation level and no habitat on-site. 1300-2390 ft msl. Chaparral, meadows, and seeps. Pebble plain and riparian woodland.
Centromadia pungens ssp. *Laevis*	smooth tarplan	none	none	1B.1	**Not Expected:** No habitat on-site. Valley and foothill grassland.Chenopod scrub. Meadows, playas, and riparian woodland.

Scientific Name	Common Name	State Status	Federal Status	CNPS list	Potential of Occurrence
Chorizanthe parryi var. *parryi*	Parry's spineflower	none	none	1B.1	**Not Expected:** No suitable habitat on-site. Coastal scrub chaparral.
Chorizanthe xanti var. *leucotheca*	white-bracted spineflower	none	none	1B.1	**Not Expected:** No habitat on-site. Mojavean desert scrub. Pynion, juniper woodland, sandy or gravelly.
Cordylanthus maritimus ssp. *Maritimus*	salt marsh birds-beak	Endangered	Endangered	1B.2	**Not Expected:** No habitat on-site. Coastal salt marsh, coastal dunes.
Dodecahema leptoceras	slendered-horned spineflower	Endangered	Endangered	1B.1	**Not Expected:** No habitat on-site. Chaparral, alluvial fan sage scrub.
Dudleya multicaulis	many-stemmed dudleya	none	none	1B.2	**Not Expected:** Not within elevation range. 15-790 ft msl. No habitat on-site. Chaparral, coastal scrub, valley and foothill grassland often clay.
Eriastrum densifolium ssp. *Sanctorum*	Santa Ana River wollystar	Endangered	Endangered	1B.1	**Not Expected:** Habitat does not exits on site but has been recorded nearby. Recorded on the southside of Baseline Avenue west of Lytle creek wash approximately 2.5 miles northwest of the project site. Exists on sandy soils in river floodplains or terraced fluvial deposits.
Eriogonum evanidum	vanishing wild buckwheat	none	none	1B.1	**Not Expected:** No habitat on-site. Chaparral, Cismontane woodland, lower montane coniferous forest, Pynion and Juniper woodland/sands.
Fimbristylis thermalis	hot springs fimbristylis	none	none	2.2	**Not Expected:** No habitat on-site. Meadows and seeps (alkaline near hot springs).

Scientific Name	Common Name	State Status	Federal Status	CNPS list	Potential of Occurrence
Galium californicum ssp. *primum*	Alvin Meadow bedstraw	none	none	1B.2	**Not Expected**: No habitat on-site. Chaparral, lower montane coniferous forest. Recorded approximately 3 miles southeast of the project site.
Helianthus nuttallii ssp. *parishii*	Los Angeles sunflower	none	none	1A	**Not Expected:** No habitat on-site. Marshes and swamps.
Horkelia cuneata ssp. puberula	mesa horkelia	none	none	1B.1	**Not Expected:** No habitat on-site. Chaparral, cismontane woodland. Coastal scrub.
Imperata brevifolia	California satintail	none	none	2.1	**Not Expected:** No habitat on-site. Coastal scrub, chaparral, riparian scrub, Mojavean scrub, meadows and seeps.
Ivesia argyrocoma	silver-haired ivesia	none	none	1B.2	**Not Expected:** Not within elevation range. 1463-2680 ft msl. No habitat on-site. Meadows and seeps. Pebble plain, upper montane coniferous forest.
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	none	none	1B.1	**Not Expected:** No habitat on-site. Mrashes and swamps. Playas and vernal pools.
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	none	none	1B.2	**Not Expected:** Not within elevation range. 1-885 ft. msl. No habitat on-site. Chaparral, coastal scrub.
Lewisia brachycalyx	short-sepaled lewisia	none	none	2.2	**No expected:** No habitat on-site. Lower montane coniferous forest. Meadows and seeps/mesic.
Lilium parryi	lemon lily	none	none	2.1	**Not Expected:** No habitat on-site. Lower montane coniferous forest. Meadows and seeps. Riaprian forest. Upper montane coniferous forest/mesic.

Scientific Name	Common Name	State Status	Federal Status	CNPS list	Potential of Occurrence
Lycium parishii	Parish's desert-thorn	none	none	2.3	**Not Expected:** No habitat on-site. Coastal scrub, Sonoran-desert scrub.
Malacothamnus parishii	Parish's bush-mallow	none	none	1A	**Not Expected:** Not within elevation range. 305-455 ft. msl. No habitat on site. Chaparral, coastal scrub.
Monardella macrantha ssp. *hallii*	Hall's monardella	none	none	1B.3	**Not Expected:** No habitat on-site. Broadleafed upland forest. Chaparral, cismontane woodland, lower montane conifeorus forest, valley and foothill grassland.
Monardella pringlei	Pringle's monardella	none	none	1A	**Not Expected:** Habitat does not exist on-site. Coastal scrub. Sandy hills.
Myosurus minimus ssp. *apus*	little mousetail	none	none	3.1	**Not Expected:** Not within elevation range. 20-640 ft. msl. Habitat does not exist on-site. Valley and foothill grassland, vernal pools (alkaline).
Nasturtium gambelii	Gambel's water cress	Threatened	Endangered	1B.1	**Not Expected:** No habitat on-site. Marshes and swamps.
Perideridia parishii ssp. *parishii*	Parish's yampah	none	none	2.2	**Not Expected:** No habitat on-site. Lower montane coniferous forest. Meadows and seeps. Upper montane coniferous forest.
Ribes divaricatum var. *parishii*	Parish's gooseberry	none	none	1A	**Not Expected:** No habitat on-site. Riparian woodland. Recorded along the length of Warm Creek which is approximately 1/2 mile to the north of the project site. The creek has been channelized with concrete.
Schoenus nigricans	black bog-rush	none	none	2.2	**Not Expected:** No habitat on-site. Marshes and swamps (often alkaline).

Scientific Name	Common Name	State Status	Federal Status	CNPS list	Potential of Occurrence
Senecio aphanactis	chaparral ragwort	none	none	2.2	**Not Expected:** Not within elevation range. 15-800 ft msl. No habitat on site. Chaparral, cismontane woodland, coastal scrub.
Sidalcea neomexicana	Salt Spring checkerbloom	none	none	2.2	**Not Expected:** No habitat on-site. Alkali playas, brackish marshes, chaparral, coastal scrub, lower montane coniferous forest, and Mojavean desert scrub.
Sphenopholis obtusata	prairie wedge grass	none	none	2.2	**Not Expected:** No habitat on-site. Cismontane woodland. Meadows and seeps/mesic.
Streptanthus campestris	southern jewel-flower	none	none	1B.3	**Not Expected:** No habitat on-site. Chaparral, lower montane coniferous forest, Pynion and juniper woodland/rocky.
Symphyotrichum defoliatum	San Bernardino aster	none	none	1B.2	**Not Expected:** No habitat on site. Meadows and seeps, marshes and swamps, coastal scrub, cismontane woodland, lower montane coniferous forest, and grassland.
Taraxacum californicum	California dandelion	none	Endangered	1B.1	**Not Expected:** No habitat on-site. Meadows and seeps (mesic).
Thelypteris puberula var. *sonorensis*	Sonoran maiden fern	none	none	2.2	**Not Expected:** Not within elevation range. 50-610 ft msl. No habitat on-site. Meadows and seeps (seeps and streams).
Invertebrates					
Carolella busckana	Busck's gallmoth	none	none		

Scientific Name	Common Name	State Status	Federal Status	CNPS list	Potential of Occurrence
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	none	Endangered		**Not Expected:** No habitat on-site. Found only in areas of the Delhi sands formation in southwestern San Bernardino and northwetsern Riverside Counties.
Fish					
Catostomus santaanae	Santa Ana sucker	CSC	Threatened		**Not Expected:** No habitat on-site. Endemic to Los Angeles Basin south coastal streams.
Gila orcuttii	arroyo chub	CSC	none		**Not Expected:** No habitat on-site. Los Angeles basin south coastal streams.
Reptiles					
Aspidoscelis hyperythra	orange-throated whiptail	CSC	none		**Not Expected:** No habitat on-site. Inhabits low elevation coastal scrub, chaparral, and valley hardwood habitats.
Aspidoscelis tigris stejnegeri	coastal western whiptail	none	none		**Not Expected:** Found in deserts and semiarid areas with sparse vegetation and open areas. Also found in woodland and riparian areas.
Crotalus ruber ruber	northern red-diamond rattlesnake	CSC	none		**Not Expected:** Chaparral, woodland, grassland, and desert areas from coastal San Diego County to the eastern slopes of the mountains.
Phrynosoma coronatum (blainvillii population)	coast (San Diego) horned lizard	CSC	none		**Not Expected:** Inhabits coastal sage scrub and chaparral in arid and semi-arid climate conditions.
Birds					
Athene cunicularia	burrowing owl	CSC	none		**Not Expected:** No habitat on-site. Open dry annual and perenial grasslands, deserts and scrublands characterized by low growing vegetation.

Scientific Name	Common Name	State Status	Federal Status	CNPS list	Potential of Occurrence
Coccyzus americanus occidentalis	western yellow billed cuckoo	Endangered	Candidate		**Not Expected:** No habitat on-site. Riparian forest nester. Lower flood bottoms of larger river systems.
Polioptila californica californica	coastal California gnatcatcher	CSC	Threatened		**Not Expected:** No habitat on-site. Obligate permanent resident of coastal sage scrub below 2500 feet in Southern California.
Vireo bellii pusillus	least Bell's vireo	Endangered	Endangered		**Not Expected:** No habitat on-site. Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms below 2500 feet.
Mammals					
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	CSC	none		**Not Expected:** No habitat on-site. Coastal scrub, chaparral, grasslands, sagebrush. Sandy herbacous areas usually in association with rocks or coarse gravel.
Dipodomys merriami parvus	San Bernardino Kangaroo Rat	CSC	Endangered		**Not Expected:** No habitat on-site. Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains.
Dipodomys stephensi	Stephen's kangaroo rat	Threatened	Endangered		**Not Expected:** No habitat on-site. Primarily annual and perennial grasslands but also occurs in coastal scrubs and sagebrush with sparse canopy cover. Prefers buckwheat, chamise, brome grass, and filaree. Will burrow into firm soil.
Eumops perotis californicus	western mastiff bat	CSC	none		**High:** Roosts in crevices in cliff faces, high buildings, trees, and tunnels. The wetsern mastiff bat has been observed on-site during a 2007 Bat Survey conducted by ECORP.

Scientific Name	Common Name	State Status	Federal Status	CNPS list	Potential of Occurrence
Lasiurus xanthinus	western yellow bat	CSC	none		**Moderate:** Roosts in trees, particularly palms. Forages over water and among trees. The project site provides suitable habitat for this species.
Lepus californicus bennettii	San Diego black-tailed jackrabbit	CSC	none		**Not Expected:** No habitat on-site. Coastal sage scrub habitats in Southern California.
Nyctinomops femorosaccus	pocketed free-tailed bat	CSC	none		**Not Expected:** No suitable habitat on-site. Exists in a variety of arid areas in Southern California, Pine Juniper woodlands, desert scrub, palm oasis, desert wash, and rocky areas with high cliffs.
Onychomys torridus ramona	southern grasshopper mouse	CSC	none		**Not Expected:** No habitat on-site. Prefers desert areas, especially scrub habitats with friable soils for digging, Prefers low to moderate shrub cover. Feeds almost exclusively on anthropods, especially scorpions and orthopteran insects.
Perognathus longimembris brevinasus	Los Angeles pocket mouse	CSC	none		**Low:** Limited habitat exists within the project site and a known occurrence occurs 2 miles to the northwest. Prefers open ground with fine sandy soils. May not dig extensive burrows, it may hide under weeds or dead leaves instead.
Taxidea taxus	American badger	CSC	none		**Not Expected:** No suitable habitat exists on-site. Requires sufficient food, friable soils and open uncultivated ground. Preys on burrowing rodents and digs burrows.

CSC: California Species of Special Concern
Other Status (California Native Plant Society)
***California Native Plant Society (CNPS) designations*:** (Note: According to CNPS, plants on Lists 1B and 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California Fish and Game Code.)
1A: Plants presumed extinct in California
1B: Plants rare and endangered in California and throughout their range.
2: Plants rare, threatened or endangered in California but more commons elsewhere in their range.
3: Plants about which we need more information; a review list.
4: Plants of limited distribution; a watch list.
List 1B, 2, and 4 extension meanings:
.1 Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Fairly endangered in California (20-80% occurrences threatened)
.3 Not very endangered in California (<20% of occurrences threatened or no current threats known)

Appendix B: Plant and Wildlife Species Observed During Site Visit

Plant Species	
Scientific Name	**Common Name**
Liquidambar styraciflua	sweetgum
Albizia julibrissin	silktree
Pinus spp.	pine trees
Sequoia sempervirenc	redwood
Cupressus spp.	cypress
Ceratonia siliqua	carob
Eucalyptus spp.	eucalyptus
Platanus racemosa	California sycamore
Quercus spp.	oak trees
Julgans spp.	walnut trees
Magnolia grandiflora	southern magnolia
Cedrus spp.	cedar
Fraxinus spp.	ash tree
Cupaniopsis anacardioides	carrotwood
Washingtonia filiferia	California fan palm

Animal Species	
Scientific Name	**Common Name**
Corvus brachyrhynchos	American crow
Calypte anna	Anna's hummingbird
Zenaida macroura	mourning dove
Sayornis nigricans	black phoebe

Appendix C: Site Photos

Photo 1 Redwood Trees (North Hall Building) offer suitable nesting habitat for birds

Photo 2 Oak Trees (South of Auditorium)

Photo 3 Southern Magnolias (Physical Science Building in background)

Photo 4 Open space at center of campus with the Auditorium and North Hall building in the background

Appendix D

Paleontology Literature and Records Review

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

April 7, 2009
(2008-132)

Mr. Eric Scott
Curator of Paleontology
San Bernardino County Museum
2024 Orange Tree Lane
Redlands, CA 92374

Subject: Cultural Resources Assessment of San Bernardino Valley College, City and County of San Bernardino, California

Dear Mr. Scott:

ECORP Consulting, Inc. would like to request a search of the paleontologic files/database for the Programmatic EIR for the Implementation of the Master Plan at the San Bernardino Valley College. The Master Plan describes a program of potential development of academic buildings, infrastructure improvements, and associated parking that will be required to address the presence of the San Jacinto fault, fault folding zone, and associated setbacks on the campus. The Master Plan also addresses projected growth in enrollment through 2030. Components of the Master Plan include demolition and replacement of 7 existing buildings, construction of 3 new parking lots/structures and one new building, and improvements to infrastructure, athletic fields, and the Greek Theater. Projects would be completed between 2010 and 2030.

The project area is located in the City of San Bernardino on the San Bernardino Valley College Campus. The campus is bounded by Esperanza Street to the north, K Street to the east, Grant Avenue to the south, and Mt. Vernon Avenue to the west. As shown on the U.S. Geological Survey (USGS) 7.5-minute, San Bernardino South, California topographic quadrangle map, the project area lies in the northwest quarter of Section 16, Township 1 South, Range 4 West of the San Bernardino Base Meridian. The attached map shows the location of the project area.

Please email the results of this search to my attention at echandler@ecorpconsulting.com. Alternatively, the results can also be faxed to (909) 307-0056. If you have any questions regarding this request, please do not hesitate to contact me at (909) 307-0046 or via email at address above. Thank you for your assistance with this project!

Sincerely,

ECORP Consulting, Inc.

Evelyn N. Chandler
Cultural Resources Manager

Attachment: as stated

215 North 5th Street
Redlands, California 92374
Phone: (909) 307-0046
Fax: (909) 307-0056
www.ecorpconsulting.com

Rocklin
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Redlands
Santa Ana
San Diego

DeLORME

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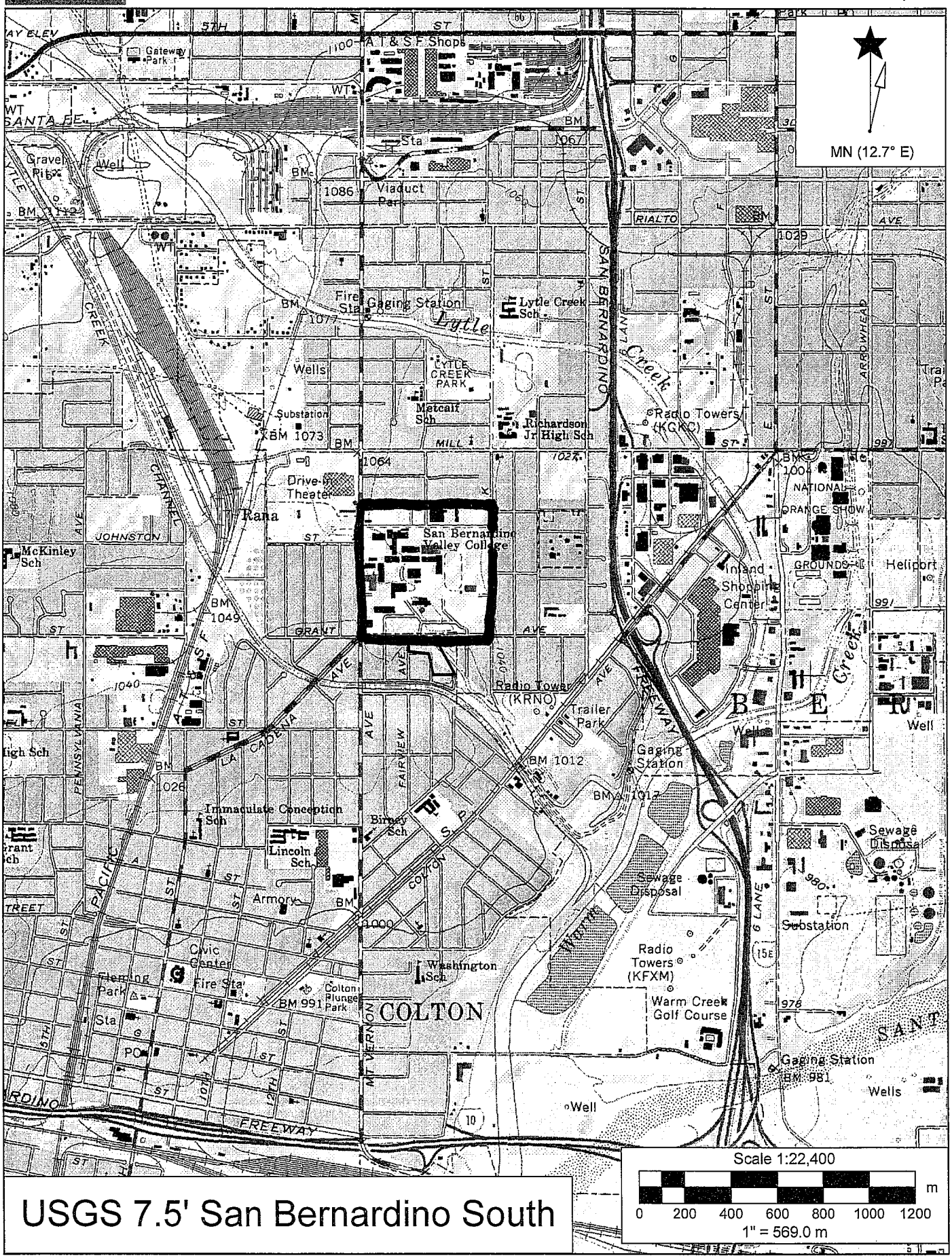

USGS 7.5' San Bernardino South

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SAN BERNARDINO COUNTY MUSEUM

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COUNTY OF SAN BERNARDINO
PUBLIC AND SUPPORT
SERVICES GROUP

ROBERT L. McKERNAN
Director

13 July 2009

ECORP Consulting, Incorporated
attn: Evelyn N. Chandler, Cultural Resources Manager
215 N. Fifth Street
Redlands, CA 92374

re: **PALEONTOLOGY LITERATURE AND RECORDS REVIEW, SAN BERNARDINO VALLEY COLLEGE PROJECT, CITY OF SAN BERNARDINO, SAN BERNARDINO COUNTY, CALIFORNIA**

Dear Ms. Chandler,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named project in the City of San Bernardino. The proposed project property is located in the northwestern quadrant of section (16 (projected), Township 1 South, Range 4 West, San Bernardino Base and Meridian, as seen on the San Bernardino South, California 7.5' United States Geological Survey topographic quadrangle map (1967 edition, photorevised 1980).

Geologic mapping (Rogers, 1965; Morton and Miller, 2003) indicates that the proposed project is located on surface exposures of Quaternary alluvium laid down during the middle Holocene (= unit **Qya_3**) overlying older Quaternary alluvial valley deposits deposited during the early to middle Pleistocene Epoch (= **$Qvoa_3$**). This early to middle Pleistocene alluvium also occurs at the surface across the central portion of the study area, in a wide band trending from northwest to southeast. These Pleistocene sediments have high potential to yield significant nonrenewable paleontologic resources, and so are assigned high paleontologic sensitivity. Pleistocene older alluvium (including Pleistocene alluvial fan alluvium) throughout San Bernardino and Riverside Counties and the Inland Empire has been repeatedly demonstrated to have high paleontologic sensitivity (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999, 2007; Anderson and others, 2002). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, short-faced bears, sabre-toothed cats, large and small horses, large and small camels, and bison (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999, 2007).

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously-known paleontologic resource

MARK H. UFFER
County Administrative Officer
NORMAN A. KANOLD
Assistant County Administrator
Public and Support
Services Group

Board of Supervisors
BRAD MITZELFELT ..... First District
PAUL BIANE ..... Second District
JOSIE GONZALES ..... Fifth District
NEIL DERRY ..... Third District
GARY C. OVITT ..... Fourth District

localities are recorded by the SBCM within the boundaries of the proposed study area. The nearest locality that has yielded fossils from Pleistocene older alluvium is locality SBCM 1.102.2, located within ½ mile northeast of the proposed study area. This locality yielded fossil wood portions from depths of ~437 feet to ~725 feet below the existing ground surface. The proximity of this locality to the proposed project area demonstrates the high paleontologic potential of Pleistocene older alluvium in this area.

Recommendations

The results of the literature review and the check of the RPLI at the SBCM demonstrate that Pleistocene alluvium present at the surface and at depth within the proposed study area, where not previously disturbed by development or other prior excavation activities, has high paleontologic sensitivity. A plan to mitigate adverse impacts to paleontologic resources, including full curation of recovered significant resources (see Scott and others, 2004), must be developed by a qualified vertebrate paleontologist. This mitigation program would need to be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of San Bernardino and the proposed guidelines of the Society of Vertebrate Paleontology.

The County of San Bernardino (Development Code §82.20.040) defines a qualified vertebrate paleontologist as meeting the following criteria:

Education: An advanced degree (Masters or higher) in geology, paleontology, biology or related disciplines (exclusive of archaeology).

Professional experience: At least five years professional experience with paleontologic (not including cultural) resources, including the collection, identification and curation of the resources.

The County of San Bernardino (Development Code §82.20.030) requires that paleontologic mitigation programs include, but not be limited to:

(a) Field survey before grading. In areas of potential but unknown sensitivity, field surveys before grading shall be required to establish the need for paleontologic monitoring.

(b) Monitoring during grading. A project that requires grading plans and is located in an area of known fossil occurrence, or that has been demonstrated to have fossils present in a field survey, shall have all grading monitored by trained paleontologic crews working under the direction of a qualified professional, so that fossils exposed during grading can be recovered and preserved. Paleontologic monitors shall be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring is not necessary if the potentially-fossiliferous units described for the property in question are not present, or if present are determined upon

exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

(c) Recovered specimens. Qualified paleontologic personnel shall prepare recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils is essential in order to fully mitigate adverse impacts to the resources.

(d) Identification and curation of specimens. Qualified paleontologic personnel shall identify and curate specimens into the collections of the Division of Geological Sciences, San Bernardino County Museum, an established, accredited museum repository with permanent retrievable paleontologic storage. These procedures are also essential steps in effective paleontologic mitigation and CEQA compliance. The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not considered complete until curation into an established museum repository has been fully completed and documented.

(e) Report of findings. Qualified paleontologic personnel shall prepare a report of findings with an appended itemized of specimens. A preliminary report shall be submitted and approved before granting of building permits, and a final report shall be submitted and approved before granting of occupancy permits. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into the collections of the San Bernardino County Museum, will signify completion of the program to mitigate impacts to paleontologic resources.

References

Anderson, R.S., M.J. Power, S.J. Smith, K.B. Springer and E. Scott, 2002. Paleoecology of a Middle Wisconsin deposit from southern California. Quaternary Research 58(3): 310-317.

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Reynolds, S.F.B. and R.L. Reynolds, 1991. The Pleistocene beneath our feet: near-surface Pleistocene fossils in inland southern California basins, *in* Inland Southern California: the last 70 million years, M.O. Woodburne, S.F.B. Reynolds, and D.P. Whistler, eds. Redlands, San Bernardino County Museum Special Publication 38(3&4), p. 41-43.

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Springer, K.B., E. Scott, L.K. Murray and W.G. Spaulding, 1998. Partial skeleton of a large individual of *Mammut americanum* from the Domenigoni Valley, Riverside County, California. Journal of Vertebrate Paleontology 18(3): 78-A.

Springer, K., E. Scott, J.C. Sagebiel, and L.K. Murray, 2007. The Diamond Valley Lake Local Fauna: late Pleistocene vertebrates from inland southern California. Journal of Vertebrate Paleontology 27(3): 151A.

Springer, K.B., E. Scott, J.C. Sagebiel and K.M. Scott, 1999. A late Pleistocene lake edge vertebrate assemblage from the Diamond Valley, Riverside County, California. Journal of Vertebrate Paleontology 19(3): 77-A.

Woodburne, M.O., 1991. The Cajon Valley, *in* Inland Southern California: the last 70 million years, M.O. Woodburne, R.E. Reynolds, and D.P. Whistler, eds. Redlands, San Bernardino County Museum Special Publication 38(3&4), p. 41-43.

Please do not hesitate to contact us with any further questions you may have.

Sincerely,

Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

Appendix E

Native American Heritage Commission Consultation

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

VIA FACSIMILE (916) 657-5390
(2008-132)

December 17, 2008

Mr. Rob Wood
Associate Governmental Program Analyst
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

Subject: Cultural Resources Assessment for San Bernardino Valley College, San Bernardino County, California

Dear Mr. Wood:

We are requesting on behalf of our client that a review of the Sacred Lands file be conducted for a cultural resources study for San Bernardino Valley College, San Bernardino County, California.

The project area is located in the City of San Bernardino and the City of Colton on the San Bernardino Valley College Campus. The portion of the campus in the City of San Bernardino is bounded by Esperanza Street to the north, Hazel Avenue to the east, Grant Avenue to the south, and Mt. Vernon Avenue to the west. The portion of the campus in the City of Colton includes portions of Fairview Avenue, Monterey Avenue, and Bothwell Avenue, all located south of Grant Avenue.

As shown on the U.S. Geological Survey (USGS) 7.5-minute, San Bernardino South, California topographic quadrangle map, the project area lies in the northeast quarter of the southeast quarter of the southeast quarter of Section , Township 1 South, Range 4 West of the San Bernardino Base Meridian. The attached map shows the location of the project area.

Please fax the results of this search to my attention at **(909) 307-0056**. For correspondence, please reference the project number of 2008-132. If you have any questions regarding this request, please do not hesitate to contact me at (909) 307-0046 or via email at jhoward@ecorpconsulting.com. Thank you for your assistance with this project.

Sincerely,

ECORP Consulting, Inc.

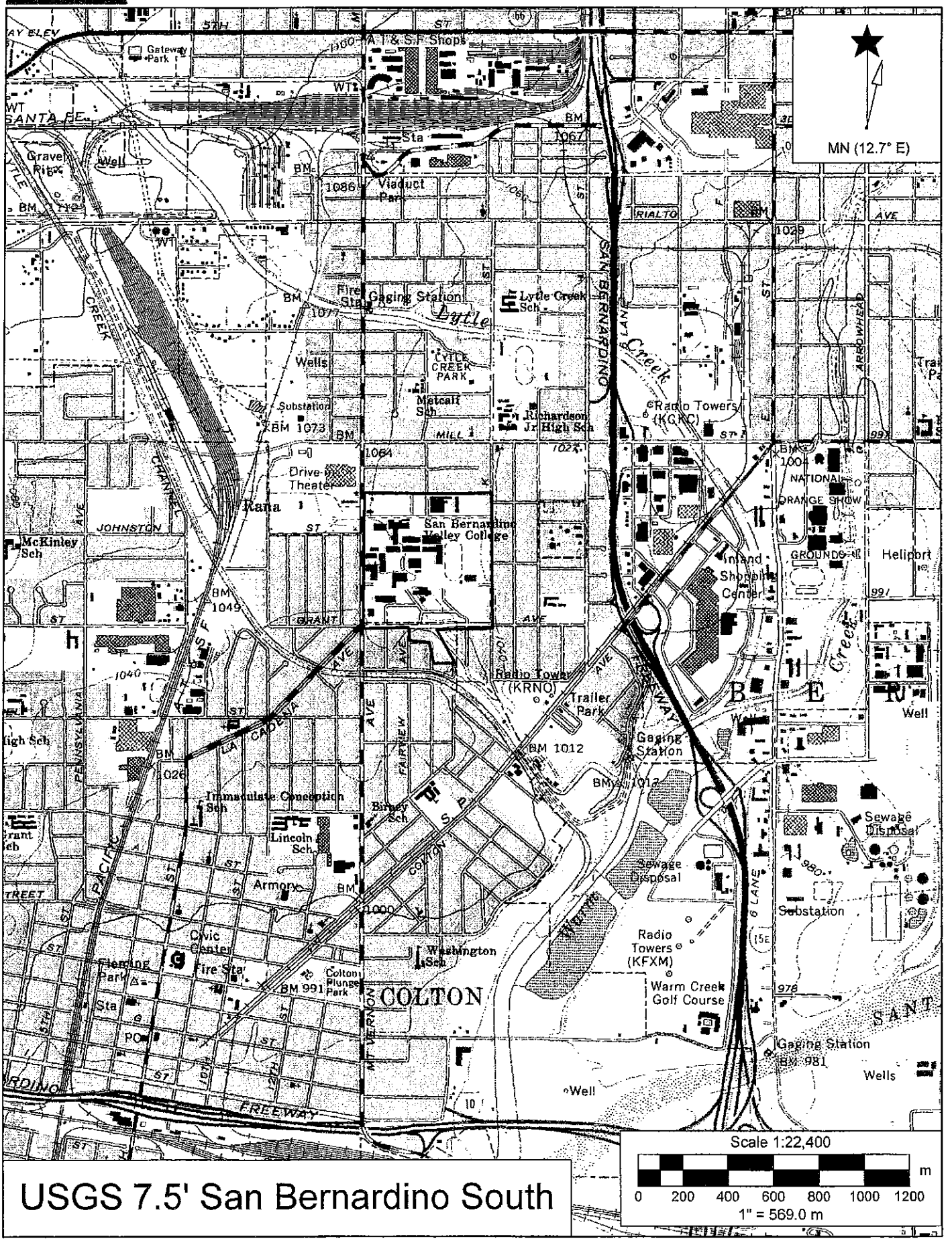
Jennifer M. Howard, M.A.
Cultural Resources Field Director

Attachment: as stated

215 North 5th Street
Redlands, California 92374
Phone: (909) 307-0046
Fax: (909) 307-0056
www.ecorpconsulting.com

Rocklin
Oakland
Redlands
Santa Ana
San Diego

DeLORME XMap® 4.5



USGS 7.5' San Bernardino South

Data use subject to license.
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www.delorme.com

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
e-mail: ds_nahc@pacbell.net

December 18, 2008

Ms. Jennifer M. Howard, M.A., Cultural Resources Field Director
ECORP CONSULTING, INC.
215 North 5th Street
Redlands, CA 92374

Sent by FAX to: 909-307-0056
No. of Pages: 2

Re: Request for a Sacred Lands File records search and Native American Contacts list for the proposed San Bernardino Valley College New Building Construction Project; located in the City of San Bernardino; San Bernardino County, California

Dear Ms. Howard:

The Native American Heritage Commission (NAHC) was able to perform a record search of its Sacred Lands File (SLF) for the affected project area/area of potential effect (APE). The SLF failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of archaeological/cultural resources does not indicate that they do not exist.

Early consultation with Native American tribes in your project area is the best way to avoid unanticipated discoveries once a project is underway. Enclosed are the names of culturally affiliated Native American Contacts that may have knowledge of cultural resources in the project area (APE). A list of Native American contacts is attached to assist you. A local tribe or Native American individual may be the only source of information about a cultural resource.

Lead agencies should consider avoidance, as defined in Section 15370 of the California Environmental Quality Act (CEQA) when significant cultural resources could be affected by a project. Also, Public Resources Code Section 15064.5(f) and Section 15097.98 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery. Discussion of these should be included in your environmental documents, as appropriate.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton
Program Analyst

Attachment: Native American Contact List

Native American Contacts
San Bernardino County
December 18, 2008

Pechanga Band of Mission Indians
Paul Macarro, Cultural Resource Center
P.O. Box 1477 Luiseno
Temecula , CA 92593
(951) 308-9295 Ext 8106
(951) 676-2768
(951) 506-9491 Fax

Morongo Band of Mission Indians
Michael Contreras, Cultural Heritage Prog. Manager
13000 Fields Road Cahuilla
Banning , CA 92220 Serrano
(951) 755-5025
(951)201-1866 - cell
(951) 922-0105 Fax

Ramona Band of Cahuilla Mission Indians
Joseph Hamilton, Chairman
P.O. Box 391670 Cahuilla
Anza , CA 92539
admin@ramonatribe.com
(951) 763-4105
(951) 763-4325 Fax

San Manuel Band of Mission Indians
Ann Brierty, Policy/Cultural Resources Department
26569 Community Center. Drive Serrano
Highland , CA 92346
abrierty@sanmanuel-nsn.gov
(909) 864-8933 EXT-3250
(909) 649-1585 - cell
(909) 862-5152 Fax

San Manuel Band of Mission Indians
James Ramos, Chairperson
26569 Community Center Drive Serrano
Highland , CA 92346
(909) 864-8933
(909) 864-3724 - FAX
(909) 864-3370 Fax

Serrano Nation of Indians
Goldie Walker
6588 Valaria Drive Serrano
Highland , CA 92346
(909) 862-9883

Alvino Siva
2034 W. Westward Cahuilla
Banning , CA 92220
(951) 849-3450

Soboba Band of Luiseno Indians
Erica Helms, Cultural Resources Manager
P.O. Box 487 Luiseno
San Jacinto , CA 92581
dhill@soboba-nsn.gov
(951) 654-2765
FAX: (951) 654-4198

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed San Bernardino Valley College Project; located in the City of San Bernardino; San Bernardino County, California for which a Sacred Lands File search and Native American Contacts list were requested.

SAMPLE OF LETTER SENT TO ALL CONTACTS IDENTIFIED BY NAHC

April 17, 2009
(2008-132)

Name
Affiliation
Address
Address

SUBJECT: ***PEIR for the Implementation of the Master Plan for San Bernardino Valley College, San Bernardino County, California***

Dear _____:

Introduction. The San Bernardino Community College District (SBCCD) is preparing a Program Environmental Impact Report (PEIR) for the implementation of the Master Plan for San Bernardino Valley College (SBVC). The Master Plan describes a program of potential development of academic buildings, infrastructure improvements, and associated parking that will be required to address the presence of the San Jacinto fault, fault folding zone, and associated setbacks on the campus. On the campus, two lines of the San Jacinto fault run parallel to each other and have a required 50-foot setback to either side, creating a zone in which no structures are allowed. Additionally, a folding zone exists to the northeast of the fault, caused by the relative movement of two tectonic plates underneath the earth's surface. The unbuildable zone created by the fault and folding zones is approximately 18 acres. The Master Plan also addresses projected growth in enrollment through 2030.

Project Location. The SBVC Master Plan site is located in the City of San Bernardino and adjacent to the City of Colton in San Bernardino County. As shown on the U.S. Geological Survey (USGS) 7.5-minute, San Bernardino South, California topographic quadrangle map, the project area lies in the northwest quarter of Section 16, Township 1 South, Range 4 West of the San Bernardino Base Meridian. The attached map shows the location of the project area.

Master Plan Summary. The Master Plan for SBVC describes the improvements to SBVC in three phases, called Horizons. Horizon 1 targets the year 2010, and primarily consists of the replacement of four buildings that are within the San Jacinto fault folding zone (North Hall, Media/Communications, Chemistry/Physical Science, and Maintenance and Operations). An Initial Study/Mitigated Negative Declaration was prepared for this building replacement project in 2007. Also included in Horizon 1 is Parking Structure 1, a parking structure located on the south portion of the campus. This structure will be evaluated in the PEIR.

Horizon 2 targets the year 2020 and is defined by the replacement of structures identified to be in the worst condition: the Liberal Arts Building, Gymnasiums and Pools, and Technical Building. The old gymnasiums would be demolished and replaced with two new gymnasium buildings in roughly the same location. The softball field would be relocated, the baseball field would be resurfaced, a new soccer field would be constructed along K Street, and the track and football field would remain in their current locations, but new home and visitor stands would be added. The new Liberal Arts Building and gymnasiums would be realigned to fully delineate the new quad formed by the 18-acre unbuildable area. The existing Liberal Arts building would be demolished and replaced with a new Liberal Arts Building. The new Technical Building would anchor the northeast corner of the campus and provide the program and campus with public

visibility and access, improving the edge of the campus in this location. The old Technical Building would be demolished and a parking lot would be constructed in that location.

Horizon 3 targets the year 2030 and represents the full buildout of the campus. A new Performing Arts building would be constructed adjacent to Grant Avenue. Two new classroom/office buildings would be constructed to support academic functions that have not yet been assigned. A multi-level parking structure with tennis courts on the top level would be constructed at the parking lot that was formerly the site of the old Technical Building. The Planetarium would be demolished, and its function incorporated into one of the new or existing buildings. A new outdoor stage and backdrop for the existing Greek Theater would be built at its old location.

Known Cultural Resources/Previous Cultural Resources Mitigation. In order to identify cultural resources that could be affected by the implementation of the Master Plan, as required by the California Environmental Quality Act (CEQA), a records search was conducted with the San Bernardino Archaeological Information Center at the San Bernardino County Museum in Redlands. There are three records of archaeological sites located within the SBVC campus. The first (SBCM-10) is located at the site of the original Auditorium near Mount Vernon Avenue. At the time of the construction of the Auditorium in 1934, there were rumors of several burials being uncovered by construction workers. At the time, the burials were identified by local residents as those of a group of white travelers. However, there is no formal documentation of either the burials or the inhabitants. The location of the second resource (CA-SBR-3001) is unknown. Excavations were reported to have been performed in the early 1970s within "Valley College." Numerous prehistoric artifacts were reportedly recovered from the area, including lithic tools and debitage and groundstone artifacts. However, when the artifacts allegedly collected from the excavation were sent to the County Museum for curation, the majority of the catalogued artifacts were missing. In addition, no map of the exact location of the excavation and no report of the excavation methods and findings were provided. It is unclear if the excavation actually occurred and if so, if it was within the SBVC campus or elsewhere in the vicinity. The third resource (P1074-28H) is an irrigation ditch constructed in the 1840s that supplied spring water from a location near present-day Mill Street to the town of Politana on the banks of the Santa Ana River in present-day Colton. There are no visible remains of this irrigation ditch extant within the SBVC campus.

Between 2001 and 2006, a Seismic Hazard Mitigation Project was implemented on the campus using a grant from the Federal Emergency Management Agency (FEMA) to replace the buildings presenting the highest life-safety risk from seismic activity. Seven buildings in or within 50 feet of the San Jacinto fault zone (Life Sciences, Campus Center, Andrews Library, Medical Arts, Administration, Art, and Art Gallery) were demolished. An eighth building (Publications) was demolished to provide space for replacement parking. The functions of these eight buildings were replaced with five new buildings, located outside of the fault zone and constructed to modern seismic standards: Health and Life Sciences, Campus Center, Library, Administration/Student Services, and Art/Art Gallery. A separate EIR was completed for these projects in 2000.

Given the potential for subsurface archaeological materials to exist within SBVC campus, mitigation in the EIR for the Seismic Hazard Mitigation project required monitoring of all ground disturbing activities and sample test excavations during the demolition of the eight buildings and the construction of the five replacement buildings. Monitoring and test excavations were conducted between 2001 and 2006 by qualified archaeologists with the presence of a Native

American monitor. No prehistoric materials were encountered during the sample test excavations or during the monitoring. One concentration of historic-age cow bone was encountered and documented in the southwest corner of the campus.

A search of the Sacred Lands File has been conducted with the Native American Heritage Commission (NAHC) in Sacramento, California. The Sacred Lands File did not identify any known Native American cultural resources within the SBVC campus.

Request for Comment. SBCCD is contacting you to provide you with an opportunity to comment on the proposed project. We would appreciate any information you may have regarding any additional, unknown cultural resources located within or near the proposed project area that are of cultural importance to the local Native American community and that could be affected by the proposed building replacement project. We will protect the confidentiality of information concerning the identity, location, character, and traditional use of cultural places identified during consultation.

We encourage you to participate in this process. The potential impacts that this project may have on cultural resources important to the Native American community cannot be evaluated without your input. If possible, for project planning purposes, we would like to receive a response from you about this project within 30 days of the receipt of this letter. To assist in gathering your comments, our consultant, ECORP Consulting, Inc., will contact you via telephone on behalf of SBCCD in the next few weeks. Written comments can be addressed to:

Evelyn N. Chandler
Cultural Resources Manager
ECORP Consulting, Inc.
215 N. 5th Street
Redlands, CA 92374

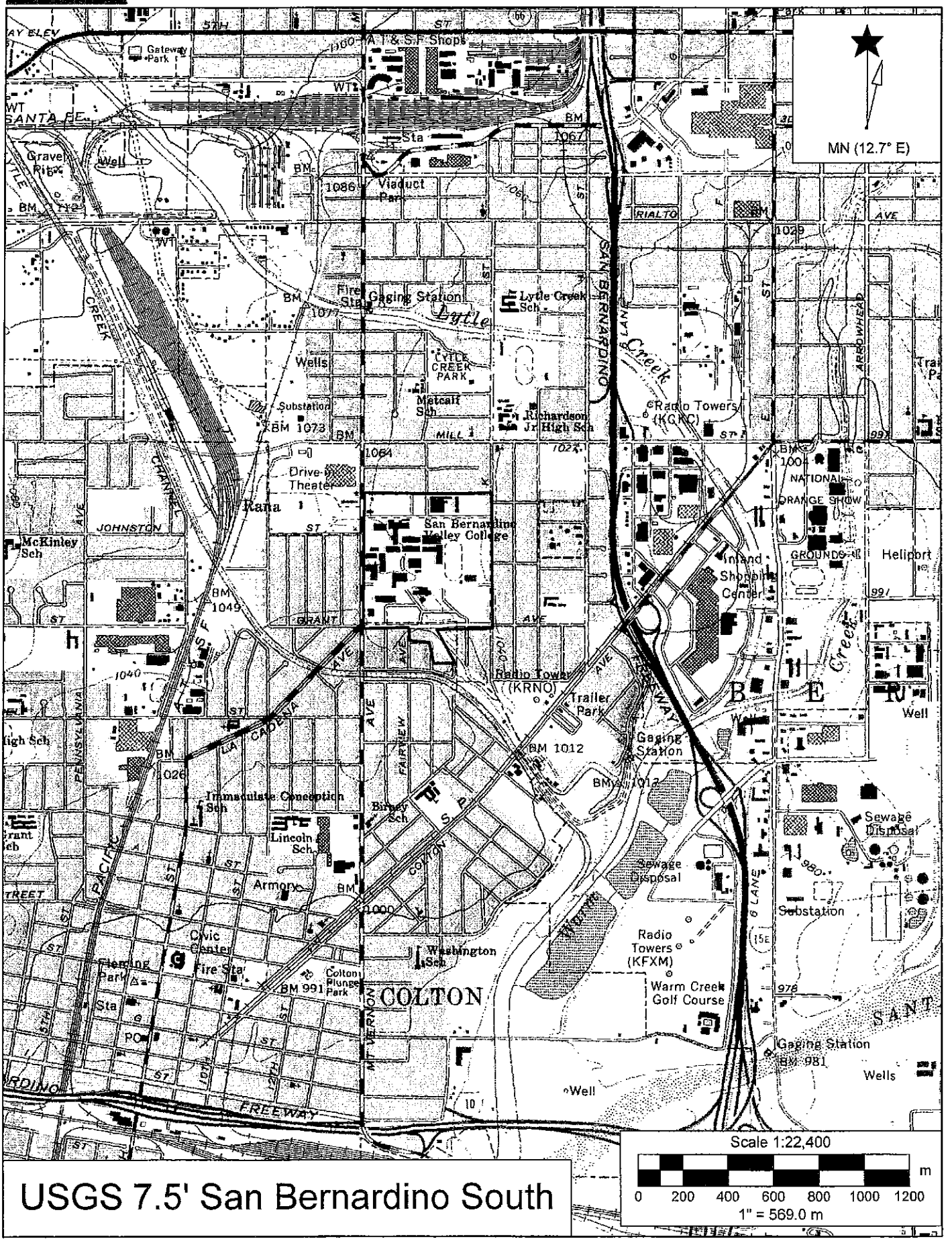
Ms. Chandler can also be contacted at (909) 307-0046 or via email at echandler@ecorpconsulting.com. Thank you for your assistance and participation in this project.

Sincerely,

Robert J. Temple
Vice Chancellor, Fiscal Services

Enclosure: as stated

DeLORME XMap® 4.5



USGS 7.5' San Bernardino South

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www.delorme.com

Soboba Cultural Resource Department
P.O. Box 487 San Jacinto, Ca 92581
Phone: 951.654.5544 ext. 4137

SOBOBA BAND OF LUISEÑO INDIANS
EST. JUNE 19, 1883

April 27, 2009

Attn: Evelyn N. Chandler
ECORP Consulting, Inc
215 N. 5th Street
Redlands, Ca 92374

Re: Program Environmental Impact Report (PEIR) for Implementation of the Master Plan for San Bernardino Valley College.

The Soboba Band of Luiseño Indians appreciates your observance of Tribal Cultural Resources and their preservation in your project. The information provided to us on said project(s) has been assessed through our Cultural Resource Department, where it was concluded that although it is outside the existing reservation, the project area does fall within the bounds of our Tribal Traditional Use Areas.

Please contact the **San Manuel Band of Mission Indians** for further assistance in identifying any issues or concerns that the tribes might have in regards to the project referenced above.

The Soboba Band of Luiseño Indians appreciates your efforts to include the Soboba Cultural Resource Department in your project.

[SPECIAL NOTE (for projects other than cell towers): *If* this project is associated with a city or county specific plan or general plan action it is subject to the provisions of SB18-Tradtional Tribal Cultural Places (law became effective January 1, 2005) and will require the city or county to participate in **formal, government-to-government** consultation with the Tribe. If the city or county are your client, you may wish to make them aware of this requirement. By law, they are required to contact the Tribe.

Sincerely,

Joseph Ontiveros

Joseph Ontiveros
Soboba Cultural Resource Department
P.O. Box 487
San Jacinto, Ca 92581
Phone (951) 654-5544 ext. 4137
Cell (951) 663-5279
jontiveros@soboba-nsn.gov

CONTACTS WITH NATIVE AMERICAN GROUPS
PEIR for the Implementation of the Master Plan for San Bernardino Valley College

NATIVE AMERICAN GROUP	CONTACT	PHONE NUMBER	DATE AND TIME OF CONTACT*	COMMENTS
Pechanga Band of Mission Indians	Paul Macarro, Cultural Resource Center	(951) 308-9295 Ext 8106	4/22/09	Evelyn Chandler of ECORP received a voicemail message from Paul Macarro stating that Pechanga's traditional territory does not extend into the San Bernardino area; it is south of the Santa Ana River only. He said the primary NA group for the project area is the San Manuel Band of Mission Indians and suggested ECORP contact Ann Brierty at San Manuel at (909) 425-3590 Ext 4321. He expressed appreciation for the notification letter and the opportunity to comment.
Ramona Band of Cahuilla Mission Indians	Joseph Hamilton, Chairman	(951) 763-4105	5/20/09, 10:05 am	Spoke to the receptionist and was informed the best way to contact Joseph Hamilton is through email.
			5/20/09, 4:50pm	Email sent by Evelyn Chandler, ECORP, requesting comments on the project.
San Manuel Band of Mission Indians	James Ramos, Chairperson	(909) 864-8933	5/20/09, 10:07 am	Left a voicemail
Private Individual	Alvino Siva	(951) 849-3450	5/20/09, 10:12 am	Spoke to a woman who stated that Alvino Siva was hospitalized and has no further interest in the project.
Morongo Band of Mission Indians	Michael Contreras, Cultural Heritage Project Manager	(951) 755-5025	5/20/09, 10:15 am	Left a voicemail
San Manuel Band of Mission Indians	Ann Brierty, Policy/Cultural Resource Department	(909) 864-8933 Ext 3250	5/20/09, 10:16 am	Left a voicemail

Serrano Nation of Indians	Goldie Walker, Tribal Contact	(909) 862-9883	5/20/09, 10:20am	Goldie Walker requested to be notified if any artifacts and/or burial sites associated with the Serrano Indians were located during the project. She also requested a copy of final report when it is available.
Soboba Band of Luiseno Indians	Erica Helms, Cultural Resource Manager	(951) 654-2765	4/27/09	Letter received from Joseph Ontiveros stating that the project falls within bounds of Soboba's Tribal Traditional Use Areas and recommends contact with San Manuel Band of Mission Indians.

*All phone contacts were made by Sara Hale, Cultural Resources Specialist, ECORP Consulting, Inc.

From: Evelyn Chandler
Sent: Wednesday, May 20, 2009 4:56 PM
To: 'admin@ramonatribe.com'
Subject: Your comments requested on PEIR for Master Plan at SBVC

Hello,

On April 17th, a letter was forwarded to Joseph Hamilton regarding the Program Environmental Impact Report (PEIR) being prepared for the Master Plan for San Bernardino Valley College (SBVC). At this time, we would like to provide you another opportunity to comment on the proposed project, which is described in detail in the letter.

If you would like to comment on the project or did not receive the letter, please reply to this email or call me at (900) 307-0046.

Thank you,

Evelyn N. Chandler
Cultural Resources Manager

ECORP Consulting, Inc.
Certified Small Business (SB)

215 North 5th Street
Redlands, CA 92374
Phone: (909) 307-0046
Fax: (909) 307-0056
echandler@ecorpconsulting.com

Appendix F

Noise Study

WIELAND ACOUSTICS, INC.
2691 Richter Avenue, Suite 114
Irvine, CA 92606
Tel: 949.474.1222
Fax: 949.474.9122
www.wielandacoustics.com

Environmental Noise Study for the Proposed San Bernardino Valley College Master Plan in the City of San Bernardino

Project File 08.065.00
September 16, 2009

Prepared for:

ECORP Consulting, Inc.
215 N. 5th Street
Redlands, CA 92374

Prepared by:

Jonathan Higginson, Senior Consultant
David L. Wieland, Principal Consultant

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1 Introduction/Project Description

The purpose of this study is to identify and assess the potential noise and vibration impacts associated with the Master Plan for San Bernardino Valley College (SBVC). The SBVC Master Plan area is located within the City of San Bernardino. Figure 1-1 identifies the location of the project site.

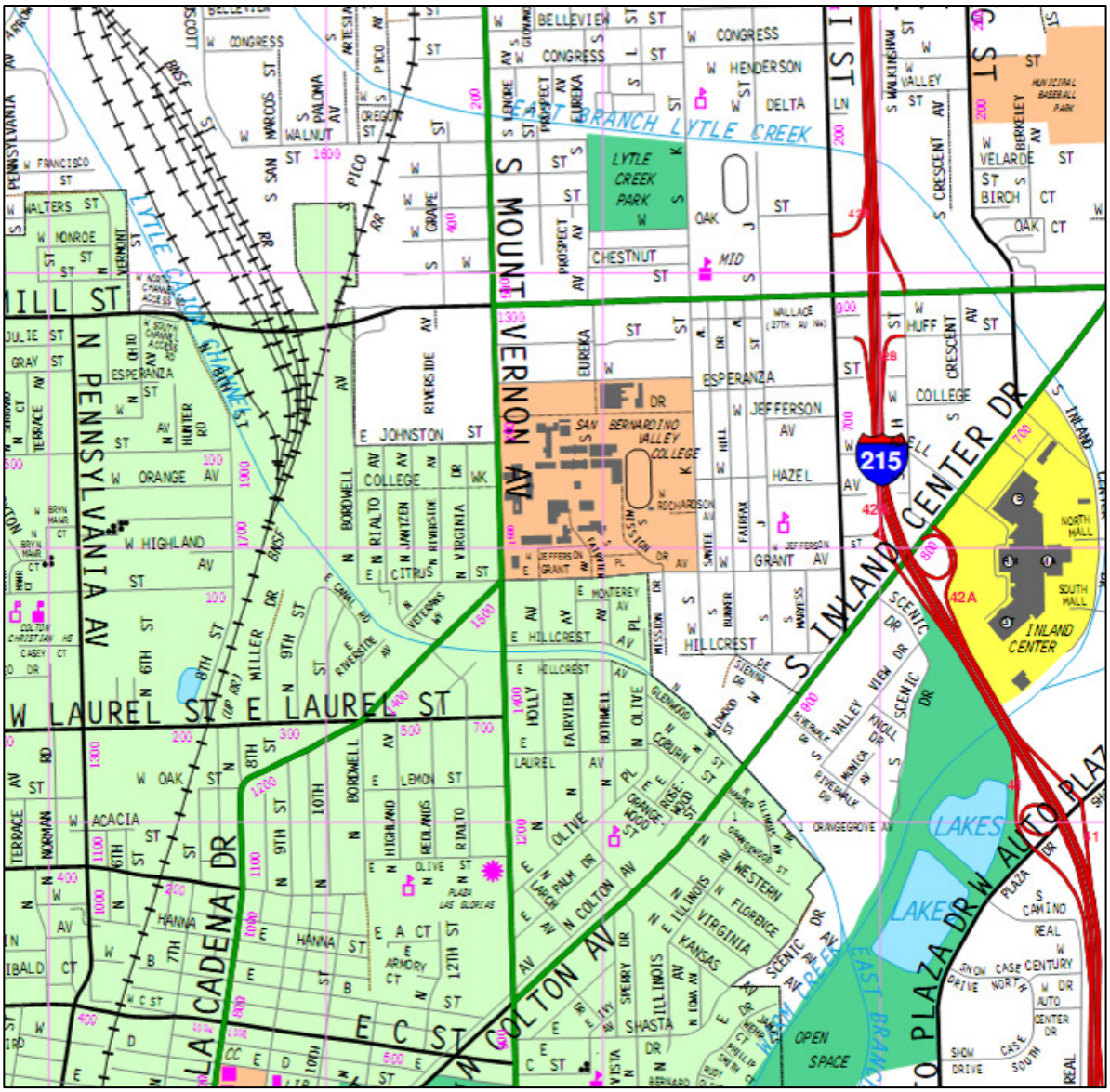


Figure 1-1. Project Study Area

The proposed Master Plan estimates that various academic buildings, infrastructure improvements, and associated parking are required to meet the planning challenges related to the San Jacinto earthquake fault and folding zone, which creates an 18-acre unbuildable area on the campus. Improvements are also required to support a future enrollment of 15,000 total students by 2020

(Horizon 2) and 17,000 total students by 2030 (Horizon 3). Table 1-1 shows the projected increases in student enrollment, building area, and parking over the planning period.

Table 1-1. SBVC Existing Conditions and Master Plan Projected Growth

	2008 Estimate	Horizon 1 2010	Horizon 2 2020	Horizon 3 2030
Student Enrollment (total)	12,561	13,300	15,000	17,000
Building Area (ASF)	426,550	418,888	427,454	526,731
Parking*	2,715	3,182	3,055	3,349

ASF = Assignable square feet, or the sum of all surface areas in a building that are assigned to, or available for assignment to, a department.

*Parking includes on-site and on-street parking supplies. Only the 2008 estimate includes use of the Swap Meet.

It should be noted that SBVC is currently overbuilt; it has more square footage than required for its current enrollment. Therefore, many of the projects in the Master Plan that replace outdated buildings would also accommodate growth without a significant increase in the overall square footage of assignable space on the campus.

The Master Plan for SBVC describes the improvements to SBVC in three phases, called Horizons (Steinberg Architects 2009). The Horizons are described below.

1.1 Horizon 1

Horizon 1 targets the year 2010, and primarily consists of the construction of four buildings that replace buildings within or near the San Jacinto fault folding zone (North Hall, Physical Science, Chemistry, and Maintenance and Operations) (Table 1-2 and Figure 1-2). The replacement is for seismic safety reasons, not to accommodate an increase in student population. The replacement of these buildings was initially funded by Measure P and State funding prior to the development of the Master Plan. Therefore, a CEQA IS/MND was prepared for this building replacement project in 2007 (SBCCD 2007). Horizon 1 is included in this study for reference purposes, and as a basis for cumulative impacts analysis.

Also included in Horizon 1 is Parking Structure 1, a multi-level, 1,250-space parking structure located on the south portion of campus with access from Grant Avenue and K Street. This parking structure facility was not included in the CEQA IS/MND prepared for the Measure P projects, and will be evaluated for the first time in this document.

Table 1-2. Horizon 1 Projects

Horizon 1 Project	Project Description
New Buildings/Facilities	
New Maintenance and Operations Building	Physical plant space for the campus.
New North Hall Replacement Building	Classrooms, labs, offices for criminal justice, humanities, humanities programs.
New Media and Communications Building	Classrooms, labs, offices, media space for media and communications programs and KVCR (campus radio and television broadcasting station).
New Chemistry/Physical Science Building	Classrooms, labs offices, assembly area for chemistry and physical sciences programs.
New Student Health Services Building	Clinical space; offices.
New Parking Structure 1	Approximate 1,250-space parking structure with the potential for a solar photovoltaic system, located on south side of campus with access from Grant Avenue and K Street.
Renovations	
None	None
Demolitions	
Maintenance and Operations Building	After the functions of the North Hall and the Maintenance and Operations Building have been moved to newly constructed buildings, they will be demolished, allowing the construction of the new Chemistry/Physical Science Building. The demolition of these buildings were analyzed in a separate IS/MND.
North Hall Building	
Chemistry/Physical Science Buildings	
Infrastructure Improvements	
Storm Drain; Sanitary Sewer; Water Distribution and Fire Protection; Heating, Ventilation, and Air Conditioning; Electrical; Natural Gas; Telecommunications; Site Work; Access Improvements; Signage; Landscape/Hardscape; Solar Photovoltaic	Infrastructure will be extended on campus to connect new buildings.

Figure 1-2. Master Plan for Horizon 1

1.2 Horizon 2

Horizon 2 targets the year 2020 and is defined by the replacement of structures identified in the assessment study as in the worst condition: the Liberal Arts Building, Gymnasiums and Pools, and Technical Building (Table 1-3 and Figure 1-3). The existing Liberal Arts Building would be demolished and replaced with a new Liberal Arts Building. The old gymnasiums would be demolished and replaced with two new gymnasium buildings in roughly the same location. The softball field would be relocated, the baseball field would be resurfaced, and a new soccer field would be constructed along K Street. The track and football field would remain in their current locations, but new home and visitor stands would be added.

The new Technical Building would anchor the northeast corner of the campus and provide the program and campus with public visibility and access, improving the edge of the campus in this location. The old Technical Building would be demolished and an approximately 200 to 250 space parking lot would be constructed in that location.

Table 1-3. Horizon 2 Projects

Horizon 2 Project	Project Description
New Buildings/Facilities	
New Gymnasiums 1 and 2	Offices for athletics, health services and physical education divisions. Locker rooms, weight rooms, and physical education/athletics spaces.
New Technical Building	Classrooms, labs, and offices for applied technology.
New Softball Field	Construct new softball field on existing open space south of College Ave. and north of the track.
New Soccer Field	Construct new soccer field on location of existing softball field west of K Street and east of the track.
New Liberal Arts Building	Classrooms, labs, offices for social science/human development, and computing services.
New Home and Visitor Stands at Track/Football Field	Home stands would be constructed on the west side of the track/football field and visitor's stands would be constructed on the east side of the track/football field.
Renovations	
Baseball Field	Resurface existing baseball field.
West Drop Off Reconfiguration	Reconfigure Parking Lot 2 to provide a drop off space
Business Building Renovation	Architectural finish upgrades, building system upgrades, and remodeling.
Auditorium Renovation	Architectural finish upgrades, handicap-accessible upgrades.
Demolitions	
Technical Building	Functions moved to new Technical Building. Site converted to surface parking lot.
Liberal Arts Building	Functions incorporated into new Liberal Arts Building. Replaced with a new Liberal Arts Building.
Snyder Gymnasium and Women's Gymnasium	Functions incorporated into new Gymnasiums 1 and 2. Replaced with landscaped open space, new home stands, and new Gymnasiums 1 and 2.
Middle College	Middle College relocated off site per the goals of the San Bernardino City Unified School District.
Infrastructure Improvements	
Central Plant	New/additional central plant and potentially a thermal energy storage system will be constructed to serve the campus.
Storm Drain; Sanitary Sewer; Water Distribution and Fire Protection; Heating, Ventilation, and Air Conditioning; Electrical; Natural Gas; Telecommunications; Site Work; Access Improvements; Signage; Landscape/Hardscape; Solar Photovoltaic	Infrastructure will be extended on campus to connect new and existing buildings.

HORIZON 2

Figure 1-3. Master Plan for Horizon 2

1.3 Horizon 3

Horizon 3 targets the year 2030 and represents the full buildout of the campus (Table 1-4 and Figure 1-4). A new Performing Arts Building would be constructed adjacent to Grant Avenue. Two new office and classroom buildings would be constructed to support academic functions that have not yet been assigned. A multi-level 1,100 space parking structure (Parking Structure 2) with tennis courts on the top level would be constructed at the parking lot that was formerly the site of the old Technical Building.

The Planetarium would be demolished, and its function incorporated into one of the new or existing buildings. A new outdoor stage and backdrop for the existing Greek Theater would be built at its old location.

Table 1-4. Horizon 3 Projects

Horizon 3 Project	Project Description
New Buildings/Facilities	
Performing Arts	Performing arts facility.
New Building 1	Replace classrooms, labs, and offices in existing Business Building and provide for accommodation of future growth.
New Building 2	Offices, classrooms, and labs for future growth.
New Parking Structure 2	An approximate 1,100-space parking structure.
New Campus Entry	New Campus Entry.
Renovations	
Greek Theater	New stage and backdrop.
Demolitions	
Planetarium	Functions incorporated into new or existing building. Replaced with open space/new Greek Theater backdrop.
Business Building	Functions incorporated into New Building 1. Replaced with new Building 1 and landscaped open space.
Infrastructure Improvements	
Storm Drain; Sanitary Sewer; Water; Heating, Ventilation, and Air Conditioning; Electrical; Gas; Telecommunications; Site work; Access Improvements; Signage; Landscape/Hardscape; Solar Photovoltaic	Provide service to new and existing buildings.

Figure 1-4. Master Plan for Horizon 3

2 Noise Descriptors

The following sections briefly describe the noise descriptors that will be used throughout this study:

2.1 Decibels

The magnitude of a sound is typically described in terms of *sound pressure level* (SPL) which refers to the root-mean-square (rms) pressure of a sound wave and can be measured in units called microPascals (µPa). However, expressing sound pressure levels in terms of µPa would be very cumbersome since it would require a very wide range of numbers (approximately 20 to 20,000,000 µPa over the entire range of human hearing). For this reason, sound pressure levels are stated in terms of decibels, abbreviated dB. The decibel is a logarithmic unit that describes the ratio of the actual sound pressure to a reference pressure (20 µPa is the standard reference pressure level for acoustical measurements in air). Specifically, a sound pressure level, in decibels, is calculated as follows:

$$SPL = 20\log_{10}\left(\frac{X}{20\mu Pa}\right),$$

where *X* is the actual sound pressure and 20 µPa is the reference pressure.

Since decibels are logarithmic units, sound pressure levels cannot be added or subtracted by ordinary arithmetic means. For example, if one automobile produces a sound pressure level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB. In fact, they would combine to produce 73 dB. This same principle can be applied to other traffic quantities as well. In other words, doubling the traffic volume on a street or the speed of the traffic will increase the traffic noise level by 3 dB. Conversely, halving the traffic volume or speed will reduce the traffic noise level by 3 dB.

2.2 A-Weighting

While sound pressure level defines the amplitude of a sound, this alone is not a reliable indicator of loudness. Human perception of loudness depends on the characteristics of the human ear. In particular, the frequency or pitch of a sound has a substantial effect on how humans will respond. Human hearing is limited not only to the range of audible frequencies, but also in the way it perceives sound pressure levels within that range. In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, and perceives both higher and lower frequency sounds of the same magnitude as being less loud. In order to better relate noise to the frequency response of the human ear, a frequency-dependent rating scale, known as the A-Scale, is used to adjust (or "weight") the sound level measured by a sound level meter. The resulting sound pressure level is expressed in A-weighted decibels or dBA. When people make relative judgments of the loudness or annoyance of most ordinary everyday sounds, their judgments correlate well with the A-weighted sound levels of those sounds. A range of noise levels associated with common indoor and outdoor activities is shown in Figure 2-1.

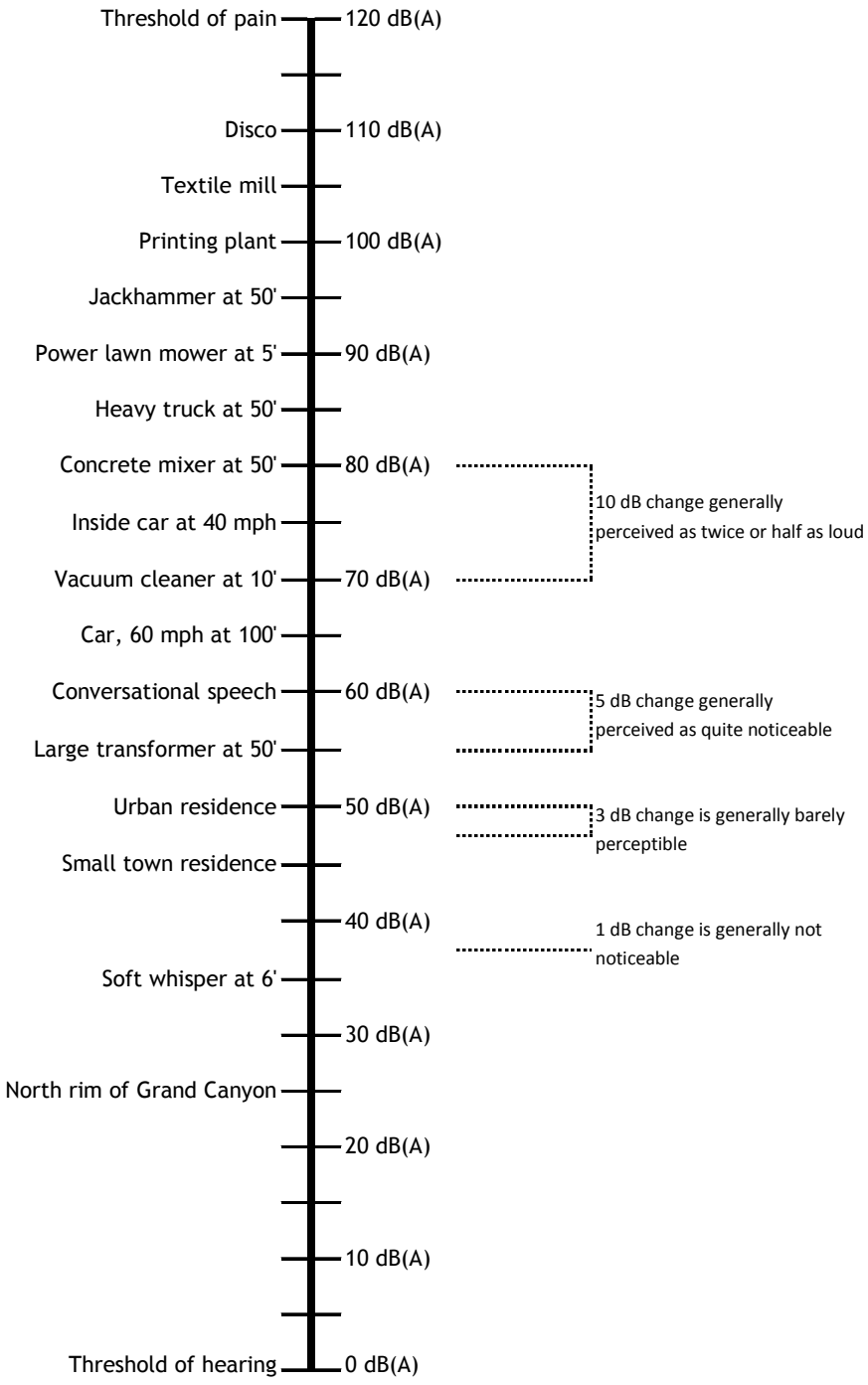


Figure 2-1. Common Noise Sources and A-Weighted Noise Levels

The A-weighted sound level of traffic and other long-term noise-producing activities within and around a community varies considerably with time. Measurements of this varying noise level are accomplished by recording values of the A-weighted level during representative periods within a specified portion of the day.

2.3 Equivalent Sound Level (L_{eq})

Many noise sources produce levels that fluctuate over time; examples include traffic, mechanical equipment that cycles on and off, or construction work which can vary sporadically. The equivalent sound level (L_{eq}) describes the average acoustical energy content of noise for an identified period of time, commonly 1 hour. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustical energy over the duration of the exposure. For many noise sources, the L_{eq} will vary depending on the time of day – a prime example is traffic noise which rises and falls depending on the amount of traffic on a given street or freeway.

2.4 Community Noise Equivalent Level (CNEL)

It is recognized that a given level of noise may be more or less tolerable depending on the duration of the exposure experienced by an individual, as well as the time of day during which the noise occurs. The community noise equivalent level (CNEL) is a measure of the cumulative 24-hour noise exposure that considers not only the variation of the A-weighted noise level but also the duration and the time of day of the disturbance. The CNEL is derived from the twenty-four A-weighted 1-hour L_{eq}'s that occur in a day, with "penalties" applied to the L_{eq}'s occurring during the evening hours (7 p.m. to 10 p.m.) and nighttime hours (10 p.m. to 7 a.m.) to account for increased noise sensitivity during these hours. Specifically, the CNEL is calculated by adding 5 dBA to each of the evening L_{eq}'s, adding 10 dBA to each of the nighttime L_{eq}'s, and then taking the average value for all 24 hours. It is noted that various state and local agencies have adopted CNEL as the measure of community noise, including the State Department of Aeronautics and the California Commission on Housing and Community Development. Figure 2-2 indicates the typical outdoor CNEL at various locations for typical noise sources. For many common noise sources, the levels measured in CNEL are very similar to those measured in L_{dn}, as described in Section 2.5, below.

2.5 Day-Night Sound Level (L_{dn})

Much like CNEL (see Section 2.4, above), L_{dn} is also a measure of the cumulative 24-hour noise exposure that considers not only the variation of the A-weighted noise level but also the duration and the time of day of the disturbance. The L_{dn} is derived in exactly the same way as CNEL, except that no "penalty" is applied to the evening hours of 7 p.m. to 10 p.m. Specifically, the L_{dn} is calculated from the twenty-four A-weighted 1-hour L_{eq}'s that occur in a day by adding 10 dBA to each of the nighttime (10 p.m. to 7 a.m.) L_{eq}'s and then taking the average value for all 24 hours. It is noted that various federal, state, and local agencies have adopted L_{dn} as the measure of community noise, including the United States Environmental Protection Agency (EPA). Figure 2-2 indicates the typical outdoor L_{dn} at various locations for typical noise source. For many common noise sources the levels measured in L_{dn} are very similar to those measured in CNEL, as described in Section 2.4, above.

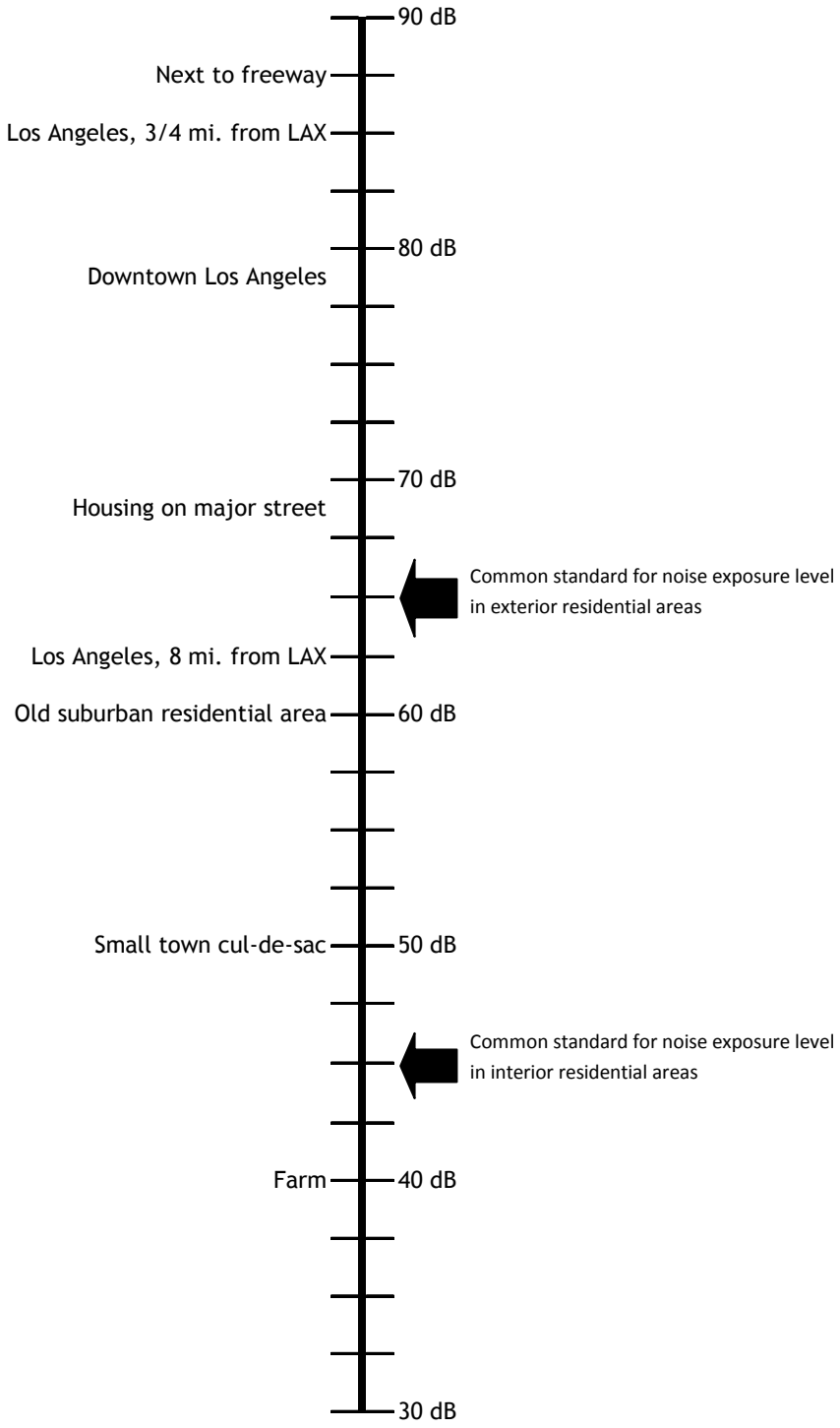


Figure 2-2. Common CNEL & L_{dn} Noise Exposure Levels at Various Locations

3 Noise Criteria

The proposed project is located within the City of San Bernardino but also borders on the City of Colton. Therefore, the noise standards of both communities are addressed in the following sections.

3.1 City of San Bernardino General Plan

The City's General Plan identifies the following policies which are relevant to the proposed project:

Policy 14.1.1 – Minimize, reduce, or prohibit, as may be required, the new development of housing, health care facilities, schools, libraries, religious facilities, and other noise sensitive uses in areas where existing or future noise levels exceed an L_{dn} of 65 dB exterior and an L_{dn} of 45 dB interior if the noise cannot be reduced to these levels.

Policy 14.1.4 – Prohibit the development of new or expansion of existing industrial, commercial, or other uses that generate noise impacts on housing, schools, health care facilities or other sensitive uses above an L_{dn} of 65 dB.

Policy 14.2.3 – Require that development that increases the ambient noise level adjacent to noise-sensitive land uses provide appropriate mitigation measures.

Policy 14.2.19 – As may be necessary, require acoustical analysis and ensure the provision of effective noise mitigation measures for sensitive land uses, especially residential uses, in areas significantly impacted by noise.

Policy 14.3.1 – Require that construction activities adjacent to residential units be limited as necessary to prevent adverse noise impacts.

Policy 14.3.2 – Require that construction activities employ feasible and practical techniques that minimize the noise impacts on adjacent uses.

3.2 City of San Bernardino Municipal Code

The City's Municipal Code provides, among other things, a basis for controlling excessive and annoying noise. Some of the more relevant chapters of the Municipal Code are discussed in the following sections.

3.2.1 Chapter 8.54.020, Prohibited Acts

Paragraph L of this chapter prohibits "[t]he operation or use between the hours of 10:00 p.m. and 8:00 a.m. of any pile driver, steam shovel, pneumatic hammers, derrick, steam or electric hoist, power driven saw, or any other tool or apparatus, the use of which is attended by loud and excessive noise, except with the approval of the City".

3.2.2 Chapter 8.54.050, Controlled Hours of Operation

This chapter makes it unlawful for any person to engage in certain activities other than between the hours of 7:00 a.m. and 8:00 p.m. in non-residential zones. These activities include operating compressors, fans, and other similar devices; and repairing, rebuilding, reconstructing, or dismantling any motor vehicle or other mechanical equipment or devices in a manner so as to be plainly audible across property lines.

3.2.3 Chapter 8.54.060, Exemptions

This chapter exempts certain activities and noise sources from the provisions of the noise ordinance, including activities conducted on the grounds of any public school during regular hours of operation; outdoor gatherings, public dances, shows, and sporting and entertainment events provided said events are authorized by the City; and construction, repair, or excavation work performed pursuant to a valid written agreement with the City which provides for noise mitigation measures.

3.2.4 Chapter 8.54.070, Disturbances from Construction Activity

This chapter prohibits any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours of 7:00 a.m. and 8:00 p.m.

3.2.5 Chapter 9.48.20, Unlawful Noises

This chapter makes it unlawful for any person to create any loud or raucous noise from any sound-making or sound-amplifying device upon any private property, or in any public park or other public place or property.

3.2.6 Chapter 19.20.030, General Standards

This chapter prohibits any loudspeaker, bells, gongs, buzzers, mechanical equipment or other sounds, attention-attracting, or communication device that is discernible beyond any boundary line of the parcel.

3.3 City of Colton General Plan

The City's Noise Element of the General Plan identifies the following standards:

1. Residential structures should be constructed to maintain interior noise levels of not greater than 45 dBA.
2. Residential growth in community noise exposure areas greater than 70 dBA should be discouraged unless on-site noise levels can be reduced to 60 dBA or lower.
3. Exterior noise levels should not exceed 65 dBA during the day or 55 dBA at night for commercial land uses, including general business and general merchandising.

4. Exterior noise levels should not exceed 60 dBA at any time for such areas important to public need, and where the preservation of serenity and quietness is essential for the areas intended purpose.

The Noise Element also identifies land use compatibility guidelines for various community noise environments. These guidelines are adjusted to account for a number of environmental factors to arrive at an acceptability standard for a particular land use.

3.4 City of Colton Municipal Code

Chapter 9.16.010 prohibits the generation of any noise that disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitivity.

Chapter 18.42.040 states that "[t]he maximum sound level radiated by any use of facility (sic), when measured at the boundary line of the property on which the sound is generated, shall not be obnoxious by reason of its intensity, pitch or dynamic characteristics as determined by the city, and shall not exceed 65 dBA". The municipal code does not specify the metric to be used in assessing the sound level. For the purposes of this study it has been assumed that the standard refers to a maximum 1-hour L_{eq} (i.e., 1-hour average noise level) of 65 dBA.

4 Vibration Descriptors

4.1 Peak Particle Velocity (PPV)

Vibration consists of rapidly fluctuating motions with an average motion of zero. The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak amplitude of the vibration velocity. The accepted unit for measuring PPV in the USA is inches per second (in/s); therefore, this is the unit that is used throughout this report. PPV is only applicable to this project in the assessment of potential building damage due to ground-borne vibration from construction activities (PPV is related to the stresses that are experienced by buildings subjected to ground-borne vibration).

4.2 Vibration Velocity Level

Although PPV is appropriate for evaluating the potential for building damage, it is not suitable for evaluating human response to ground-borne vibration. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to an "average" vibration amplitude. However, the actual average level is not a useful measure of vibration because the net average of a vibration signal is zero. Instead, vibration velocity level (L_v) is used for evaluating human response. L_v describes the root mean square (rms) velocity amplitude of the vibration. This rms value may be thought of as a "smoothed" or "magnitude-averaged" amplitude. The rms of a vibration signal is typically calculated over a 1 second period. The maximum L_v describes the maximum rms velocity amplitude that occurs during a vibration measurement.

L_v can be measured in inches per second (in/s). However, expressing these levels in terms of in/s would be very cumbersome since it would require a very wide range of numbers. For this reason, L_v is stated in terms of decibels. Although it is not a universally accepted notation, the abbreviation "VdB" is used throughout this report to denote vibration velocity level decibels in order to reduce the potential for confusion with sound level decibels. The VdB is a logarithmic unit that describes the ratio of the actual rms velocity amplitude to a reference velocity amplitude. The accepted reference velocity amplitude is 1×10^{-6} in/s in the USA; therefore, this is the reference amplitude that is used throughout this report (it is noted that the accepted reference level varies globally and much confusion can arise if the reference is not clearly stated). Specifically, a vibration velocity level (L_v), in decibels (VdB), is calculated as follows:

$$L_V = 20\log_{10}\left(\frac{V}{1\times10^{-6}\,in./s}\right),$$

where *V* is the actual rms velocity amplitude and 1×10^{-6} in/s is the reference velocity amplitude.

Since decibels are logarithmic units, vibration velocity levels cannot be added or subtracted by ordinary arithmetic means.

5 Vibration Criteria

Project construction activities can produce two types of potential vibration impact: 1) annoyance or interference with vibration-sensitive activities, and 2) vibration-induced building damage. Neither the City of San Bernardino nor the City of Colton has quantitative standards to address vibration impacts. Therefore, the criteria discussed in the following sections have been used in this study.

5.1 City of San Bernardino Municipal Code

Chapter 19.20.030 prohibits any vibration that is discernible beyond the boundary line of the property.

5.2 City of Colton Municipal Code

Chapter 18.42.050 states that "[a]ll activities shall be operated so as not to generate ground vibration by equipment other than motor vehicles, trains or by temporary construction or demolition, which is perceptible without instruments by the average person at or beyond any lot line of the lot containing the activities".

5.3 Annoyance or Interference with Vibration-Sensitive Activities

Criteria developed by the Federal Transit Administration **[1]** indicate that when ground-borne vibration exceeds 72 VdB, it is usually perceived as annoying to occupants of residential buildings. For schools, churches, other institutions, and quiet offices, a ground-borne vibration level of more than 75 is usually perceived as annoying.

5.4 Vibration-Induced Building Damage

General vibration damage criteria developed by the Federal Transit Administration **[1]** are summarized as follows:

Table 5-1. FTA Construction Vibration Damage Criteria

Building Category	PPV (in/s)
Reinforced concrete, steel or timber (no plaster)	0.5
Engineered concrete and masonry (no plaster)	0.3
Non-engineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.12

Caltrans **[2]** uses the following criteria to evaluate the severity of problems associated with vibration:

Table 5-2. Caltrans Vibration Damage Criteria

Building Category	PPV (in/s)	
	Continuous Sources	Transient Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.08	0.12
Fragile buildings	0.1	0.2
Historic and some old buildings	0.25	0.5
Older residential structures	0.3	0.5
New residential structures	0.5	1.0
Modern industrial/commercial buildings	0.5	2.0

6 Thresholds of Significance

The Project is located within the City of San Bernardino and is also adjacent to the City of Colton. Of these, only the City of Colton has a quantitative noise ordinance standard; therefore, to provide a consistent study, the Colton standard will be applied in assessing impacts of non-transportation noise sources in both jurisdictions. Based on this application of the standard, and the CEQA guidelines, a significant impact will be assessed if the project will result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. This impact will occur if: (1) the exterior L_{dn} due to traffic exceeds 65 dB at new activity areas at SBVC; (2) the interior L_{dn} due to traffic exceeds 45 dB within new buildings at SBVC; (3) project traffic increases the L_{dn} at off-site noise-sensitive properties above 65 dB; (4) construction activities occur outside the hours of 7:00 a.m. to 8:00 p.m.; or (5) project activities generate a 1-hour L_{eq} exceeding 65 dBA at off-site properties.
- Exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels. This impact will occur if project construction causes the vibration velocity level (L_V) to exceed 72 VdB at an adjacent residential building or 75 VdB at an adjacent college building.

Because of the potential for damage, a significant impact will also be assessed if the PPV exceeds 0.2 in/s at any existing residential building or 0.3 in/s at any existing college or commercial building.

- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. This impact will occur if: (1) project traffic increases the L_{dn} at any off-site sensitive receptor by an audible amount of 3 dB or more; or (2) the existing ambient 1-hour L_{eq} is less than 65 dBA at any off-site sensitive receptor and new activity levels at SBVC increase the 1-hour L_{eq} above 65 dBA; or, (3) the existing ambient 1-hour L_{eq} is 65 dBA or greater at any off-site sensitive receptor and new activity noise levels at SBVC increase the 1-hour L_{eq} by 3 dBA or more.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. The only source of temporary or periodic noise associated with the project is construction. This impact will occur if: (1) the existing ambient 1-hour L_{eq} is less than 65 dBA at any off-site sensitive receptor and construction activity levels at SBVC increase the 1-hour L_{eq} above 65 dBA; or (2) the existing ambient 1-hour L_{eq} is 65 dBA or greater at any off-site sensitive receptor and construction activity noise levels at SBVC increase the 1-hour L_{eq} by 3 dBA or more.
- Exposure of persons residing or working in the project area to excessive noise levels as a result of activities at an airport. Since the project site is located well outside the planning boundaries for San Bernardino International Airport, this threshold will not be considered further.

7 Existing Noise Environment

There are two main types of noise source that currently affect the study area. The first is traffic on the local streets; the second is on-site activities. On-site noise sources include: parking activities, athletic fields (including football, soccer, and softball), tennis courts, activities at the Technical Building, and mechanical equipment. Section 7.1 discusses the measurements that were obtained of existing noise levels in the study area (these noise levels were associated primarily with traffic). Section 7.2 addresses the existing traffic noise levels in the study area, and Section 7.3 addresses on-site noise sources. Activities at the campus are passive and do not generate ground-borne vibration or noise levels.

7.1 Noise Measurements

In order to document the existing noise environment, measurements were obtained at three locations throughout the study area. (Refer to Figure 7-1.) At two locations the measurement was obtained for a continuous period of 24 hours; at the third location the measurement was obtained for a period of about 20 minutes. At each location the microphone was positioned at a height of 5 feet above the ground. The results of the noise measurements, provided in Appendix I, are summarized in Table 7-1.

Table 7-1. Summary of Noise Measurements

Location #	Location Description	Measurement Period	Measured 1-Hour L_{eq}, dBA	L_{dn}, dB
1	Alley immediately east of 1662 Virginia Dr.	4:00 PM to 4:24 PM	55.8	Not measured
2	Side yard of 707 K St.	7:00 AM to 8:00 PM 8:00 PM to 7:00 AM	53.9 - 59.4 48.4 - 55.3	59.5
3	Side yard of 958 Grant Ave.	7:00 AM to 8:00 PM 8:00 PM to 7:00 AM	57.9 - 62.5 50.5 - 58.3	62.1

The instrumentation used to obtain the noise measurements consisted of integrating sound level meters (Models 712 and 820) and an acoustical calibrator (Model CAL200) manufactured by Larson Davis Laboratories. The accuracy of the calibrator is maintained through a program established by the manufacturer, and is traceable to the National Bureau of Standards. All instrumentation meets the requirements of the American National Standards Institute (ANSI) S1.4-1971.

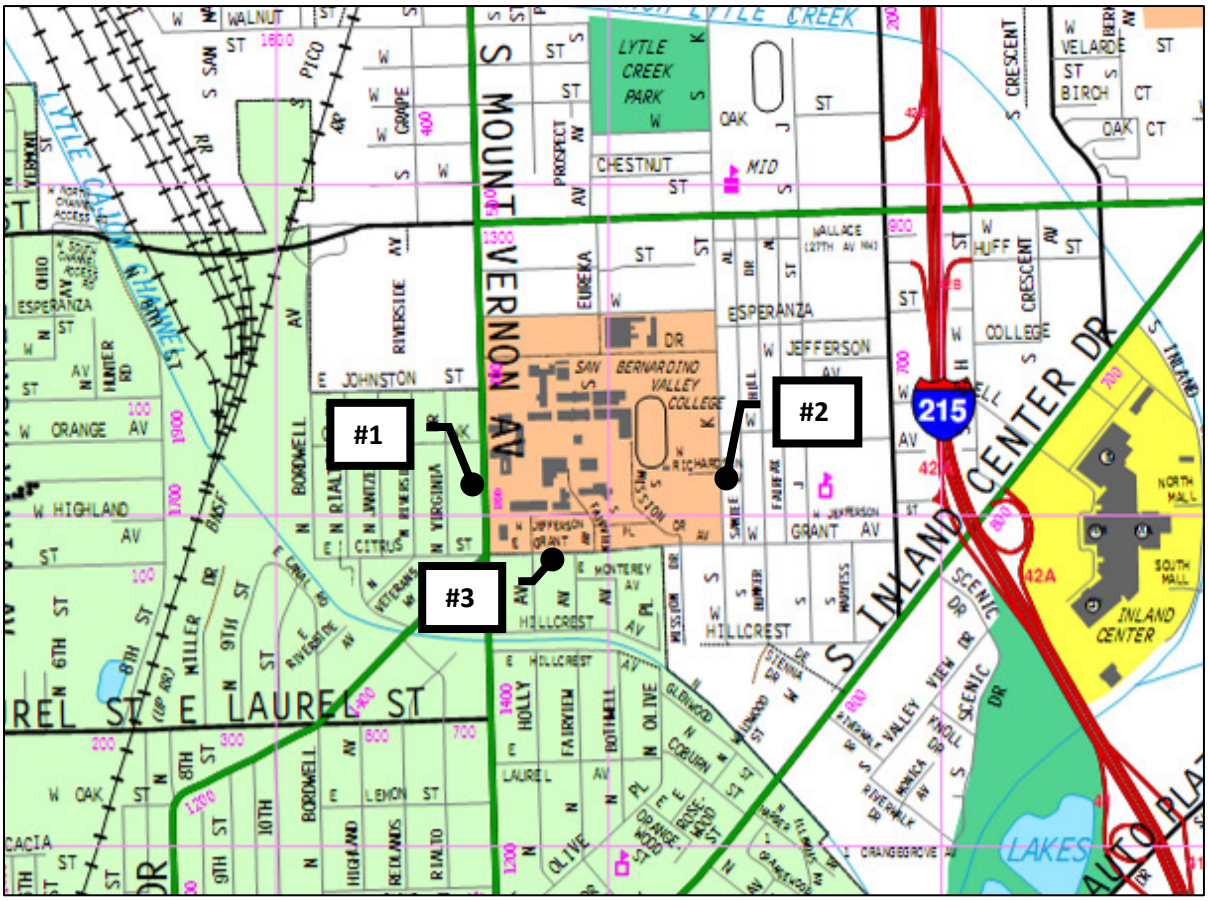


Figure 7-1. Noise Measurement Locations

7.2 Traffic Noise Exposures

The Traffic Noise Model (TNM) lookup tables **[3]** developed by the Federal Highway Administration (FHWA) were used to estimate existing traffic noise levels adjacent to various segments of street in the study area based on traffic volumes, speeds, truck mix, site conditions, and distance from the roadway to the receptor. Traffic data for the model was obtained from Fehr & Peers **[4]**. The results of the modeling effort, provided in Appendix II, are summarized in Table 7-2. At locations that are buffered from the traffic noise by existing block walls, the L_{dn} is about 5 to 6 dB less than the values indicated in the table. Referring to the above table, it is noted that the exterior noise threshold of 65 dB L_{dn} is currently exceeded at residences on Mount Vernon Avenue from south of Colton Avenue to Grant Avenue.

Table 7-2. Existing Traffic Noise Levels

Arterial / Segment	Average Daily Traffic (ADT)	Unmitigated L_{dn} @ Nearest Sensitive Receptor*	Distance to L_{dn} Contour from Roadway Centerline	
			60 dB	65 dB
N. Colton Avenue				
Mt. Vernon Ave. to I St.	3,806	>62.0 dB	49'	--
Esperanza Street				
Mt. Vernon Ave. to Eureka Ave.	1,469	53.4 dB	--	--
Eureka Ave. to K St.	1,719	>55.9 dB	--	--
Grant Avenue				
Mt. Vernon Ave. to Fairview Ave.	4,069	59.5 dB	--	--
Fairview Ave. to K St.	3,566	58.8 dB	--	--
K St. to J St.	3,694	>59.2 dB	--	--
J St. to I St.	3,719	>59.3 dB	--	--
I Street				
Inland Center Dr. to Grant Ave.	4,984	61.2 dB	57'	--
Grant Ave. to Mill St.	1,281	55.9 dB	--	--
Inland Center Drive				
I St. to I-215 SB ramps	7,838	47.4 dB	72'	36'
I-215 SB ramps to I-215 NB ramps	7,066	<38.8 dB	68'	--
East of I-215 NB ramps	8,350	<39.5 dB	75'	38'
J Street				
South of Grant Ave.	131	42.2 dB	--	--
Grant Ave. to Mill St.	825	50.7 dB	--	--
K Street				
South of Grant Ave.	150	43.2 dB	--	--
Grant Ave. to Esperanza St.	2,625	>57.7 dB	--	--
Esperanza St. to Mill St.	4,244	>59.8 dB	--	--
Mill Street				
Mt. Vernon Ave. to Eureka Ave.	5,831	60.3 dB	62'	--
Eureka Ave. to K St.	6,094	63.4 dB	63'	--
Mt. Vernon Avenue				
South of Colton Ave.	8,906	66.3 dB	89'	50'
Colton Ave. to Grant Ave.	9,172	66.0 dB	90'	51'
Grant Ave. to Esperanza St.	9,331	54.8 dB	91'	51'
Esperanza St. to Mill St.	9,666	55.6 dB	92'	52'
North of Mill St.	8,975	62.3 dB	78'	40'

Notes:
"--" signifies that the contour is located less than 35 feet from the roadway centerline
* The TNM Lookup tables only address receptors at distances of between 32 and 980 feet from the roadway centerline. Therefore, where the distance to the nearest sensitive receptor is less than 32 feet, the L_{dn} at the receptor is shown as being greater than (">") the L_{dn} at 32 feet. Likewise, where the distance to the nearest sensitive receptor is greater than 980 feet, the L_{dn} at the receptor is shown as being less than ("<") the L_{dn} at 980 feet.

7.3 On-Site Noise Sources

Existing on-site noise sources include: parking activities, athletic fields (including football, soccer, and softball), tennis courts, and activities at the Technical Building. In order to analyze the existing noise levels due to these sources, it was necessary to simplify the activities into a number of representative operational scenarios. Three operational scenarios were developed using the referenced Master Plan documents and information provided by College staff, the project planner, and the SBVC website. The scenarios were: (1) Daytime campus activities; (2) Spring afternoon sports activities; and (3) Fall afternoon sports activities. For each scenario, assumptions were made regarding which activities would occur simultaneously over a 1-hour period under "worst-case" conditions. Table 7-3 identifies the noise sources and assumptions considered in each scenario.

Table 7-3. Scenarios Considered in the Analysis of On-Site Activities

Noise Source	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Parking lots	1,596 movements	1,596 movements	1,596 movements
Technical Building	Small aircraft engine running for 15 minutes. Large air extraction unit running for entire hour. Repairs occurring on 4 vehicles simultaneously at exterior areas.	Not used	Not used
Softball field	Not used	Crowd size of 50.	Not used
Football field	Not used	Not used	Crowd size of 700. PA system in use.
Soccer field	Not used	Not used	Crowd size of 100.
Tennis courts	Games taking place on 8 courts.	Games taking place on 8 courts.	Games taking place on 8 courts.

Table 7-4 identifies the noise levels used for each of the noise sources identified in Table 7-3, and the sources of the data.

Table 7-4. Noise Levels and Data Sources Used in the Analysis of On-Site Activities

Receiver Location	Sound Power Level	Data Source
Parking lot	63.1 dBA per movement	SoundPLAN 6.5 database
Technical Building	127.6 dBA for aircraft engine	Reference 5
	89.1 dBA for air extraction unit	Measurement, Appendix I
	92.6 dBA per vehicle	Reference 6
Softball field	88.3 dBA per spectator 83.4 dBA per player on field	Reference 7
Soccer field		
Football field		
	+3 dBA correction for PA system at football field	Estimated
Tennis courts	89.2 dBA per court	Reference 8

Based on the assumptions presented in Table 7-3, and using the data presented in Table 7-4, each scenario was analyzed using a computer noise model developed with SoundPLAN software (version

6.5) and the Horizon 1 site layout. (As indicated in Section 1.1, Horizon 1 will be used in this study as the basis for a cumulative impacts analysis.) SoundPLAN takes a number of significant variables into account, including the distance from sources to the receptors, the heights of sources and receptors, the directivity of the noise sources, ground conditions, barrier effects provided by walls or buildings, and reflection of noise off hard surfaces. The results of the analyses are presented as noise contour maps in Appendix III (Figures III-1 through III-3). The values presented in the figures are the estimated 1-hour average noise levels (designated L_{eq}). Table 7-5 summarizes the estimated worst-case noise levels at off-site properties due to on-site operations.

Table 7-5. Summary of Existing Worst-Case Noise Levels Due to On-Site Activities

Receiver location	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Closest properties to the north of SBVC	75 dBA	47 dBA	58 dBA
Closest properties to the east of SBVC	63 dBA	53 dBA	64 dBA
Closest properties to the south of SBVC	55 dBA	48 dBA	58 dBA
Closest properties to the west of SBVC	50 dBA	< 45 dBA	51 dBA
Property immediately adjacent to southwest corner of SBVC	< 45 dBA	< 45 dBA	49 dBA

Referring to Table 7-5, the estimated worst-case 1-hour L_{eq} currently exceeds the threshold of 65 dBA at some of the homes to the north of SBVC during daytime campus activities. The estimated 1-hour L_{eq} at all other receivers is below the threshold of 65 dBA.

8 Future Noise Environment within the Study Area

For ease of presentation, the discussion of future conditions in the study area with the project has been divided into two sections: construction and operation. Each is discussed in greater detail in the following sections.

8.1 Construction

Construction of the project will occur only between 7:00 a.m. and 8:00 p.m. Construction noise levels in the vicinity of the project will fluctuate depending on the particular type, number and duration of use of various pieces of construction equipment. The exposure of persons to the periodic increase in noise levels will be short-term. Table 8-1 shows typical noise levels associated with various types of construction-related machinery.

Table 8-1. Construction Equipment Noise Levels

Equipment Type	Maximum Equipment Noise Level at 50 ft. in dBA
Air Compressor	77.7
Auger Drill Rig	84.4
Backhoe	77.6
Compactor	83.2
Concrete Mixer	78.8
Concrete Pump	81.4
Crane	80.6
Dozer	81.7
Generator	80.6
Grader	85.0
Loader	79.1
Pneumatic Tools	85.2
Pump	80.9
Roller	80.0
Tractor	84.0
Trucks	76.5
Source: *Roadway Construction Noise Model 1.00*. US Dept. of Transportation. February 2, 2006.	

Construction of the proposed project can be divided into two parts: (1) demolition, site clearing and grading, and (2) construction. Since the exact construction schedule, number and type of equipment to be used, and duration of use are not known at this time, the analysis of construction noise levels is based on a number of assumptions, as shown in Table 8-2.

Table 8-2. Estimated Combined Noise Level During Construction

Construction Equipment	Max. Equipment Noise Level @ 50'	Usage Factor[a]	Avg. Equipment Noise Level @ 50' with Usage Factor
Demolition, Site Clearing & Grading			
1 front loader	79.1 dBA	0.4	75.1 dBA
1 backhoe	77.6 dBA	0.4	73.6 dBA
1 dozer	81.7 dBA	0.4	77.7 dBA
1 truck	76.5 dBA	0.4	72.5 dBA
Combined			*81.2 dBA*
Building Construction			
1 truck	76.5 dBA	0.4	72.5 dBA
1 concrete mixer	78.8 dBA	0.4	74.8 dBA
1 concrete pump	81.4 dBA	0.2	74.4 dBA
1 auger drill rig	84.4 dBA	0.2	77.4 dBA
1 crane	80.6 dBA	0.16	72.6 dBA
1 pump	80.9 dBA	0.5	77.9 dBA
1 generator	80.6 dBA	0.5	77.6 dBA
1 compressor	77.7 dBA	0.4	73.7 dBA
Combined			*84.6 dBA*
Note: a. Percentage of time equipment is operating at noisiest mode in most used phase on site.			

Based on the estimated combined construction noise levels identified in Table 8-2, an analysis was conducted to estimate the noise levels that will be experienced at the nearest residential property lines. This analysis is provided in Table 8-3.

Table 8-3. Analysis of Estimated Construction Noise Levels

Nearest Residential Property Line to the…	Construction Phase	Estimated Avg. Level @ 50', dBA	Attenuation Due to Distance, dBA[a]	Estimated Avg. Level @ Sensitive Location, dBA	Ambient Noise Level, 7am to 8pm, dBA	Estimated Construction Noise + Ambient, dBA	Estimated Increase due to Construction, dBA
North	Site Clearing Construction	81.2 84.6	-12.0 (200')	69.2 72.6	53.9-59.4[b]	69.3-69.6 72.7-72.8	10-15 13-19
East	Site Clearing Construction	81.2 84.6	-12.9 (220')	68.3 71.7	53.9-59.4[b]	68.5-68.8 71.8-71.9	9-15 13-18
South	Site Clearing Construction	81.2 84.6	-11.6 (190')	69.6 73.0	57.9-62.5[c]	69.9-70.4 73.1-73.4	8-12 11-15
West	Site Clearing Construction	81.2 84.6	-16.3 (325')	64.9 68.3	55.8[d]	65.4 68.5	10 13

Note:
a. Attenuation is based on a reduction of 6 dB for every doubling of distance from the source. Distance is calculated from the center of the nearest construction site.
b. Based on measured noise levels at Location #2 (see Section 7.1 for measurement details).
c. Based on measured noise levels at Location #3 (see Section 7.1 for measurement details).
d. Based on measured noise levels at Location #1 (see Section 7.1 for measurement details).

Referring to the analysis of Table 8-3, the average noise level produced by construction of the project is expected to increase the ambient noise level above the significance threshold of 65 dBA at all residences in the vicinity of the campus. This is a substantial temporary increase and, therefore, the impact is significant.

The primary vibratory sources during the construction of the project are expected to be large bulldozers and the drill rig for the poured-in-place piles. Based on published data **[1]**, both of these generate an approximate vibration level of 87 VdB and a peak particle velocity (PPV) of 0.089 in/s at a distance of 25 feet. At the distance of the nearest residences to the project site (across Esperanza Street, about 75 feet away) the estimated vibration level will be 73 VdB and the estimated PPV will be 0.017 in/s. The vibration level is marginally above the impact criterion of 72 VdB for residential properties, meaning that ground vibration may be perceptible at times to the residents. However, the impact at these locations is not considered to be significant because of the short duration of the vibration and because the PPV of 0.017 in/s will be well below the level at which damage can occur (0.20 in/s). On the SBVC campus itself, it is possible that vibration will be perceived by occupants of the existing buildings if bulldozers or drill rigs operate within about 63 feet of them. However, the impact is not considered significant because of the short duration of the activity, and because the campus administration will have the authority to stop the construction during classroom hours if the vibration is affecting educational activities. The possibility of affecting existing campus buildings or to the existing commercial building at the northeast corner of Mount Vernon Avenue and Grant Avenue will occur if bulldozers or drill rigs operate within about 11 feet of them. Therefore, this is a potentially significant impact.

8.2 Project Operation

The two main types of noise source associated with project operation are traffic on the local streets and on-site activities. Each type of noise source is discussed separately in the following sections.

8.2.1 Traffic

Based on data provided by Fehr & Peers **[4]**, analyses were conducted to identify the future traffic noise exposures that will occur in the study area, both with and without the project. The results of the analyses are provided in Table 8-4 for the "Horizon 1" case (Year 2010), in Table 8-5 for the "Horizon 2" case (Year 2020), and in Table 8-6 for the "Horizon 3" case (Year 2030). Each table identifies the traffic data used in the analysis and the estimated L_{dn} generated by the traffic. Appendix II provides the complete analysis. Referring to the tables, it may be concluded that:

- The project will increase the traffic-generated L_{dn} by at most 2 dB at off-site sensitive receptors. This is less than the 3 dB threshold of significance; therefore the impact is not significant.
- Project traffic will not increase the L_{dn} above the 65 dB threshold of significance at any residential properties in the study area. Therefore, the impact is not significant.

Table 8-4. Horizon 1 (Year 2010) Traffic Noise Exposure Levels

Arterial / Segment	Average Daily Traffic (ADT)		Unmitigated L_{dn} @ Nearest Sensitive Receptor, dB*		Change in L_{dn} Due to Project, dB
	Without Project	With Project	Without Project	With Project	
N. Colton Avenue					
Mt. Vernon Ave. to I St.	3,959	3,959	>62.2	>62.2	0.0
Esperanza Street					
Mt. Vernon Ave. to Eureka Ave.	1,519	1,497	53.5	53.5	0.0
Eureka Ave. to K St.	1,769	1,728	>56.0	>55.9	-0.1
Grant Avenue					
Mt. Vernon Ave. to Fairview Ave.	4,225	4,219	59.7	59.7	0.0
Fairview Ave. to K St.	3,719	3,738	59.0	59.0	0.0
K St. to J St.	3,834	3,879	>59.4	>59.4	0.0
J St. to I St.	3,859	3,903	>59.4	>59.5	0.1
I Street					
Inland Center Dr. to Grant Ave.	5,172	6,934	61.3	62.6	1.3
Grant Ave. to Mill St.	1,338	1,656	56.1	57.0	0.9
Inland Center Drive					
I St. to I-215 SB ramps	8,138	8,169	47.6	47.6	0.0
I-215 SB ramps to I-215 NB ramps	7,344	7,356	<39.0	<39.0	0.0
East of I-215 NB ramps	8,694	8,694	<39.7	<39.7	0.0
J Street					
South of Grant Ave.	131	131	42.2	42.2	0.0
Grant Ave. to Mill St.	856	856	50.9	50.9	0.0
K Street					
South of Grant Ave.	150	150	43.2	43.2	0.0
Grant Ave. to Esperanza St.	2,684	2,644	>57.8	>57.8	0.0
Esperanza St. to Mill St.	4,409	4,384	>60.0	>60.0	0.0
Mill Street					
Mt. Vernon Ave. to Eureka Ave.	6,056	6,056	60.4	60.4	0.0
Eureka Ave. to K St.	6,344	6,338	63.5	63.5	0.0
Mt. Vernon Avenue					
South of Colton Ave.	9,363	9,363	66.5	66.5	0.0
Colton Ave. to Grant Ave.	9,900	9,900	66.3	66.3	0.0
Grant Ave. to Esperanza St.	10,047	10,041	55.1	55.1	0.0
Esperanza St. to Mill St.	10,438	10,441	56.0	56.0	0.0
North of Mill St.	9,388	9,388	62.5	62.5	0.0

Note:
* The TNM Lookup tables only address receptors at distances of between 32 and 980 feet from the roadway centerline. Therefore, where the distance to the nearest sensitive receptor is less than 32', the L_{dn} at the receptor is shown as being greater than (">") the L_{dn} at 32'. Likewise, where the distance to the nearest sensitive receptor is greater than 980', the L_{dn} at the receptor is shown as being less than ("<") the L_{dn} at 980'.

Table 8-5. Horizon 2 (Year 2020) Traffic Noise Exposure Levels

Arterial / Segment	Average Daily Traffic (ADT)		Unmitigated L_{dn} @ Nearest Sensitive Receptor, dB*		Change in L_{dn} Due to Project, dB
	Without Project	With Project	Without Project	With Project	
N. Colton Avenue					
Mt. Vernon Ave. to I St.	4,831	4,831	>63.1	>63.1	0.0
Esperanza Street					
Mt. Vernon Ave. to Eureka Ave.	1,897	1,806	54.5	54.3	-0.2
Eureka Ave. to K St.	2,238	2,072	>57.0	>56.7	-0.3
Grant Avenue					
Mt. Vernon Ave. to Fairview Ave.	5,478	5,497	60.8	60.8	0.0
Fairview Ave. to K St.	5,013	5,134	60.3	60.4	0.1
K St. to J St.	5,313	5,438	>60.8	>60.9	0.1
J St. to I St.	5,356	5,475	>60.8	>60.9	0.1
I Street					
Inland Center Dr. to Grant Ave.	6,934	7,022	62.6	62.7	0.1
Grant Ave. to Mill St.	1,656	1,681	57.0	57.0	0.0
Inland Center Drive					
I St. to I-215 SB ramps	10,553	10,644	48.7	48.7	0.0
I-215 SB ramps to I-215 NB ramps	9,297	9,331	<40.0	<40.0	0.0
East of I-215 NB ramps	10,669	10,669	<40.6	<40.6	0.0
J Street					
South of Grant Ave.	169	169	43.3	43.3	0.0
Grant Ave. to Mill St.	1,056	1,056	51.8	51.8	0.0
K Street					
South of Grant Ave.	200	200	44.5	44.5	0.0
Grant Ave. to Esperanza St.	3,431	3,278	>58.9	>58.7	-0.2
Esperanza St. to Mill St.	5,497	5,422	>60.9	>60.9	0.0
Mill Street					
Mt. Vernon Ave. to Eureka Ave.	7,413	7,388	61.3	61.3	0.0
Eureka Ave. to K St.	7,763	7,738	64.4	64.4	0.0
Mt. Vernon Avenue					
South of Colton Ave.	11,531	11,531	67.4	67.4	0.0
Colton Ave. to Grant Ave.	12,247	12,244	67.2	67.2	0.0
Grant Ave. to Esperanza St.	12,394	12,363	56.0	56.0	0.0
Esperanza St. to Mill St.	12,841	12,850	56.9	56.9	0.0
North of Mill St.	11,519	11,506	63.4	63.4	0.0

Note:
* The TNM Lookup tables only address receptors at distances of between 32 and 980 feet from the roadway centerline. Therefore, where the distance to the nearest sensitive receptor is less than 32', the L_{dn} at the receptor is shown as being greater than (">") the L_{dn} at 32'. Likewise, where the distance to the nearest sensitive receptor is greater than 980', the L_{dn} at the receptor is shown as being less than ("<") the L_{dn} at 980'.

Table 8-6. Horizon 3 (Year 2030) Traffic Noise Exposure Levels

Arterial / Segment	Average Daily Traffic (ADT)		Unmitigated L_{dn} @ Nearest Sensitive Receptor, dB*		Change in L_{dn} Due to Project, dB
	Without Project	With Project	Without Project	With Project	
N. Colton Avenue					
Mt. Vernon Ave. to I St.	5,781	5,903	>63.9	>64.0	0.1
Esperanza Street					
Mt. Vernon Ave. to Eureka Ave.	3,413	2,091	57.1	54.9	-2.2
Eureka Ave. to K St.	2,606	2,034	>57.7	>56.6	-1.1
Grant Avenue					
Mt. Vernon Ave. to Fairview Ave.	7,231	6,713	62.0	61.7	-0.3
Fairview Ave. to K St.	6,069	6,328	61.1	61.3	0.2
K St. to J St.	5,531	7,256	>61.0	>62.2	1.2
J St. to I St.	6,494	7,291	>61.7	>62.2	0.5
I Street					
Inland Center Dr. to Grant Ave.	8,025	9,122	63.3	63.8	0.5
Grant Ave. to Mill St.	2,275	2,113	58.4	58.0	-0.4
Inland Center Drive					
I St. to I-215 SB ramps	12,138	13,544	49.3	49.8	0.5
I-215 SB ramps to I-215 NB ramps	12,131	11,694	<41.2	<41.0	-0.2
East of I-215 NB ramps	13,019	13,069	<41.5	<41.5	0.0
J Street					
South of Grant Ave.	206	206	44.2	44.2	0.0
Grant Ave. to Mill St.	1,275	1,275	52.6	52.6	0.0
K Street					
South of Grant Ave.	231	231	45.1	45.1	0.0
Grant Ave. to Esperanza St.	4,606	4,250	>60.2	>59.8	-0.4
Esperanza St. to Mill St.	4,175	6,738	>59.8	>61.8	2.0
Mill Street					
Mt. Vernon Ave. to Eureka Ave.	9,050	9,113	62.2	62.2	0.0
Eureka Ave. to K St.	10,763	9,494	65.8	65.3	-0.5
Mt. Vernon Avenue					
South of Colton Ave.	15,819	14,175	68.8	68.3	-0.5
Colton Ave. to Grant Ave.	14,338	15,091	67.9	68.1	0.2
Grant Ave. to Esperanza St.	14,656	15,088	56.7	56.8	0.1
Esperanza St. to Mill St.	15,638	15,706	57.7	57.7	0.0
North of Mill St.	14,050	14,106	64.2	64.3	0.1

Note:
* The TNM Lookup tables only address receptors at distances of between 32 and 980 feet from the roadway centerline. Therefore, where the distance to the nearest sensitive receptor is less than 32', the L_{dn} at the receptor is shown as being greater than (">") the L_{dn} at 32'. Likewise, where the distance to the nearest sensitive receptor is greater than 980', the L_{dn} at the receptor is shown as being less than ("<") the L_{dn} at 980'.

8.2.2 On-Site Noise Sources

In order to analyze future on-site noise sources, the three operational scenarios described in Section 7.3 (daytime campus activities, spring afternoon sports activities, and fall afternoon sports activities) were revised to reflect future conditions under each of the project Horizons. The scenarios were revised based on the referenced Master Plan documents, and information provided by College staff and the project planner. Tables 8-7 through 8-9 identify the noise sources and assumptions considered in each scenario for Horizons 1 through 3.

Table 8-7. Scenarios Considered in the Analysis of On-Site Activities, Horizon 1

Noise Source	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Parking lots	1,596 movements	1,596 movements	1,596 movements
Technical Building	Small aircraft engine running for 15 minutes. Large air extraction unit running for entire hour. Repairs occurring on 4 vehicles simultaneously at exterior areas.	Not used	Not used
Softball field	Not used	Crowd size of 50.	Not used
Football field	Not used	Not used	Crowd size of 700. PA system in use.
Soccer field	Not used	Not used	Crowd size of 100.
Tennis courts	Games taking place on 8 courts.	Games taking place on 8 courts.	Games taking place on 8 courts.

Table 8-8. Scenarios Considered in the Analysis of On-Site Activities, Horizon 2

Noise Source	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Parking lots	1,800 movements	1,800 movements	1,800 movements
Technical Building	Small aircraft engine running for 15 minutes at center of exterior area south of new bldg. Large air extraction unit running for entire hour on south wall of new bldg. Repairs occurring on 4 vehicles simultaneously at exterior area south of new bldg.	Not used	Not used
Softball field	Not used	Crowd size of 200.	Not used
Football field	Not used	Not used	Crowd size of 2,000 (1,350 on home bleachers, 650 on away bleachers). PA system in use.
Soccer field	Not used	Not used	Crowd size of 300.
Tennis courts	Not used (no outdoor courts exist in this Horizon).	Not used (no outdoor courts exist in this Horizon).	Not used (no outdoor courts exist in this Horizon).

Table 8-9. Scenarios Considered in the Analysis of On-Site Activities, Horizon 3

Noise Source	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Parking lots	2,040 movements	2,040 movements	2,040 movements
Technical Building	Small aircraft engine running for 15 minutes at center of exterior area south of bldg. Large air extraction unit running for entire hour on south wall of bldg. Repairs occurring on 4 vehicles simultaneously at exterior area south of bldg.	Not used	Not used
Softball field	Not used	Crowd size of 200.	Not used
Football field	Not used	Not used	Crowd size of 2,000 (1,350 on home bleachers, 650 on away bleachers). PA system in use.
Soccer field	Not used	Not used	Crowd size of 300.
Tennis courts	Games taking place on 8 courts.	Games taking place on 8 courts.	Games taking place on 8 courts.

It is noted that there are a number of other noise sources associated with the campus that have not been addressed quantitatively in this study. The following list provides a brief summary of these noise sources along with the reason(s) they were not included directly in the noise modeling.

- *Central Plant*. The new central plant was not included in the noise modeling because no information is available on the type of mechanical equipment that will be used. It is noted, however, that the central plant is considered in the noise mitigation measures of Section 11.
- *Campus Events*. Campus events are on-site events that vary in scope and size. Larger events include Homecoming and pep rallies, and smaller events include Awareness Week events, and health, career or job fairs. Smaller events were not analyzed because these types of events already occur at the campus, so they are simply a continuation of an existing use. Larger events were not analyzed because, based on information provided by SBVC staff, they will either be held inside the gymnasium buildings (so that the building can be used to control the noise) or at the Greek theater (where large events already take place, see below).
- *Greek Theater*. The Greek Theater currently hosts concerts and other events which include amplified speech and music. It will continue to host such events in the future. Therefore, it was not included in the noise modeling because it represents the continuation of an existing use.
- *Baseball Field*. The baseball field has not been included in the noise modeling because there will be no changes to its operation, and so it represents a continuation of an existing use.
- *Middle College*. The Middle College will be demolished and relocated as part of Horizon 2. There are no significant noise sources associated with the operation of the Middle College; therefore, it has not been included in the noise modeling.

The noise levels used for each of the noise sources identified in Tables 8-7 through 8-9 are provided in Table 7-4 (see Section 7.3). The SoundPLAN computer noise model discussed in Section 7.3 was revised and re-run to analyze each of the future scenarios under each Horizon. The results of the analyses are presented as noise contour maps in Appendix III. Figures III-4 through III-6 provide the Horizon 1 results, Figures III-7 through III-9 provide the Horizon 2 results, and Figures III-10 through III-12 provide the Horizon 3 results. The values presented in the figures are the estimated 1-hour average noise levels (designated L_{eq}).

In order to estimate the noise increases due to the project, the SoundPLAN software was used to generate noise difference maps between consecutive Horizons for each scenario. These maps, presented in Appendix III, illustrate the noise increase associated with each scenario. Figures III-13 through III-15 address changes from Horizon 1 without Parking Structure 1 to Horizon 1 with Parking Structure 1, Figures III-16 through III-18 address changes from Horizon 1 to Horizon 2, and Figures III-19 through III-21 address changes from Horizon 2 to Horizon 3.

The results of the analyses for each Horizon are summarized in the following sections:

8.2.2.1 Horizon 1

Table 8-10 summarizes the estimated worst-case 1-hour average noise levels at off-site properties due to on-site operations for Horizon 1.

Table 8-10. Summary of Worst-Case Noise Levels Due to Horizon 1 On-Site Activities

Receiver location	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Closest properties to the north	75 dBA	47 dBA	58 dBA
Closest properties to the east	63 dBA	53 dBA	64 dBA
Closest properties to the south	55 dBA	47 dBA	57 dBA
Closest properties to the west	50 dBA	< 45 dBA	51 dBA
Property immediately adjacent to southwest corner of SBVC	< 45 dBA	< 45 dBA	49 dBA

Referring to Table 8-10, Horizon 1 noise levels will exceed the 1-hour L_{eq} threshold of 65 dBA at some of the homes to the north of SBVC during daytime campus activities. However, this is not a significant impact because the estimated noise level of 75 dBA is associated with existing campus activities (refer to Table 7-5, Section 7.3) and not with the Horizon 1 project (i.e., Parking Structure 1). The noise levels at all other receivers and for all other scenarios will be below the threshold of 65 dBA. Therefore, Horizon 1 activities will not result in the generation of noise levels in excess of local standards and the impact will not be significant.

Table 8-11 summarizes the estimated worst-case noise increases at off-site properties due to on-site operations for Horizon 1 (as noted previously, the increases were estimated by calculating the difference between the Horizon 1 noise levels with and without Parking Structure 1 for each scenario).

Table 8-11. Summary of Worst-Case Noise Increases Due to Horizon 1 On-Site Activities

Receiver location	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Closest properties to the north	0 dBA	0 dBA	0 dBA
Closest properties to the east	1 dBA	1 dBA	1 dBA
Closest properties to the south	1 dBA	1 dBA	1 dBA
Closest properties to the west	0 dBA	0 dBA	1 dBA
Property immediately adjacent to southwest corner of SBVC	0 dBA	0 dBA	1 dBA

Note: The increases identified above are not obtained by subtracting the values indicated in Table 7-5 from the values indicated in Table 8-10. While Table 7-5 identifies the highest (i.e., worst-case) existing noise level that occurs at any residence to the north (for example), and Table 8-10 provides the same information for Horizon 1 with the parking structure, the location at which the highest noise level occurs is not necessarily the same in each case. This is because the barrier effects of the existing buildings are different at different residences. For this reason, the values indicated above in Table 8-11 are the largest (i.e., worst-case) increases that will occur at any residence to the north (for example), and do not necessarily represent the same locations considered in Tables 7-5 and 8-10.

Table 8-12 summarizes the assessment of impact for the noise increases due to Horizon 1 on-site activities. Referring to the table, Horizon 1 on-site activities will not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project and the impact will be less than significant.

Table 8-12. Assessment of Impact for Noise Increases Due to Horizon 1 On-Site Activities

Receiver location	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Closest properties to the north	No Impact[a]	No Impact[a]	No Impact[a]
Closest properties to the east	Less than significant[b]	Less than significant[b]	Less than significant[b]
Closest properties to the south	Less than significant[b]	Less than significant[b]	Less than significant[b]
Closest properties to the west	No Impact[a]	No Impact[a]	Less than significant[b]
Property immediately adjacent to southwest corner of SBVC	No Impact[a]	No Impact[a]	Less than significant[b]

Notes:
a. No impact because there is no noise increase.
b. Impact is less than significant because the noise increase does not result in noise levels above 65 dBA.

8.2.2.2 Horizon 2

Table 8-13 summarizes the estimated worst-case noise levels at off-site properties due to on-site operations for Horizon 2.

Table 8-13. Summary of Worst-Case Noise Levels Due to Horizon 2 On-Site Activities

Receiver location	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Closest properties to the north	55 dBA	57 dBA	64 dBA
Closest properties to the east	79 dBA	54 dBA	68 dBA
Closest properties to the south	59 dBA	47 dBA	50 dBA
Closest properties to the west	55 dBA	46 dBA	59 dBA
Property immediately adjacent to southwest corner of SBVC	47 dBA	< 45 dBA	51 dBA

Referring to Table 8-13, Horizon 2 activities will increase the 1-hour L_{eq} above threshold of 65 dBA at some of the homes to the east of SBVC during both daytime campus activities and fall afternoon sports activities. Therefore, Horizon 2 activities will result in the generation of noise levels in excess of local standards and the impact is significant at these locations under these two scenarios. The noise levels at all other receivers and for all other scenarios will be below the threshold of 65 dBA. Therefore, the impact at these locations is not significant.

Table 8-14 summarizes the estimated worst-case noise increases at off-site properties due to on-site operations for Horizon 2 (as noted previously, the increases were estimated by calculating the difference between the Horizon 1 noise levels and the Horizon 2 noise levels for each scenario).

Table 8-14. Summary of Worst-Case Noise Increases Due to Horizon 2 On-Site Activities

Receiver location	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Closest properties to the north	4 dBA	> 15 dBA	15 dBA
Closest properties to the east	>15 dBA	13 dBA	9 dBA
Closest properties to the south	>15 dBA	7 dBA	10 dBA
Closest properties to the west	9 dBA	10 dBA	6 dBA
Property immediately adjacent to southwest corner of SBVC	6 dBA	8 dBA	4 dBA

Note: The increases identified above are not obtained by subtracting the values indicated in Table 8-10 from the values indicated in Table 8-13. While Table 8-10 identifies the highest (i.e., worst-case) noise level that will occur at any residence to the north (for example) with Horizon 1, and Table 8-13 provides the same information for Horizon 2, the location at which the highest noise level occurs for each Horizon is not necessarily the same. This is because noise sources are relocated, new noise sources are included, and/or buildings that once acted as barriers to some of the noise sources are demolished in Horizon 2. For these reasons, the values indicated above in Table 8-14 are the largest (i.e., worst-case) increases that will occur at any residence to the north (for example), and do not necessarily represent the same locations considered in Tables 8-10 and 8-13.

Table 8-15 summarizes the assessment of impact for the noise increases due to Horizon 2 on-site activities. Referring to the table, Horizon 2 on-site activities will result in a substantial permanent increase in ambient noise levels above levels existing without the project at some of the homes to the east of SBVC; this impact will be significant. At all other locations, the impact is less than significant.

Table 8-15. Assessment of Impact for Noise Increases Due to Horizon 2 On-Site Activities

Receiver location	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Closest properties to the north	Less than significant[a]	Less than significant[a]	Less than significant[a]
Closest properties to the east	**Significant Impact**[b]	Less than significant[a]	**Significant Impact**[b]
Closest properties to the south	Less than significant[a]	Less than significant[a]	Less than significant[a]
Closest properties to the west	Less than significant[a]	Less than significant[a]	Less than significant[a]
Property immediately adjacent to southwest corner of SBVC	Less than significant[a]	Less than significant[a]	Less than significant[a]

Notes:
a. Impact is less than significant because the noise increase does not result in noise levels above 65 dBA.
b. Impact is significant because noise is increased from below 65 dBA to above 65 dBA.

8.2.2.3 Horizon 3

Table 8-16 summarizes the estimated worst-case noise levels at off-site properties due to on-site operations for Horizon 3.

Table 8-16. Summary of Worst-Case Noise Levels Due to Horizon 3 On-Site Activities

Receiver location	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Closest properties to the north	54 dBA	57 dBA	60 dBA
Closest properties to the east	79 dBA	54 dBA	68 dBA
Closest properties to the south	58 dBA	47 dBA	59 dBA
Closest properties to the west	55 dBA	46 dBA	51 dBA
Property immediately adjacent to southwest corner of SBVC	53 dBA	< 45 dBA	48 dBA

Referring to Table 8-16, Horizon 3 noise levels will exceed the 1-hour L_{eq} threshold of 65 dBA at some of the homes to the east of SBVC during both daytime campus activities and fall afternoon sports activities. However, this is not a significant impact because the estimated noise levels of 79 and 68 dBA are associated with Horizon 2 activities (refer to Table 8-13, Section 8.2.2.2) and not with the Horizon 3 project. The noise levels at all other receivers and for all other scenarios will be below the threshold of 65 dBA. Therefore, Horizon 3 activities will not result in the generation of noise levels in excess of local standards and the impact will not be significant.

Table 8-17 summarizes the estimated worst-case noise increases at off-site properties due to on-site operations for Horizon 3 (as noted previously, the increases were estimated by calculating the difference between the Horizon 2 noise levels and the Horizon 3 noise levels for each scenario).

Table 8-17. Summary of Worst-Case Noise Increases Due to Horizon 3 On-Site Activities

Receiver location	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Closest properties to the north	8 dBA	4 dBA	1 dBA
Closest properties to the east	1 dBA	3 dBA	1 dBA
Closest properties to the south	1 dBA	1 dBA	1 dBA
Closest properties to the west	9 dBA	3 dBA	2 dBA
Property immediately adjacent to southwest corner of SBVC	9 dBA	5 dBA	1 dBA

Note: The increases identified above are not obtained by subtracting the values indicated in Table 8-13 from the values indicated in Table 8-16. While Table 8-13 identifies the highest (i.e., worst-case) noise level that will occur at any residence to the north (for example) with Horizon 2, and Table 8-16 provides the same information for Horizon 3, the location at which the highest noise levels occurs for each Horizon is not necessarily the same. This is because noise sources are relocated, new noise sources are included, and/or buildings that once acted as barriers to some of the noise sources are demolished in Horizon 3. For these reasons, the values indicated above in Table 8-17 are the largest (i.e., worst-case) increases that will occur at any residence to the north (for example), and do not necessarily represent the same locations considered in Tables 8-13 and 8-17.

Table 8-18 summarizes the assessment of impact for the noise increases due to Horizon 3 on-site activities. Referring to the table, Horizon 3 on-site activities will not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project and the impact will be less than significant.

Table 8-18. Assessment of Impact for Noise Increases Due to Horizon 3 On-Site Activities

Receiver location	Scenario		
	Daytime Campus	Spring Afternoon Sports	Fall Afternoon Sports
Closest properties to the north	Less than significant[a]	Less than significant[a]	Less than significant[a]
Closest properties to the east	Less than significant[b,c]	Less than significant[a]	Less than significant[b,c]
Closest properties to the south	Less than significant[a]	Less than significant[a]	Less than significant[a]
Closest properties to the west	Less than significant[a]	Less than significant[a]	Less than significant[a]
Property immediately adjacent to southwest corner of SBVC	Less than significant[a]	Less than significant[a]	Less than significant[a]

Notes:
a. Impact is less than significant because the noise increase does not result in noise levels above 65 dBA.
b. Impact is less than significant because the noise increase does not result in noise levels above 65 dBA at any locations that previously experienced noise levels below 65 dBA.
c. Impact is less than significant because the 1-hour L_{eq} does not increase by 3 dBA or more at any locations with previous noise levels of 65 dBA or higher.

9 Future Noise Environment at the Project Site

For ease of presentation, the discussion of future noise impacts at the SBVC site has been divided into two sections: exterior and interior noise levels.

9.1 Exterior Noise Levels

Based on data provided by Fehr & Peers **[4]**, an analysis was conducted to identify the future traffic noise exposures that will occur at the campus for the "Horizon 3" case (Year 2030). The results of

the analysis are provided in Appendix II and summarized in Table 9-1. Referring to the table, the L_{dn} is expected to be less than the threshold of 65 dB for a school site at all proposed buildings and outdoor activity areas except at Building 25 (Liberal Arts) adjacent to Mount Vernon Avenue, where the L_{dn} will be marginally higher at about 65.2 dB. However, since there are no outdoor activity areas associated with Building 25, the impact is not significant.

Table 9-1. Horizon 3 (Year 2030) Traffic Noise Exposure Levels at SBVC

Arterial / Segment	Average Daily Traffic (ADT)	Unmitigated L_{dn} @ Nearest Sensitive Receptor*	Distance to L_{dn} Contour from Roadway Centerline	
			60 dB	65 dB
Esperanza Street				
Mt. Vernon Ave. to Eureka Ave.	2,091	50.7 dB	--	--
Eureka Ave. to K St.	2,034	56.3 dB	--	--
Grant Avenue				
Mt. Vernon Ave. to Fairview Ave.	6,713	54.0 dB	48'	--
Fairview Ave. to K St.	6,328	56.4 dB	46'	--
K Street				
Grant Ave. to Esperanza St.	4,250	>59.8 dB	--	--
Mt. Vernon Avenue				
Grant Ave. to Esperanza St.	15,088	65.2 dB	114'	66'

Notes:
"--" signifies that the contour is located less than 35 feet from the roadway centerline
* The TNM Lookup tables only address receptors at distances of between 32 and 980 feet from the roadway centerline. Therefore, where the distance to the nearest receptor is less than 32 feet, the L_{dn} at the receptor is shown as being greater than (">") the L_{dn} at 32 feet. Likewise, where the distance to the nearest receptor is greater than 980 feet, the L_{dn} at the receptor is shown as being less than ("<") the L_{dn} at 980 feet.

9.2 Interior Noise Levels

It has been assumed in this study that standard construction provides at least 20 dB of noise reduction with windows and doors closed. As indicated in the previous section, Building 25 will be exposed to an L_{dn} of about 65.2 dB. Based on the assumption identified above, it is estimated that the interior L_{dn} will be about 45.2 dB with windows and doors closed. Since this marginally exceeds the threshold of 45 dB, the impact is potentially significant. At all other proposed buildings the interior L_{dn} will be less than 45 dB; therefore, the impact is not significant at these locations.

10 Assessment of Impact

Using the criteria established in this study, the following summarizes the impacts associated with the proposed project:

- The project will result in the exposure of persons to generation of noise levels in excess of the thresholds of significance. This significant impact will occur at the Liberal Arts Building (Building 25) where future interior on-site traffic noise levels will marginally exceed 45 dB L_{dn}. The project will also result in the exposure of persons to generation of noise levels in excess of standards established in the local noise ordinance. This significant impact will occur at homes to the east of SBVC with Horizon 2.

- Project construction may result in the exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels. This potentially significant impact may occur at existing campus buildings or at the existing commercial building at the northeast corner of Mount Vernon Avenue and Grant Avenue if bulldozers or drill rigs operate within about 11 feet of them.
- The project will result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. This significant impact will occur as a result of campus activities associated with Horizon 2, and will occur at homes to the east of SBVC.
- Project construction will result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. This significant impact will occur at all residences in the vicinity of the campus.

11 Mitigation Measures

The following measures are recommended to mitigate the significant or potentially significant noise impacts associated with traffic noise at the project site, operational noise generated by the Technical Building and central plant, and construction-generated vibration.

1. Mechanical ventilation shall be installed at all new SBVC buildings since the interior threshold of 45 dB L_{dn} is to be met with windows and doors closed.
2. An acoustical study shall be required for Building 25 (Liberal Arts) to verify that the building has been properly designed to comply with the L_{dn} threshold of 45 dB for interior areas. The design features required to achieve the noise threshold may include one or more of the following elements, as verified by the acoustical study: sound-rated windows and doors, orientation of windows relative to Mount Vernon Avenue, upgraded exterior wall and/or roof construction, insulation batts, and/or forced air ventilation.
3. An acoustical analysis shall be required for the future Technical Building to verify that noise from the facility (including auto maintenance and repair, aircraft engine testing, fans and other mechanical equipment) does not exceed a 1-hour L_{eq} of 65 dBA at noise-sensitive offsite receptors. The design features necessary to achieve this requirement may include one or more of the following elements, as verified by the acoustical study: noise barriers, locating activities inside the building, upgrading the design of the building to increase noise reduction, locating noisy activities away from the nearby homes, and providing silencers for air extraction fans.
4. An acoustical analysis shall be required for the future central plant to verify that the overall noise level generated by the mechanical equipment (i.e., air conditioners, heat pumps, refrigeration equipment, etc.) does not exceed a 1-hour L_{eq} of 65 dBA at noise-sensitive offsite receptors. The design features necessary to achieve this requirement may include one or more of the following elements, as verified by the acoustical study: selecting quieter equipment, adding or upgrading silencers, improving the design of mechanical penthouses, raising the height of rooftop parapet walls, placing equipment inside a building, and/or installing screen walls around individual equipment items.

5. To avoid potential building damage due to vibration from heavy construction equipment (bulldozers or drill rigs) the following measures shall be implemented when use of such equipment will take place within 11 feet of existing buildings:
    a. Qualified structural and geotechnical engineers shall review the peak vibration velocities estimated in this report, and determine if there are any risks to the building, including possible risks from dynamic soil settlement induced by the vibration. If the structural or geotechnical engineers identify any potential risks, they shall take all necessary steps to protect the building including, but not limited to, photographing and/or videotaping the building in order to provide a record of the existing conditions before construction.
    b. If considered appropriate by a qualified structural engineer or geotechnical engineer, an engineer shall be on-site during the construction activities and perform such tests and observations as are necessary to ensure the structural stability of the building. This may include vibration measurements obtained inside or outside of the building.

12 Abatement Measures

The following abatement measures are recommended in order to reduce, to the extent feasible, the noise levels associated with project construction, and sporting events.

1. Construction and demolition shall not be permitted except between the hours of 7:00 a.m. and 8:00 p.m.
2. Where feasible, temporary solid noise barriers or berms shall be erected between construction equipment and sensitive off-site receptors.
3. Construction storage areas shall be located away from sensitive receptors. Where this is not possible, the storage of waste materials, earth, and other supplies shall be positioned in a manner that will function as a noise barrier to the closest sensitive receivers.
4. All construction equipment shall be equipped with properly operating mufflers of a type recommended by the manufacturer.
5. Noisy construction equipment items shall be located as far as practicable from the surrounding residential properties and campus buildings.
6. The quietest construction equipment owned by the contractor shall be used. The use of electric powered equipment is typically quieter than diesel, and hydraulic powered equipment is quieter than pneumatic power. If compressors powered by diesel or gasoline engines are to be used, they shall be contained or have baffles to help abate noise levels.
7. All construction equipment shall be properly maintained. Poor maintenance of equipment typically causes excessive noise levels.
8. Noisy construction equipment shall be operated only when necessary, and shall be switched off when not in use.
9. Notice shall be posted prior to construction identifying the location and dates of construction, and the name and phone number of a contact person at SBVC in case of complaints. The notice

shall encourage the residents to call SBVC's contact person rather than the police in case of complaint. The notice shall inform residents of any changes to the schedule. The designated contact person shall be on site throughout project construction with a mobile phone. If a complaint is received, SBVC's contact person shall take whatever reasonable steps are necessary to resolve the complaint.

10. Bleacher seating on the east side of the football field may be close-backed to provide a barrier to crowd noise. The backing material may extend at least 5 feet above the level of the highest seats in each bleacher so that a barrier is also provided for noise from the higher seating levels.

13 Significant Unavoidable Impacts

It is not considered feasible to mitigate construction noise levels such that they will not increase the 1-hour L_{eq} from less than 65 dBA to more than 65 dBA at all sensitive receptors in the project vicinity. However, it is noted that the recommendations provided in Section 12 (abatement measures 1 through 9) will control construction noise to the extent practicable. Furthermore, construction noise will be temporary, will diminish over the course of construction, and will cease entirely at the completion of the project.

It is not considered feasible to mitigate the noise impacts associated with future sporting events at the project site because, by their nature, these are outdoor events that are intended to attract large crowds. These facilities cannot be readily enclosed; shielding them would require significant solid noise barriers (both in terms of height and length). While the Master Plan provides reconfiguration and/or upgrade to sports facilities, it is noted that these noise sources already exist at SBVC and would continue with or without the Master Plan Project. Nevertheless, during future sporting events there would be a substantial permanent increase in ambient noise levels above levels existing without the project at some of the homes to the east of SBVC. Abatement Measure number 10 in Section 12 would provide some reduction in the noise levels associated with outdoor sporting events. However, even with this measure, noise from outdoor sporting events would continue to be significant and unavoidable.

14 References

1. *Transit Noise and Vibration Impact Assessment*. U.S. Department of Transportation/Federal Transit Administration (FTA-VA-90-1003-06). May 2006.
2. *Transportation- and Construction-Induced Vibration Guidance Manual.* Jones & Stokes (J&S 02-039). Contract No. 43A0049 for California Department of Transportation, Noise, Vibration, and Hazardous Waste Management Office, Sacramento, CA. June 2004.
3. TNM Version 2.5 Look-Up Tables. Federal Highway Administration.
4. *San Bernardino Valley College Master Plan Draft Transportation Impact Study*. Fehr & Peers. June 2009.
5. http://cafefoundation.org/v2/pav_enablingtech_noisetech.php.

6. *Acoustical Evaluation for the Two J's Auto Body Shop, 9301 Beverly Road, Pico Rivera, CA*. Wieland Acoustics, Inc. May 19, 2004.
7. *Environmental Noise Study for the Proposed Master Plan Improvements at Four Schools in the City of Costa Mesa.* Wieland Acoustics, Inc. May 20, 2009.
8. *Environmental Noise Study for the Proposed El Camino Real Park Renovation in the City of Orange*. Wieland Acoustics, Inc. September 13, 2004.

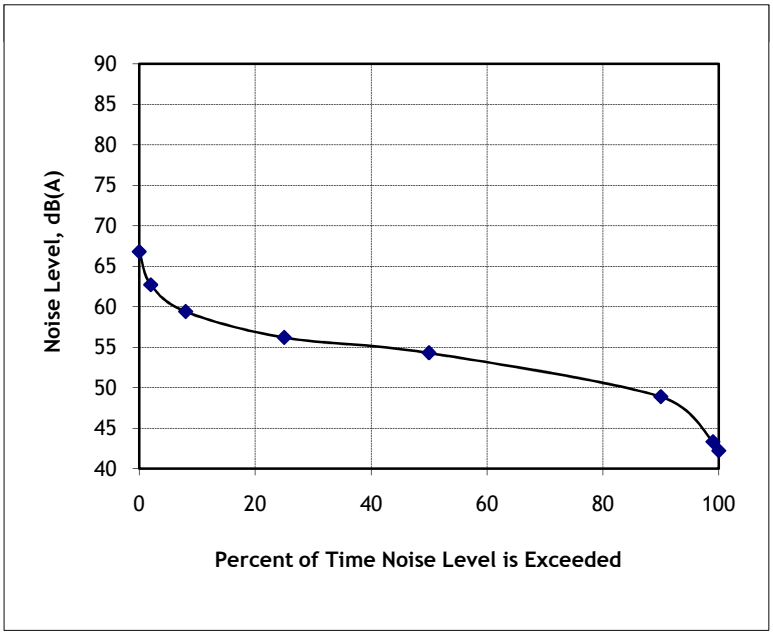
APPENDIX I

Noise Measurements

Table I-1. Noise Survey

Project:	SBVC Master Plan
Position:	Location #1, Dirt road behind 1662 Virginia Drive
Date:	October 29, 2008
Time:	Noted
Noise Source:	Traffic on S. Mount Vernon Avenue
Distance:	
SLM Height:	5'
LD 820 S/N:	0996
LD CAL200 Calibrator S/N:	2966
Operator:	T. Corbishley

	Measurement Period		
	4:00 PM to 4:24 PM	to	to
n*	**Ln**	**Ln**	**Ln**
2	62.7		
8	59.4		
25	56.2		
50	54.3		
90	48.9		
99	43.3		
Leq	55.8		
Lmax	66.8		
Lmin	42.2		



* Leq is the average sound level during the measurement period.
Ln is the sound level exceeded n% of the time during the measurement period.
Lmax and Lmin are the maximum and minimum sound levels during the measurement period.

Table I-2. Measured Hourly Noise Levels and Ldn

Project: SBVC Master Plan

Location: Location #2, Side yard of 707 K Street

Date: October 29/30, 2008

Measurement Period	Hourly Noise Level, dB(A)		Measurement Period	Hourly Noise Level, dB(A)
12:00 am - 1:00 am	49.6		12:00 pm - 1:00 pm	56.7
1:00 am - 2:00 am	48.4		1:00 pm - 2:00 pm	55.0
2:00 am - 3:00 am	48.4		2:00 pm - 3:00 pm	56.8
3:00 am - 4:00 am	50.2		3:00 pm - 4:00 pm	57.8
4:00 am - 5:00 am	54.0		4:00 pm - 5:00 pm	55.9
5:00 am - 6:00 am	54.3		5:00 pm - 6:00 pm	59.1
6:00 am - 7:00 am	55.3		6:00 pm - 7:00 pm	56.2
7:00 am - 8:00 am	59.3		7:00 pm - 8:00 pm	53.9
8:00 am - 9:00 am	58.1		8:00 pm - 9:00 pm	55.0
9:00 am - 10:00 am	57.2		9:00 pm - 10:00 pm	52.1
10:00 am -11:00 am	59.4		10:00 pm - 11:00 pm	50.6
11:00 am - 12:00 pm	55.6		11:00 pm - 12:00 am	49.6
			Ldn	***59.5***

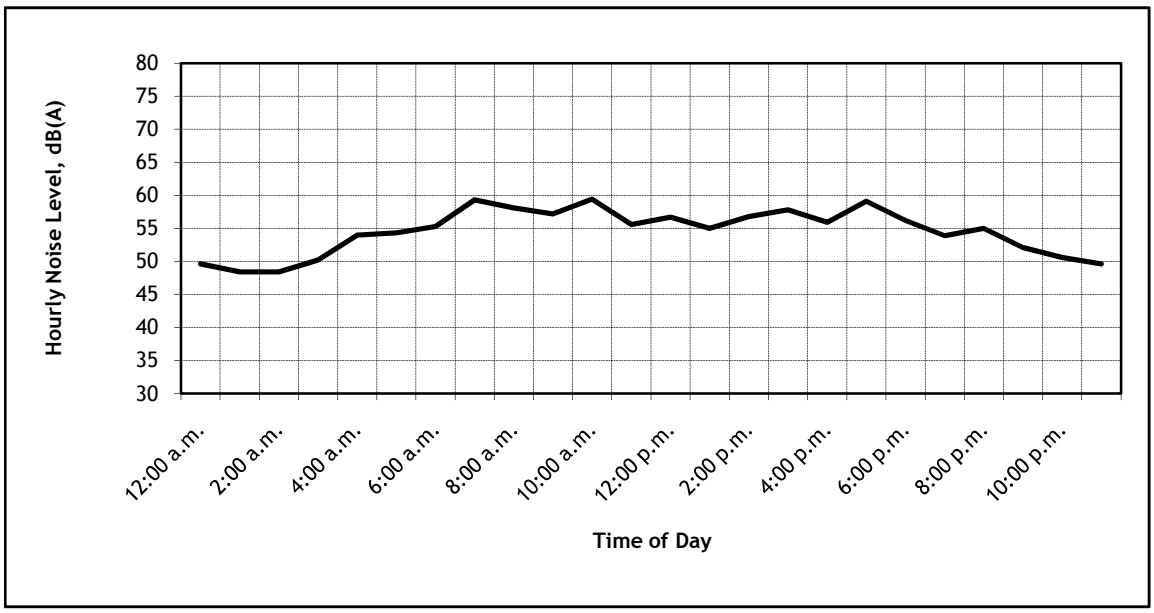


Table I-3. Measured Hourly Noise Levels and Ldn

Project: SBVC Master Plan

Location: Location #3, Side yard of 958 Grant Avenue

Date: October 29/30, 2008

Measurement Period	Hourly Noise Level, dB(A)		Measurement Period	Hourly Noise Level, dB(A)
12:00 am - 1:00 am	52.2		12:00 pm - 1:00 pm	58.7
1:00 am - 2:00 am	52.0		1:00 pm - 2:00 pm	58.1
2:00 am - 3:00 am	50.5		2:00 pm - 3:00 pm	59.4
3:00 am - 4:00 am	51.5		3:00 pm - 4:00 pm	59.2
4:00 am - 5:00 am	53.5		4:00 pm - 5:00 pm	58.6
5:00 am - 6:00 am	55.0		5:00 pm - 6:00 pm	62.4
6:00 am - 7:00 am	58.3		6:00 pm - 7:00 pm	59.6
7:00 am - 8:00 am	62.5		7:00 pm - 8:00 pm	57.9
8:00 am - 9:00 am	60.2		8:00 pm - 9:00 pm	58.3
9:00 am - 10:00 am	60.3		9:00 pm - 10:00 pm	56.4
10:00 am -11:00 am	58.2		10:00 pm - 11:00 pm	56.6
11:00 am - 12:00 pm	58.8		11:00 pm - 12:00 am	54.0
			Ldn	***62.1***

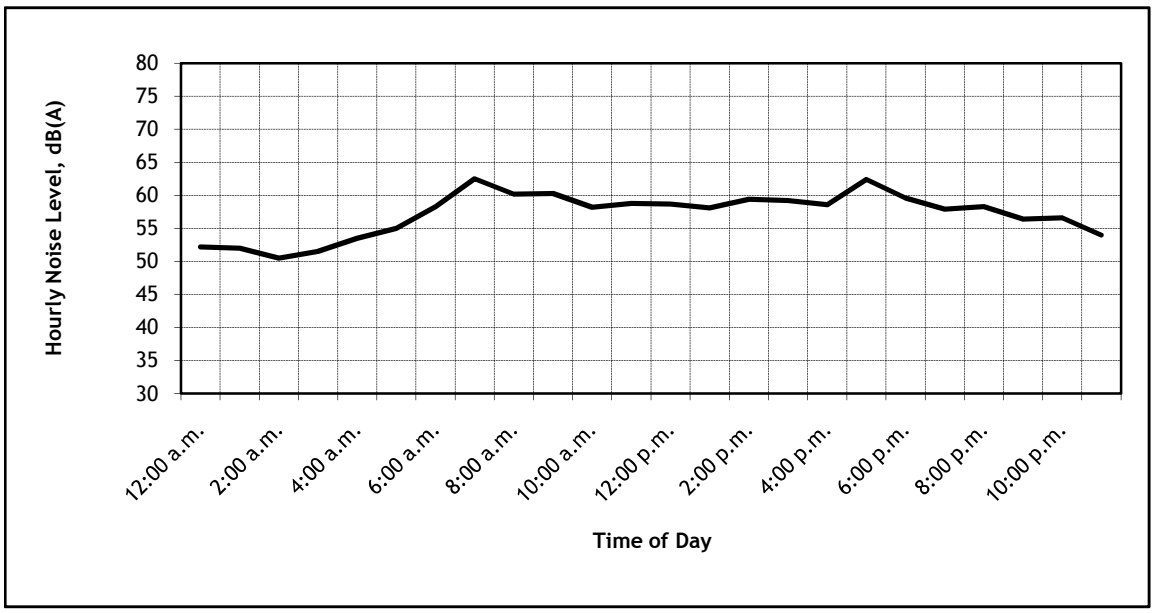
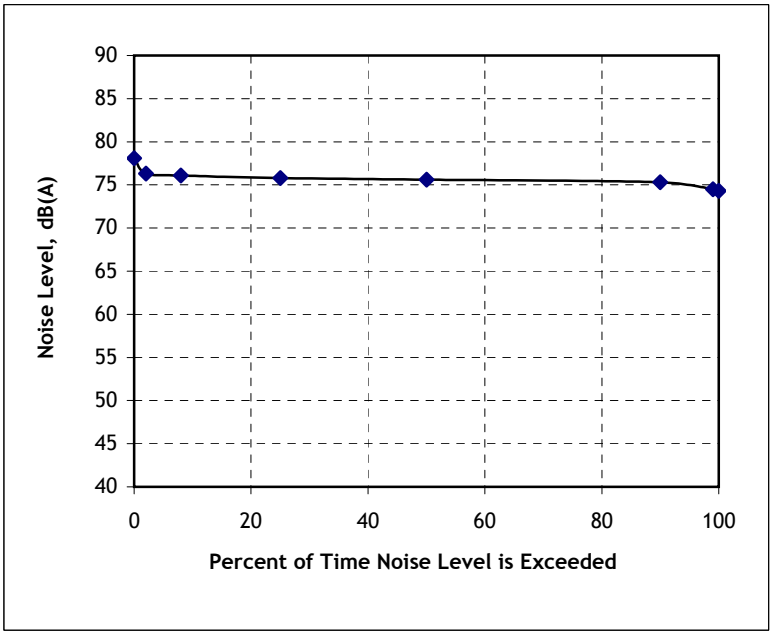


Table I-4. Noise Survey

Project:	SBVC Master Plan
Position:	Outside technical building, adjacent to air extractor unit for welding shop
Date:	November 3, 2008
Time:	Noted
Noise Source:	Air extractor unit for welding shop
Distance:	6.2 feet
SLM Height:	5'
LD 824 S/N:	3536
LD CAL200 Calibrator S/N:	2966
Operator:	T. Corbishley

	Measurement Period		
	11:05 AM to 11:09 AM	to	to
n*	**Ln**	**Ln**	**Ln**
2	76.3		
8	76.1		
25	75.8		
50	75.6		
90	75.3		
99	74.5		
Leq	75.7		
Lmax	78.1		
Lmin	74.3		



* Leq is the average sound level during the measurement period.
Ln is the sound level exceeded n% of the time during the measurement period.
Lmax and Lmin are the maximum and minimum sound levels during the measurement period.

APPENDIX II

Traffic Noise Analysis

Table II-1. Distance to Existing Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks		Traffic Dist.*	Avg. Daily Traffic	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none)		Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet				
		Med.	Hvy.		Existing		Height (2-10m)	Distance (10/30m)			60dB	65dB	70dB	75dB	80dB
N. COLTON AVENUE															
Mt. Vernon Ave. to I St.	35	1.84%	0.74%	3	3,806	S			31'	>62.0	49	--	--	--	--
ESPERANZA STREET															
Mt. Vernon Ave. to Eureka Ave.	25	1.84%	0.74%	3	1,469	S			48'	53.4	--	--	--	--	--
Eureka Ave. to K St.	25	1.84%	0.74%	3	1,719	S			27'	>55.9	--	--	--	--	--
GRANT AVENUE															
Mt. Vernon Ave. to Fairview Ave.	25	1.84%	0.74%	3	4,069	S			36'	59.5	--	--	--	--	--
Fairview Ave. to K St.	25	1.84%	0.74%	3	3,566	S			37'	58.8	--	--	--	--	--
K St. to J St.	25	1.84%	0.74%	3	3,694	S			20'	>59.2	--	--	--	--	--
J St. to I St.	25	1.84%	0.74%	3	3,719	S			21'	>59.3	--	--	--	--	--
I STREET															
Inland Center Dr. to Grant Ave.	35	1.84%	0.74%	3	4,984	S			49'	61.2	57	--	--	--	--
Grant Ave. to Mill St.	35	1.84%	0.74%	3	1,281	S			45'	55.9	--	--	--	--	--
INLAND CENTER DRIVE															
I St. to I-215 SB ramps	35	1.84%	0.74%	3	7,838	S			321'	47.4	72	36	--	--	--
I-215 SB ramps to I-215 NB ramps	35	1.84%	0.74%	3	7,066	S			>980'	<38.8	68	--	--	--	--
East of I-215 NB ramps	35	1.84%	0.74%	3	8,350	S			>980'	<39.5	75	38	--	--	--
J STREET															
South of Grant Ave.	25	1.84%	0.74%	3	131	S			53'	42.2	--	--	--	--	--
Grant Ave. to Mill St.	25	1.84%	0.74%	3	825	S			49'	50.7	--	--	--	--	--
K STREET															
South of Grant Ave.	25	1.84%	0.74%	3	150	S			50'	43.2	--	--	--	--	--
Grant Ave. to Esperanza St.	25	1.84%	0.74%	3	2,625	S			31'	>57.7	--	--	--	--	--
Esperanza St. to Mill St.	25	1.84%	0.74%	3	4,244	S			21'	>59.8	--	--	--	--	--
MILL STREET															
Mt. Vernon Ave. to Eureka Ave.	35	1.84%	0.74%	3	5,831	S			60'	60.3	62	--	--	--	--
Eureka Ave. to K St.	35	1.84%	0.74%	3	6,094	S			40'	63.4	63	--	--	--	--

Table II-1, cont. Distance to Existing Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks Med.	% Trucks Hvy.	Traffic Dist.*	Avg. Daily Traffic Existing	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none) Height (2-10m)	Barrier Details** (leave blank if none) Distance (10/30m)	Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet 60dB	65dB	70dB	75dB	80dB
MT. VERNON AVENUE															
South of Colton Ave.	40	1.84%	0.74%	3	8,906	S			41'	66.3	89	50	--	--	--
Colton Ave. to Grant Ave.	40	1.84%	0.74%	3	9,172	S			44'	66.0	90	51	--	--	--
Grant Ave. to Esperanza St.	40	1.84%	0.74%	3	9,331	S			162'	54.8	91	51	--	--	--
Esparanza St. to Mill St.	40	1.84%	0.74%	3	9,666	S			150'	55.6	92	52	--	--	--
North of Mill St.	35	1.84%	0.74%	3	8,975	S			59'	62.3	78	40	--	--	--

* The following summarizes the traffic distributions used in the analysis:

Traffic Distribution No.	Day A	Day MT	Day HT	Evening A	Evening MT	Evening HT	Night A	Night MT	Night HT
1	75.51%	1.56%	0.64%	12.57%	0.09%	0.02%	9.34%	0.19%	0.08%
2	65.83%	2.92%	2.10%	17.98%	0.20%	0.23%	9.49%	0.50%	0.75%
3	73.60%	0.90%	0.35%	13.60%	0.04%	0.04%	10.22%	0.90%	0.35%
4	69.50%	1.44%	2.40%	12.90%	0.06%	0.10%	9.60%	1.50%	2.50%
5	64.81%	1.27%	4.49%	17.70%	0.09%	0.49%	9.34%	0.22%	1.60%
6	63.80%	1.53%	5.24%	17.42%	0.10%	0.57%	9.20%	0.26%	1.87%
7	57.86%	3.19%	9.57%	15.80%	0.22%	1.05%	8.34%	0.55%	3.42%
8	64.91%	2.39%	3.44%	17.73%	0.16%	0.38%	9.36%	0.41%	1.23%
9	66.18%	2.28%	2.30%	18.07%	0.16%	0.25%	9.54%	0.39%	0.82%
10	74.04%	0.79%	0.18%	13.68%	0.04%	0.02%	10.28%	0.79%	0.18%
11	71.85%	1.94%	0.44%	13.28%	0.09%	0.05%	9.98%	1.94%	0.44%

A = automobiles; MT = medium (2-axle) trucks; HT = heavy (3+ axle) trucks

The above values are adjusted as needed so that the overall medium truck and heavy truck percentages for a traffic distribution number agree with the values entered into the "% Trucks" columns on the summary table.

** For street segments with barriers, noise levels and contour distances are only reported for locations 10m (approx. 30') or more beyond the noise barrier.

Table II-2. Distance to Year 2010 Without Project Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks		Traffic Dist.*	Avg. Daily Traffic	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none)		Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet				
		Med.	Hvy.		2010		Height (2-10m)	Distance (10/30m)			60dB	65dB	70dB	75dB	80dB
N. COLTON AVENUE															
Mt. Vernon Ave. to I St.	35	1.84%	0.74%	3	3,959	S			31'	>62.2	50	--	--	--	--
ESPERANZA STREET															
Mt. Vernon Ave. to Eureka Ave.	25	1.84%	0.74%	3	1,519	S			48'	53.5	--	--	--	--	--
Eureka Ave. to K St.	25	1.84%	0.74%	3	1,769	S			27'	>56.0	--	--	--	--	--
GRANT AVENUE															
Mt. Vernon Ave. to Fairview Ave.	25	1.84%	0.74%	3	4,225	S			36'	59.7	--	--	--	--	--
Fairview Ave. to K St.	25	1.84%	0.74%	3	3,719	S			37'	59.0	--	--	--	--	--
K St. to J St.	25	1.84%	0.74%	3	3,834	S			20'	>59.4	--	--	--	--	--
J St. to I St.	25	1.84%	0.74%	3	3,859	S			21'	>59.4	--	--	--	--	--
I STREET															
Inland Center Dr. to Grant Ave.	35	1.84%	0.74%	3	5,172	S			49'	61.3	58	--	--	--	--
Grant Ave. to Mill St.	35	1.84%	0.74%	3	1,338	S			45'	56.1	--	--	--	--	--
INLAND CENTER DRIVE															
I St. to I-215 SB ramps	35	1.84%	0.74%	3	8,138	S			321'	47.6	74	37	--	--	--
I-215 SB ramps to I-215 NB ramps	35	1.84%	0.74%	3	7,344	S			>980'	<39.0	70	--	--	--	--
East of I-215 NB ramps	35	1.84%	0.74%	3	8,694	S			>980'	<39.7	76	39	--	--	--
J STREET															
South of Grant Ave.	25	1.84%	0.74%	3	131	S			53'	42.2	--	--	--	--	--
Grant Ave. to Mill St.	25	1.84%	0.74%	3	856	S			49'	50.9	--	--	--	--	--
K STREET															
South of Grant Ave.	25	1.84%	0.74%	3	150	S			50'	43.2	--	--	--	--	--
Grant Ave. to Esperanza St.	25	1.84%	0.74%	3	2,684	S			31'	>57.8	--	--	--	--	--
Esperanza St. to Mill St.	25	1.84%	0.74%	3	4,409	S			21'	>60.0	--	--	--	--	--
MILL STREET															
Mt. Vernon Ave. to Eureka Ave.	35	1.84%	0.74%	3	6,056	S			60'	60.4	63	--	--	--	--
Eureka Ave. to K St.	35	1.84%	0.74%	3	6,344	S			40'	63.5	64	--	--	--	--

Table II-2, cont. Distance to Year 2010 Without Project Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks Med.	% Trucks Hvy.	Traffic Dist.*	Avg. Daily Traffic 2010	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none) Height (2-10m)	Barrier Details** (leave blank if none) Distance (10/30m)	Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet 60dB	65dB	70dB	75dB	80dB
MT. VERNON AVENUE															
South of Colton Ave.	40	1.84%	0.74%	3	9,363	S			41'	66.5	91	51	--	--	--
Colton Ave. to Grant Ave.	40	1.84%	0.74%	3	9,900	S			44'	66.3	93	53	--	--	--
Grant Ave. to Esperanza St.	40	1.84%	0.74%	3	10,047	S			162'	55.1	94	53	--	--	--
Esparanza St. to Mill St.	40	1.84%	0.74%	3	10,438	S			150'	56.0	95	54	--	--	--
North of Mill St.	35	1.84%	0.74%	3	9,388	S			59'	62.5	79	42	--	--	--

* The following summarizes the traffic distributions used in the analysis:

Traffic Distribution No.	Day A	Day MT	Day HT	Evening A	Evening MT	Evening HT	Night A	Night MT	Night HT
1	75.51%	1.56%	0.64%	12.57%	0.09%	0.02%	9.34%	0.19%	0.08%
2	65.83%	2.92%	2.10%	17.98%	0.20%	0.23%	9.49%	0.50%	0.75%
3	73.60%	0.90%	0.35%	13.60%	0.04%	0.04%	10.22%	0.90%	0.35%
4	69.50%	1.44%	2.40%	12.90%	0.06%	0.10%	9.60%	1.50%	2.50%
5	64.81%	1.27%	4.49%	17.70%	0.09%	0.49%	9.34%	0.22%	1.60%
6	63.80%	1.53%	5.24%	17.42%	0.10%	0.57%	9.20%	0.26%	1.87%
7	57.86%	3.19%	9.57%	15.80%	0.22%	1.05%	8.34%	0.55%	3.42%
8	64.91%	2.39%	3.44%	17.73%	0.16%	0.38%	9.36%	0.41%	1.23%
9	66.18%	2.28%	2.30%	18.07%	0.16%	0.25%	9.54%	0.39%	0.82%
10	74.04%	0.79%	0.18%	13.68%	0.04%	0.02%	10.28%	0.79%	0.18%
11	71.85%	1.94%	0.44%	13.28%	0.09%	0.05%	9.98%	1.94%	0.44%

A = automobiles; MT = medium (2-axle) trucks; HT = heavy (3+ axle) trucks

The above values are adjusted as needed so that the overall medium truck and heavy truck percentages for a traffic distribution number agree with the values entered into the "% Trucks" columns on the summary table.

** For street segments with barriers, noise levels and contour distances are only reported for locations 10m (approx. 30') or more beyond the noise barrier.

Table II-3. Distance to Year 2010 With Project Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks		Traffic Dist.*	Avg. Daily Traffic	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none)		Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet				
		Med.	Hvy.		2010		Height (2-10m)	Distance (10/30m)			60dB	65dB	70dB	75dB	80dB
N. COLTON AVENUE															
Mt. Vernon Ave. to I St.	35	1.84%	0.74%	3	3,959	S			31'	>62.2	50	--	--	--	--
ESPERANZA STREET															
Mt. Vernon Ave. to Eureka Ave.	25	1.84%	0.74%	3	1,497	S			48'	53.5	--	--	--	--	--
Eureka Ave. to K St.	25	1.84%	0.74%	3	1,728	S			27'	>55.9	--	--	--	--	--
GRANT AVENUE															
Mt. Vernon Ave. to Fairview Ave.	25	1.84%	0.74%	3	4,219	S			36'	59.7	--	--	--	--	--
Fairview Ave. to K St.	25	1.84%	0.74%	3	3,738	S			37'	59.0	--	--	--	--	--
K St. to J St.	25	1.84%	0.74%	3	3,879	S			20'	>59.4	--	--	--	--	--
J St. to I St.	25	1.84%	0.74%	3	3,903	S			21'	>59.5	--	--	--	--	--
I STREET															
Inland Center Dr. to Grant Ave.	35	1.84%	0.74%	3	6,934	S			49'	62.6	68	--	--	--	--
Grant Ave. to Mill St.	35	1.84%	0.74%	3	1,656	S			45'	57.0	--	--	--	--	--
INLAND CENTER DRIVE															
I St. to I-215 SB ramps	35	1.84%	0.74%	3	8,169	S			321'	47.6	74	37	--	--	--
I-215 SB ramps to I-215 NB ramps	35	1.84%	0.74%	3	7,356	S			>980'	<39.0	70	--	--	--	--
East of I-215 NB ramps	35	1.84%	0.74%	3	8,694	S			>980'	<39.7	76	39	--	--	--
J STREET															
South of Grant Ave.	25	1.84%	0.74%	3	131	S			53'	42.2	--	--	--	--	--
Grant Ave. to Mill St.	25	1.84%	0.74%	3	856	S			49'	50.9	--	--	--	--	--
K STREET															
South of Grant Ave.	25	1.84%	0.74%	3	150	S			50'	43.2	--	--	--	--	--
Grant Ave. to Esperanza St.	25	1.84%	0.74%	3	2,644	S			31'	>57.8	--	--	--	--	--
Esperanza St. to Mill St.	25	1.84%	0.74%	3	4,384	S			21'	>60.0	--	--	--	--	--
MILL STREET															
Mt. Vernon Ave. to Eureka Ave.	35	1.84%	0.74%	3	6,056	S			60'	60.4	63	--	--	--	--
Eureka Ave. to K St.	35	1.84%	0.74%	3	6,338	S			40'	63.5	64	--	--	--	--

Table II-3, cont. Distance to Year 2010 With Project Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks Med.	% Trucks Hvy.	Traffic Dist.*	Avg. Daily Traffic 2010	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none) Height (2-10m)	Barrier Details** (leave blank if none) Distance (10/30m)	Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet 60dB	65dB	70dB	75dB	80dB
MT. VERNON AVENUE															
South of Colton Ave.	40	1.84%	0.74%	3	9,363	S			41'	66.5	91	51	--	--	--
Colton Ave. to Grant Ave.	40	1.84%	0.74%	3	9,900	S			44'	66.3	93	53	--	--	--
Grant Ave. to Esperanza St.	40	1.84%	0.74%	3	10,041	S			162'	55.1	94	53	--	--	--
Esparanza St. to Mill St.	40	1.84%	0.74%	3	10,441	S			150'	56.0	95	54	--	--	--
North of Mill St.	35	1.84%	0.74%	3	9,388	S			59'	62.5	79	42	--	--	--

* The following summarizes the traffic distributions used in the analysis:

Traffic Distribution No.	Day A	Day MT	Day HT	Evening A	Evening MT	Evening HT	Night A	Night MT	Night HT
1	75.51%	1.56%	0.64%	12.57%	0.09%	0.02%	9.34%	0.19%	0.08%
2	65.83%	2.92%	2.10%	17.98%	0.20%	0.23%	9.49%	0.50%	0.75%
3	73.60%	0.90%	0.35%	13.60%	0.04%	0.04%	10.22%	0.90%	0.35%
4	69.50%	1.44%	2.40%	12.90%	0.06%	0.10%	9.60%	1.50%	2.50%
5	64.81%	1.27%	4.49%	17.70%	0.09%	0.49%	9.34%	0.22%	1.60%
6	63.80%	1.53%	5.24%	17.42%	0.10%	0.57%	9.20%	0.26%	1.87%
7	57.86%	3.19%	9.57%	15.80%	0.22%	1.05%	8.34%	0.55%	3.42%
8	64.91%	2.39%	3.44%	17.73%	0.16%	0.38%	9.36%	0.41%	1.23%
9	66.18%	2.28%	2.30%	18.07%	0.16%	0.25%	9.54%	0.39%	0.82%
10	74.04%	0.79%	0.18%	13.68%	0.04%	0.02%	10.28%	0.79%	0.18%
11	71.85%	1.94%	0.44%	13.28%	0.09%	0.05%	9.98%	1.94%	0.44%

A = automobiles; MT = medium (2-axle) trucks; HT = heavy (3+ axle) trucks

The above values are adjusted as needed so that the overall medium truck and heavy truck percentages for a traffic distribution number agree with the values entered into the "% Trucks" columns on the summary table.

** For street segments with barriers, noise levels and contour distances are only reported for locations 10m (approx. 30') or more beyond the noise barrier.

Table II-4. Distance to Year 2020 Without Project Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks		Traffic Dist.*	Avg. Daily Traffic	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none)		Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet				
		Med.	Hvy.		2020		Height (2-10m)	Distance (10/30m)			60dB	65dB	70dB	75dB	80dB
N. COLTON AVENUE															
Mt. Vernon Ave. to I St.	35	1.84%	0.74%	3	4,831	S			31'	>63.1	56	--	--	--	--
ESPERANZA STREET															
Mt. Vernon Ave. to Eureka Ave.	25	1.84%	0.74%	3	1,897	S			48'	54.5	--	--	--	--	--
Eureka Ave. to K St.	25	1.84%	0.74%	3	2,238	S			27'	>57.0	--	--	--	--	--
GRANT AVENUE															
Mt. Vernon Ave. to Fairview Ave.	25	1.84%	0.74%	3	5,478	S			36'	60.8	42	--	--	--	--
Fairview Ave. to K St.	25	1.84%	0.74%	3	5,013	S			37'	60.3	39	--	--	--	--
K St. to J St.	25	1.84%	0.74%	3	5,313	S			20'	>60.8	41	--	--	--	--
J St. to I St.	25	1.84%	0.74%	3	5,356	S			21'	>60.8	41	--	--	--	--
I STREET															
Inland Center Dr. to Grant Ave.	35	1.84%	0.74%	3	6,934	S			49'	62.6	68	--	--	--	--
Grant Ave. to Mill St.	35	1.84%	0.74%	3	1,656	S			45'	57.0	--	--	--	--	--
INLAND CENTER DRIVE															
I St. to I-215 SB ramps	35	1.84%	0.74%	3	10,553	S			321'	48.7	84	45	--	--	--
I-215 SB ramps to I-215 NB ramps	35	1.84%	0.74%	3	9,297	S			>980'	<40.0	79	41	--	--	--
East of I-215 NB ramps	35	1.84%	0.74%	3	10,669	S			>980'	<40.6	84	45	--	--	--
J STREET															
South of Grant Ave.	25	1.84%	0.74%	3	169	S			53'	43.3	--	--	--	--	--
Grant Ave. to Mill St.	25	1.84%	0.74%	3	1,056	S			49'	51.8	--	--	--	--	--
K STREET															
South of Grant Ave.	25	1.84%	0.74%	3	200	S			50'	44.5	--	--	--	--	--
Grant Ave. to Esperanza St.	25	1.84%	0.74%	3	3,431	S			31'	>58.9	--	--	--	--	--
Esperanza St. to Mill St.	25	1.84%	0.74%	3	5,497	S			21'	>60.9	42	--	--	--	--
MILL STREET															
Mt. Vernon Ave. to Eureka Ave.	35	1.84%	0.74%	3	7,413	S			60'	61.3	70	--	--	--	--
Eureka Ave. to K St.	35	1.84%	0.74%	3	7,763	S			40'	64.4	72	36	--	--	--

Table II-4, cont. Distance to Year 2020 Without Project Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks Med.	% Trucks Hvy.	Traffic Dist.*	Avg. Daily Traffic 2020	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none) Height (2-10m)	Barrier Details** (leave blank if none) Distance (10/30m)	Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet 60dB	65dB	70dB	75dB	80dB
MT. VERNON AVENUE															
South of Colton Ave.	40	1.84%	0.74%	3	11,531	S			41'	67.4	99	57	--	--	--
Colton Ave. to Grant Ave.	40	1.84%	0.74%	3	12,247	S			44'	67.2	103	59	--	--	--
Grant Ave. to Esperanza St.	40	1.84%	0.74%	3	12,394	S			162'	56.0	103	60	--	--	--
Esparanza St. to Mill St.	40	1.84%	0.74%	3	12,841	S			150'	56.9	105	61	--	--	--
North of Mill St.	35	1.84%	0.74%	3	11,519	S			59'	63.4	87	48	--	--	--

* The following summarizes the traffic distributions used in the analysis:

Traffic Distribution No.	Day A	Day MT	Day HT	Evening A	Evening MT	Evening HT	Night A	Night MT	Night HT
1	75.51%	1.56%	0.64%	12.57%	0.09%	0.02%	9.34%	0.19%	0.08%
2	65.83%	2.92%	2.10%	17.98%	0.20%	0.23%	9.49%	0.50%	0.75%
3	73.60%	0.90%	0.35%	13.60%	0.04%	0.04%	10.22%	0.90%	0.35%
4	69.50%	1.44%	2.40%	12.90%	0.06%	0.10%	9.60%	1.50%	2.50%
5	64.81%	1.27%	4.49%	17.70%	0.09%	0.49%	9.34%	0.22%	1.60%
6	63.80%	1.53%	5.24%	17.42%	0.10%	0.57%	9.20%	0.26%	1.87%
7	57.86%	3.19%	9.57%	15.80%	0.22%	1.05%	8.34%	0.55%	3.42%
8	64.91%	2.39%	3.44%	17.73%	0.16%	0.38%	9.36%	0.41%	1.23%
9	66.18%	2.28%	2.30%	18.07%	0.16%	0.25%	9.54%	0.39%	0.82%
10	74.04%	0.79%	0.18%	13.68%	0.04%	0.02%	10.28%	0.79%	0.18%
11	71.85%	1.94%	0.44%	13.28%	0.09%	0.05%	9.98%	1.94%	0.44%

A = automobiles; MT = medium (2-axle) trucks; HT = heavy (3+ axle) trucks

The above values are adjusted as needed so that the overall medium truck and heavy truck percentages for a traffic distribution number agree with the values entered into the "% Trucks" columns on the summary table.

** For street segments with barriers, noise levels and contour distances are only reported for locations 10m (approx. 30') or more beyond the noise barrier.

Table II-5. Distance to Year 2020 With Project Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks		Traffic Dist.*	Avg. Daily Traffic	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none)		Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet				
		Med.	Hvy.		2020		Height (2-10m)	Distance (10/30m)			60dB	65dB	70dB	75dB	80dB
N. COLTON AVENUE															
Mt. Vernon Ave. to I St.	35	1.84%	0.74%	3	4,831	S			31'	>63.1	56	--	--	--	--
ESPERANZA STREET															
Mt. Vernon Ave. to Eureka Ave.	25	1.84%	0.74%	3	1,806	S			48'	54.3	--	--	--	--	--
Eureka Ave. to K St.	25	1.84%	0.74%	3	2,072	S			27'	>56.7	--	--	--	--	--
GRANT AVENUE															
Mt. Vernon Ave. to Fairview Ave.	25	1.84%	0.74%	3	5,497	S			36'	60.8	42	--	--	--	--
Fairview Ave. to K St.	25	1.84%	0.74%	3	5,134	S			37'	60.4	40	--	--	--	--
K St. to J St.	25	1.84%	0.74%	3	5,438	S			20'	>60.9	41	--	--	--	--
J St. to I St.	25	1.84%	0.74%	3	5,475	S			21'	>60.9	42	--	--	--	--
I STREET															
Inland Center Dr. to Grant Ave.	35	1.84%	0.74%	3	7,022	S			49'	62.7	68	--	--	--	--
Grant Ave. to Mill St.	35	1.84%	0.74%	3	1,681	S			45'	57.0	--	--	--	--	--
INLAND CENTER DRIVE															
I St. to I-215 SB ramps	35	1.84%	0.74%	3	10,644	S			321'	48.7	84	45	--	--	--
I-215 SB ramps to I-215 NB ramps	35	1.84%	0.74%	3	9,331	S			>980'	<40.0	79	41	--	--	--
East of I-215 NB ramps	35	1.84%	0.74%	3	10,669	S			>980'	<40.6	84	45	--	--	--
J STREET															
South of Grant Ave.	25	1.84%	0.74%	3	169	S			53'	43.3	--	--	--	--	--
Grant Ave. to Mill St.	25	1.84%	0.74%	3	1,056	S			49'	51.8	--	--	--	--	--
K STREET															
South of Grant Ave.	25	1.84%	0.74%	3	200	S			50'	44.5	--	--	--	--	--
Grant Ave. to Esperanza St.	25	1.84%	0.74%	3	3,278	S			31'	>58.7	--	--	--	--	--
Esperanza St. to Mill St.	25	1.84%	0.74%	3	5,422	S			21'	>60.9	41	--	--	--	--
MILL STREET															
Mt. Vernon Ave. to Eureka Ave.	35	1.84%	0.74%	3	7,388	S			60'	61.3	70	--	--	--	--
Eureka Ave. to K St.	35	1.84%	0.74%	3	7,738	S			40'	64.4	72	36	--	--	--

Table II-5, cont. Distance to Year 2020 With Project Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks Med.	% Trucks Hvy.	Traffic Dist.*	Avg. Daily Traffic 2020	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none) Height (2-10m)	Barrier Details** (leave blank if none) Distance (10/30m)	Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet 60dB	65dB	70dB	75dB	80dB
MT. VERNON AVENUE															
South of Colton Ave.	40	1.84%	0.74%	3	11,531	S			41'	67.4	99	57	--	--	--
Colton Ave. to Grant Ave.	40	1.84%	0.74%	3	12,244	S			44'	67.2	103	59	--	--	--
Grant Ave. to Esperanza St.	40	1.84%	0.74%	3	12,363	S			162'	56.0	103	60	--	--	--
Esparanza St. to Mill St.	40	1.84%	0.74%	3	12,850	S			150'	56.9	105	61	--	--	--
North of Mill St.	35	1.84%	0.74%	3	11,506	S			59'	63.4	87	48	--	--	--

* The following summarizes the traffic distributions used in the analysis:

Traffic Distribution No.	Day A	Day MT	Day HT	Evening A	Evening MT	Evening HT	Night A	Night MT	Night HT
1	75.51%	1.56%	0.64%	12.57%	0.09%	0.02%	9.34%	0.19%	0.08%
2	65.83%	2.92%	2.10%	17.98%	0.20%	0.23%	9.49%	0.50%	0.75%
3	73.60%	0.90%	0.35%	13.60%	0.04%	0.04%	10.22%	0.90%	0.35%
4	69.50%	1.44%	2.40%	12.90%	0.06%	0.10%	9.60%	1.50%	2.50%
5	64.81%	1.27%	4.49%	17.70%	0.09%	0.49%	9.34%	0.22%	1.60%
6	63.80%	1.53%	5.24%	17.42%	0.10%	0.57%	9.20%	0.26%	1.87%
7	57.86%	3.19%	9.57%	15.80%	0.22%	1.05%	8.34%	0.55%	3.42%
8	64.91%	2.39%	3.44%	17.73%	0.16%	0.38%	9.36%	0.41%	1.23%
9	66.18%	2.28%	2.30%	18.07%	0.16%	0.25%	9.54%	0.39%	0.82%
10	74.04%	0.79%	0.18%	13.68%	0.04%	0.02%	10.28%	0.79%	0.18%
11	71.85%	1.94%	0.44%	13.28%	0.09%	0.05%	9.98%	1.94%	0.44%

A = automobiles; MT = medium (2-axle) trucks; HT = heavy (3+ axle) trucks

The above values are adjusted as needed so that the overall medium truck and heavy truck percentages for a traffic distribution number agree with the values entered into the "% Trucks" columns on the summary table.

** For street segments with barriers, noise levels and contour distances are only reported for locations 10m (approx. 30') or more beyond the noise barrier.

Table II-6. Distance to Year 2030 Without Project Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks		Traffic Dist.*	Avg. Daily Traffic	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none)		Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet				
		Med.	Hvy.		2030		Height (2-10m)	Distance (10/30m)			60dB	65dB	70dB	75dB	80dB
N. COLTON AVENUE															
Mt. Vernon Ave. to I St.	35	1.84%	0.74%	3	5,781	S			31'	>63.9	62	--	--	--	--
ESPERANZA STREET															
Mt. Vernon Ave. to Eureka Ave.	25	1.84%	0.74%	3	3,413	S			48'	57.1	--	--	--	--	--
Eureka Ave. to K St.	25	1.84%	0.74%	3	2,606	S			27'	>57.7	--	--	--	--	--
GRANT AVENUE															
Mt. Vernon Ave. to Fairview Ave.	25	1.84%	0.74%	3	7,231	S			36'	62.0	50	--	--	--	--
Fairview Ave. to K St.	25	1.84%	0.74%	3	6,069	S			37'	61.1	45	--	--	--	--
K St. to J St.	25	1.84%	0.74%	3	5,531	S			20'	>61.0	42	--	--	--	--
J St. to I St.	25	1.84%	0.74%	3	6,494	S			21'	>61.7	47	--	--	--	--
I STREET															
Inland Center Dr. to Grant Ave.	35	1.84%	0.74%	3	8,025	S			49'	63.3	73	37	--	--	--
Grant Ave. to Mill St.	35	1.84%	0.74%	3	2,275	S			45'	58.4	--	--	--	--	--
INLAND CENTER DRIVE															
I St. to I-215 SB ramps	35	1.84%	0.74%	3	12,138	S			321'	49.3	90	49	--	--	--
I-215 SB ramps to I-215 NB ramps	35	1.84%	0.74%	3	12,131	S			>980'	<41.2	90	49	--	--	--
East of I-215 NB ramps	35	1.84%	0.74%	3	13,019	S			>980'	<41.5	92	51	--	--	--
J STREET															
South of Grant Ave.	25	1.84%	0.74%	3	206	S			53'	44.2	--	--	--	--	--
Grant Ave. to Mill St.	25	1.84%	0.74%	3	1,275	S			49'	52.6	--	--	--	--	--
K STREET															
South of Grant Ave.	25	1.84%	0.74%	3	231	S			50'	45.1	--	--	--	--	--
Grant Ave. to Esperanza St.	25	1.84%	0.74%	3	4,606	S			31'	>60.2	36	--	--	--	--
Esperanza St. to Mill St.	25	1.84%	0.74%	3	4,175	S			21'	>59.8	--	--	--	--	--
MILL STREET															
Mt. Vernon Ave. to Eureka Ave.	35	1.84%	0.74%	3	9,050	S			60'	62.2	78	41	--	--	--
Eureka Ave. to K St.	35	1.84%	0.74%	3	10,763	S			40'	65.8	85	46	--	--	--

Table II-6, cont. Distance to Year 2030 Without Project Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks Med.	% Trucks Hvy.	Traffic Dist.*	Avg. Daily Traffic 2030	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none) Height (2-10m)	Barrier Details** (leave blank if none) Distance (10/30m)	Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet 60dB	65dB	70dB	75dB	80dB
MT. VERNON AVENUE															
South of Colton Ave.	40	1.84%	0.74%	3	15,819	S			41'	68.8	117	67	--	--	--
Colton Ave. to Grant Ave.	40	1.84%	0.74%	3	14,338	S			44'	67.9	111	64	--	--	--
Grant Ave. to Esperanza St.	40	1.84%	0.74%	3	14,656	S			162'	56.7	113	65	--	--	--
Esparanza St. to Mill St.	40	1.84%	0.74%	3	15,638	S			150'	57.7	116	67	--	--	--
North of Mill St.	35	1.84%	0.74%	3	14,050	S			59'	64.2	95	54	--	--	--

* The following summarizes the traffic distributions used in the analysis:

Traffic Distribution No.	Day A	Day MT	Day HT	Evening A	Evening MT	Evening HT	Night A	Night MT	Night HT
1	75.51%	1.56%	0.64%	12.57%	0.09%	0.02%	9.34%	0.19%	0.08%
2	65.83%	2.92%	2.10%	17.98%	0.20%	0.23%	9.49%	0.50%	0.75%
3	73.60%	0.90%	0.35%	13.60%	0.04%	0.04%	10.22%	0.90%	0.35%
4	69.50%	1.44%	2.40%	12.90%	0.06%	0.10%	9.60%	1.50%	2.50%
5	64.81%	1.27%	4.49%	17.70%	0.09%	0.49%	9.34%	0.22%	1.60%
6	63.80%	1.53%	5.24%	17.42%	0.10%	0.57%	9.20%	0.26%	1.87%
7	57.86%	3.19%	9.57%	15.80%	0.22%	1.05%	8.34%	0.55%	3.42%
8	64.91%	2.39%	3.44%	17.73%	0.16%	0.38%	9.36%	0.41%	1.23%
9	66.18%	2.28%	2.30%	18.07%	0.16%	0.25%	9.54%	0.39%	0.82%
10	74.04%	0.79%	0.18%	13.68%	0.04%	0.02%	10.28%	0.79%	0.18%
11	71.85%	1.94%	0.44%	13.28%	0.09%	0.05%	9.98%	1.94%	0.44%

A = automobiles; MT = medium (2-axle) trucks; HT = heavy (3+ axle) trucks

The above values are adjusted as needed so that the overall medium truck and heavy truck percentages for a traffic distribution number agree with the values entered into the "% Trucks" columns on the summary table.

** For street segments with barriers, noise levels and contour distances are only reported for locations 10m (approx. 30') or more beyond the noise barrier.

Table II-7. Distance to Year 2030 With Project Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks		Traffic Dist.*	Avg. Daily Traffic	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none)		Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet				
		Med.	Hvy.		2030		Height (2-10m)	Distance (10/30m)			60dB	65dB	70dB	75dB	80dB
N. COLTON AVENUE															
Mt. Vernon Ave. to I St.	35	1.84%	0.74%	3	5,903	S			31'	>64.0	62	--	--	--	--
ESPERANZA STREET															
Mt. Vernon Ave. to Eureka Ave.	25	1.84%	0.74%	3	2,091	S			48'	54.9	--	--	--	--	--
Eureka Ave. to K St.	25	1.84%	0.74%	3	2,034	S			27'	>56.6	--	--	--	--	--
GRANT AVENUE															
Mt. Vernon Ave. to Fairview Ave.	25	1.84%	0.74%	3	6,713	S			36'	61.7	48	--	--	--	--
Fairview Ave. to K St.	25	1.84%	0.74%	3	6,328	S			37'	61.3	46	--	--	--	--
K St. to J St.	25	1.84%	0.74%	3	7,256	S			20'	>62.2	50	--	--	--	--
J St. to I St.	25	1.84%	0.74%	3	7,291	S			21'	>62.2	51	--	--	--	--
I STREET															
Inland Center Dr. to Grant Ave.	35	1.84%	0.74%	3	9,122	S			49'	63.8	78	41	--	--	--
Grant Ave. to Mill St.	35	1.84%	0.74%	3	2,113	S			45'	58.0	--	--	--	--	--
INLAND CENTER DRIVE															
I St. to I-215 SB ramps	35	1.84%	0.74%	3	13,544	S			321'	49.8	94	53	--	--	--
I-215 SB ramps to I-215 NB ramps	35	1.84%	0.74%	3	11,694	S			>980'	<41.0	88	48	--	--	--
East of I-215 NB ramps	35	1.84%	0.74%	3	13,069	S			>980'	<41.5	92	52	--	--	--
J STREET															
South of Grant Ave.	25	1.84%	0.74%	3	206	S			53'	44.2	--	--	--	--	--
Grant Ave. to Mill St.	25	1.84%	0.74%	3	1,275	S			49'	52.6	--	--	--	--	--
K STREET															
South of Grant Ave.	25	1.84%	0.74%	3	231	S			50'	45.1	--	--	--	--	--
Grant Ave. to Esperanza St.	25	1.84%	0.74%	3	4,250	S			31'	>59.8	--	--	--	--	--
Esperanza St. to Mill St.	25	1.84%	0.74%	3	6,738	S			21'	>61.8	48	--	--	--	--
MILL STREET															
Mt. Vernon Ave. to Eureka Ave.	35	1.84%	0.74%	3	9,113	S			60'	62.2	78	41	--	--	--
Eureka Ave. to K St.	35	1.84%	0.74%	3	9,494	S			40'	65.3	80	42	--	--	--

Table II-7, cont. Distance to Year 2030 With Project Ldn Contour Lines, San Bernardino Valley College Master Plan

Arterial / Reach	Speed Limit, mph	% Trucks Med.	% Trucks Hvy.	Traffic Dist.*	Avg. Daily Traffic 2030	Hard (H) or Soft (S) Site?	Barrier Details** (leave blank if none) Height (2-10m)	Barrier Details** (leave blank if none) Distance (10/30m)	Dist., Sens. Rec. to C/L	Ldn at Sens. Rec.	Distance to Ldn Contours From Roadway Centerline, feet 60dB	65dB	70dB	75dB	80dB
MT. VERNON AVENUE															
South of Colton Ave.	40	1.84%	0.74%	3	14,175	S			41'	68.3	111	64	--	--	--
Colton Ave. to Grant Ave.	40	1.84%	0.74%	3	15,091	S			44'	68.1	114	66	--	--	--
Grant Ave. to Esperanza St.	40	1.84%	0.74%	3	15,088	S			162'	56.8	114	66	--	--	--
Esparanza St. to Mill St.	40	1.84%	0.74%	3	15,706	S			150'	57.7	116	67	--	--	--
North of Mill St.	35	1.84%	0.74%	3	14,106	S			59'	64.3	95	54	--	--	--

* The following summarizes the traffic distributions used in the analysis:

Traffic Distribution No.	Day A	Day MT	Day HT	Evening A	Evening MT	Evening HT	Night A	Night MT	Night HT
1	75.51%	1.56%	0.64%	12.57%	0.09%	0.02%	9.34%	0.19%	0.08%
2	65.83%	2.92%	2.10%	17.98%	0.20%	0.23%	9.49%	0.50%	0.75%
3	73.60%	0.90%	0.35%	13.60%	0.04%	0.04%	10.22%	0.90%	0.35%
4	69.50%	1.44%	2.40%	12.90%	0.06%	0.10%	9.60%	1.50%	2.50%
5	64.81%	1.27%	4.49%	17.70%	0.09%	0.49%	9.34%	0.22%	1.60%
6	63.80%	1.53%	5.24%	17.42%	0.10%	0.57%	9.20%	0.26%	1.87%
7	57.86%	3.19%	9.57%	15.80%	0.22%	1.05%	8.34%	0.55%	3.42%
8	64.91%	2.39%	3.44%	17.73%	0.16%	0.38%	9.36%	0.41%	1.23%
9	66.18%	2.28%	2.30%	18.07%	0.16%	0.25%	9.54%	0.39%	0.82%
10	74.04%	0.79%	0.18%	13.68%	0.04%	0.02%	10.28%	0.79%	0.18%
11	71.85%	1.94%	0.44%	13.28%	0.09%	0.05%	9.98%	1.94%	0.44%

A = automobiles; MT = medium (2-axle) trucks; HT = heavy (3+ axle) trucks

The above values are adjusted as needed so that the overall medium truck and heavy truck percentages for a traffic distribution number agree with the values entered into the "% Trucks" columns on the summary table.

** For street segments with barriers, noise levels and contour distances are only reported for locations 10m (approx. 30') or more beyond the noise barrier.

APPENDIX III

Operational Noise Analysis

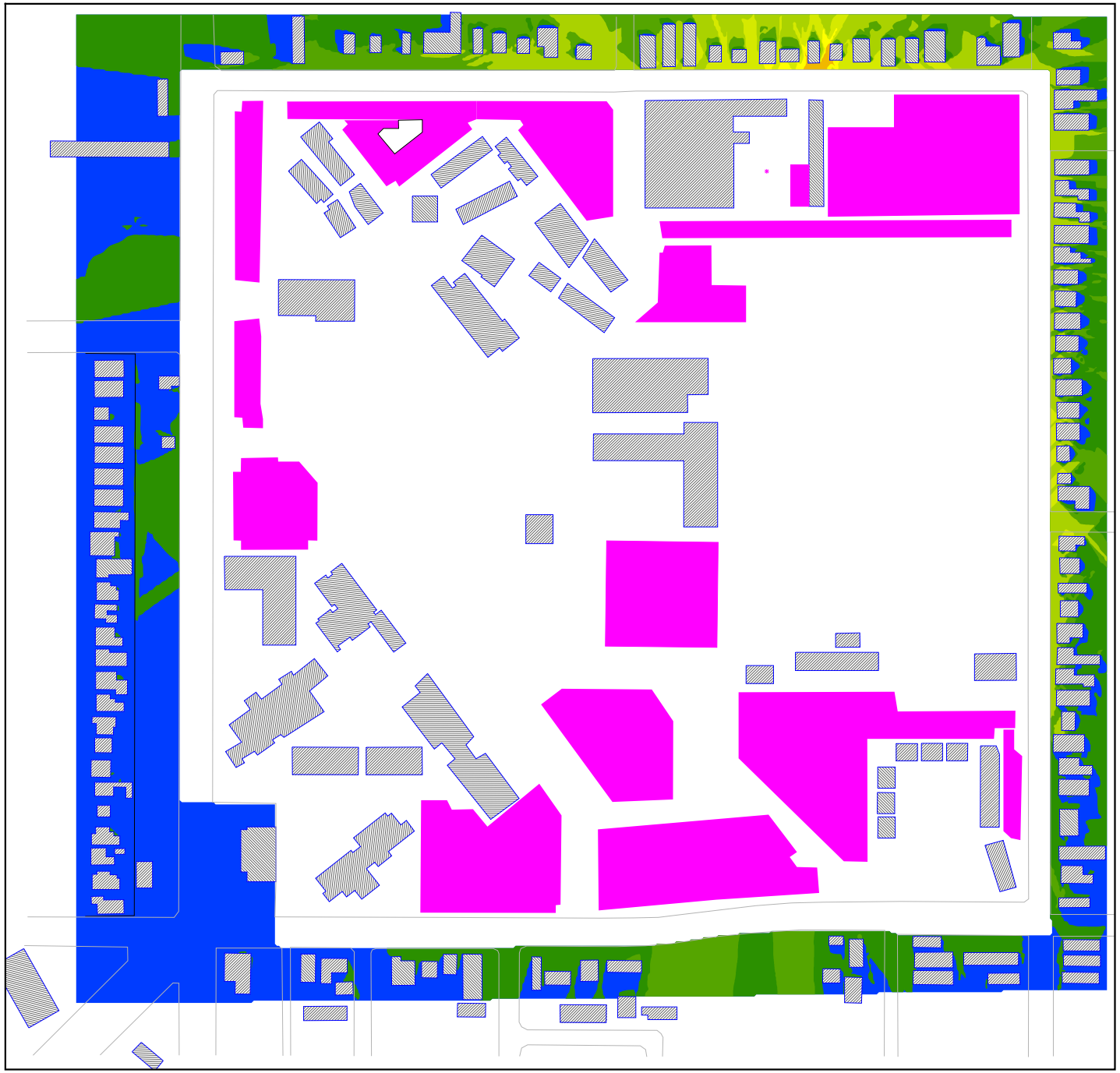


Figure III-1. Existing 1-Hour Leq, Daytime Campus Activities

1-Hour Leq, dBA

>	85
80 -	85
75 -	80
70 -	75
65 -	70
60 -	65
55 -	60
50 -	55
45 -	50
<=	45

Signs and symbols

- Buildings
- Property Lines
- Noise Source
- Wall

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
noise & vibration consultants

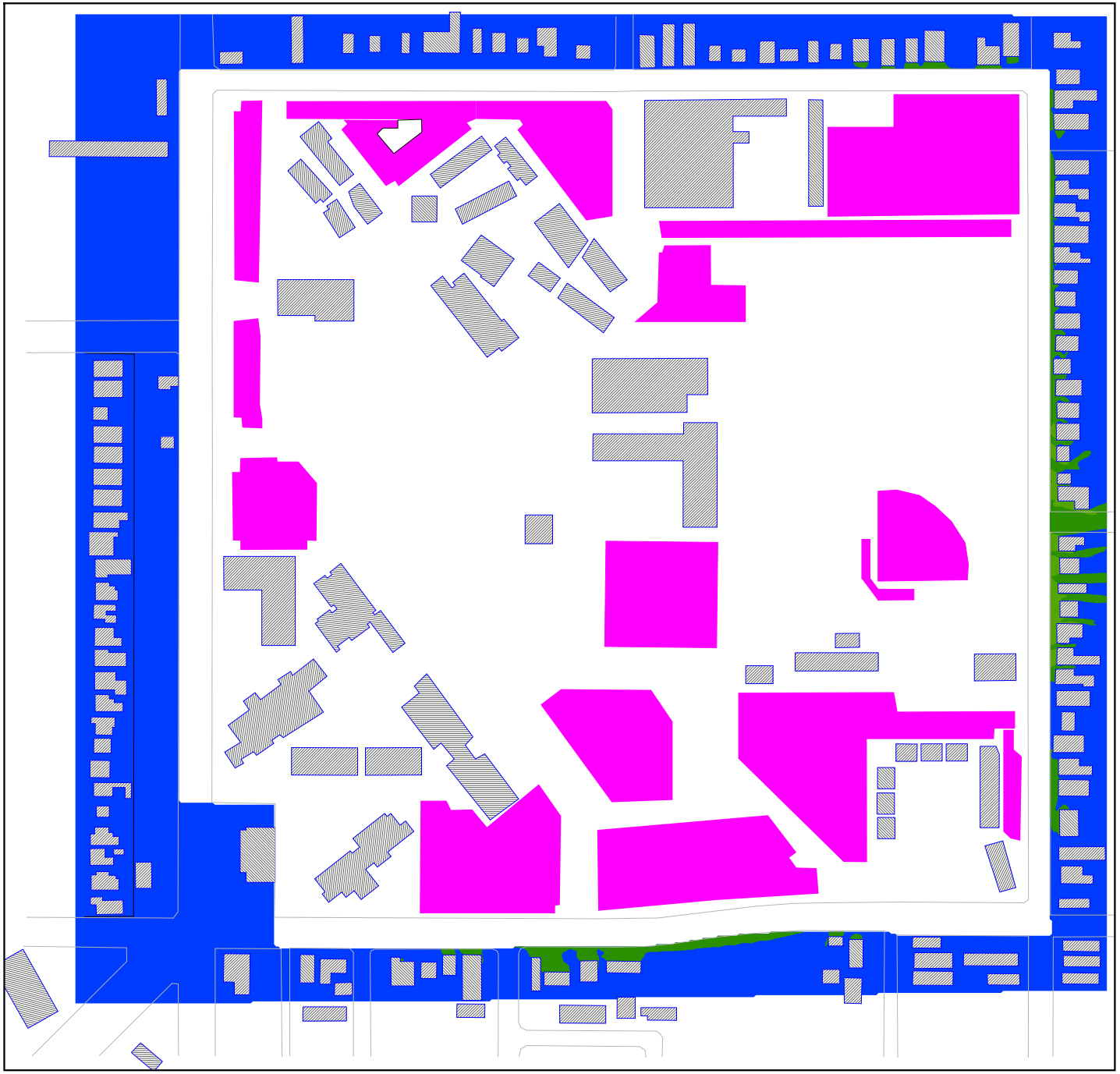


Figure III-2.
Existing 1-Hour Leq, Spring Afternoon Sports Activities

1-Hour Leq, dBA

>	85
80 -	85
75 -	80
70 -	75
65 -	70
60 -	65
55 -	60
50 -	55
45 -	50
<=	45

Signs and symbols
- Buildings
- Property Lines
- Noise Source
- Wall

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
noise & vibration consultants

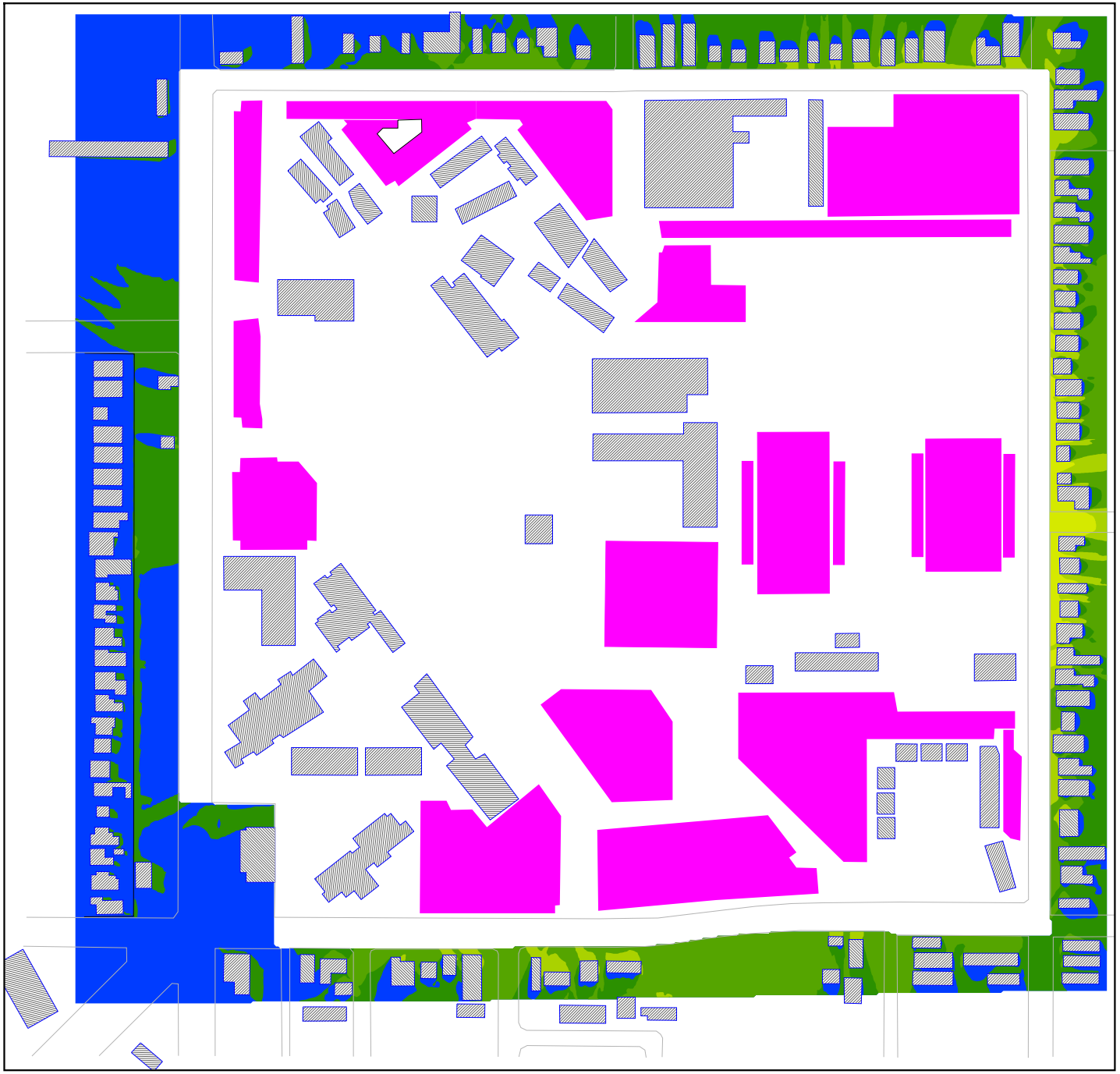


Figure III-3.
Existing 1-Hour Leq,
Fall Afternoon
Sports Activities

1-Hour Leq, dBA

>	85
80 -	85
75 -	80
70 -	75
65 -	70
60 -	65
55 -	60
50 -	55
45 -	50
<=	45

Signs and symbols
- Buildings
- Property Lines
- Noise Source
- Wall

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
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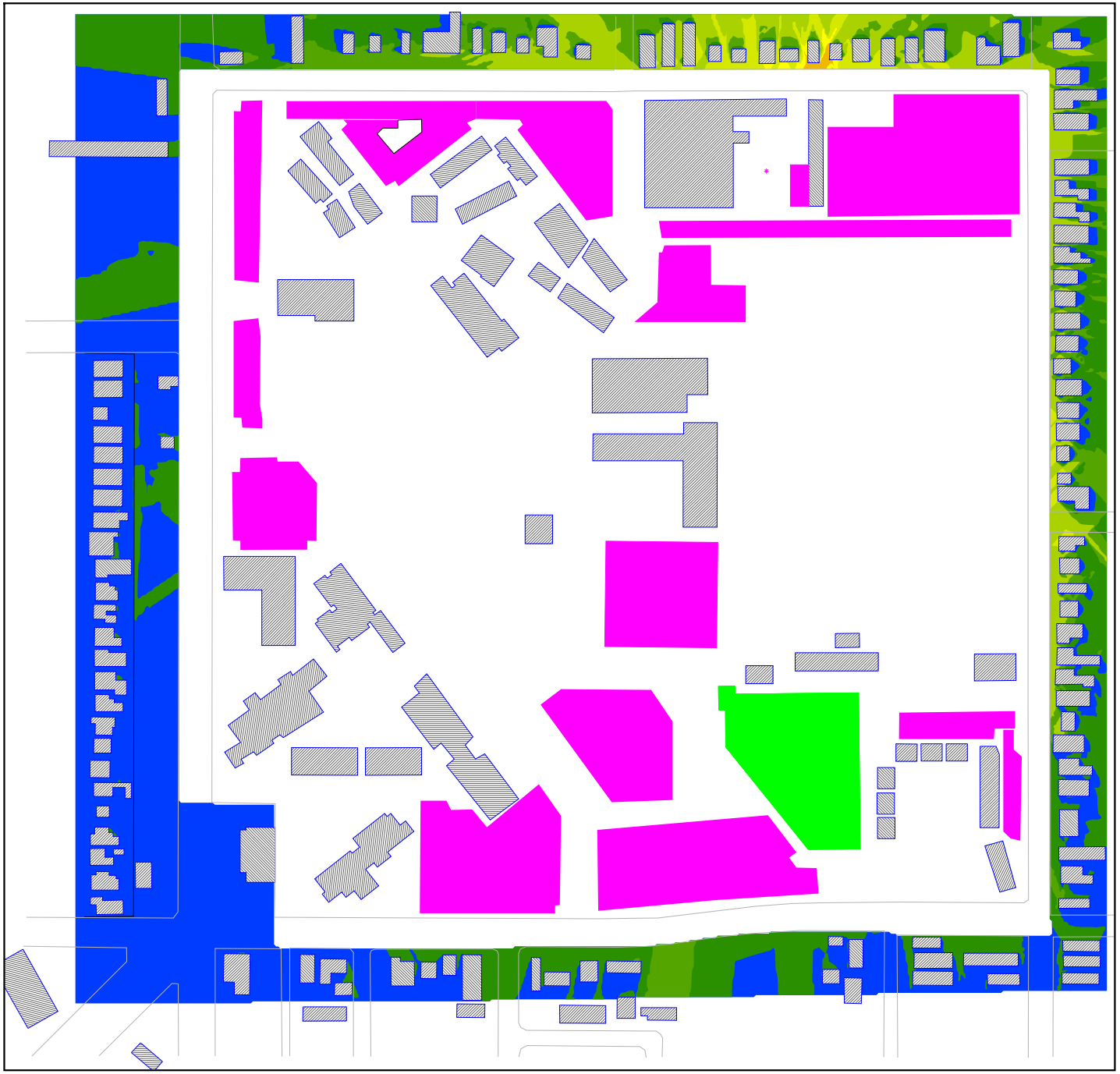

Figure III-4. Horizon 1 1-Hour Leq, Daytime Campus Activities

Calculation Date: July 30, 2009

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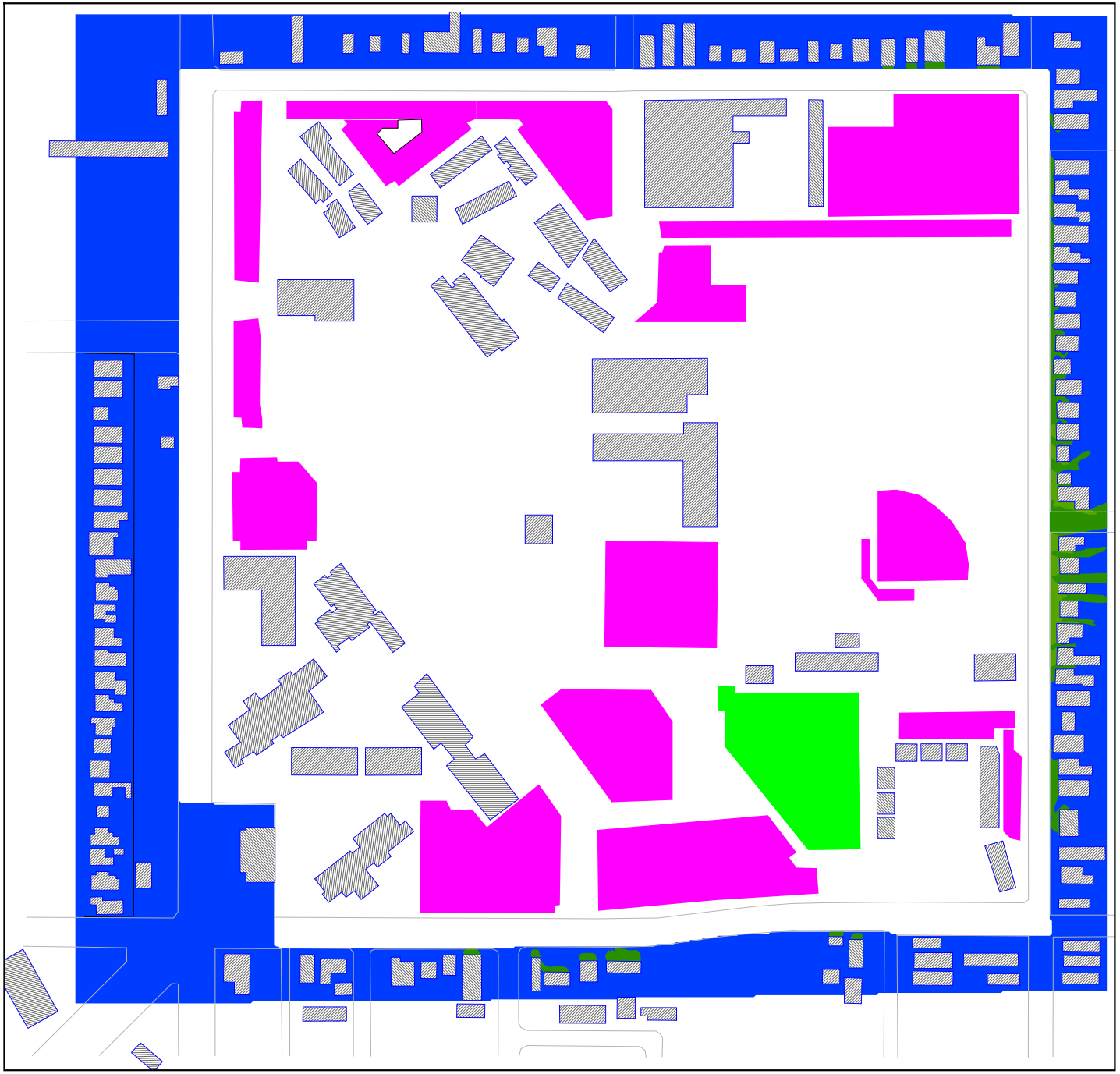

Figure III-5.
Horizon 1 1-Hour Leq, Spring Afternoon Sports Activities

Calculation Date: July 30, 2009

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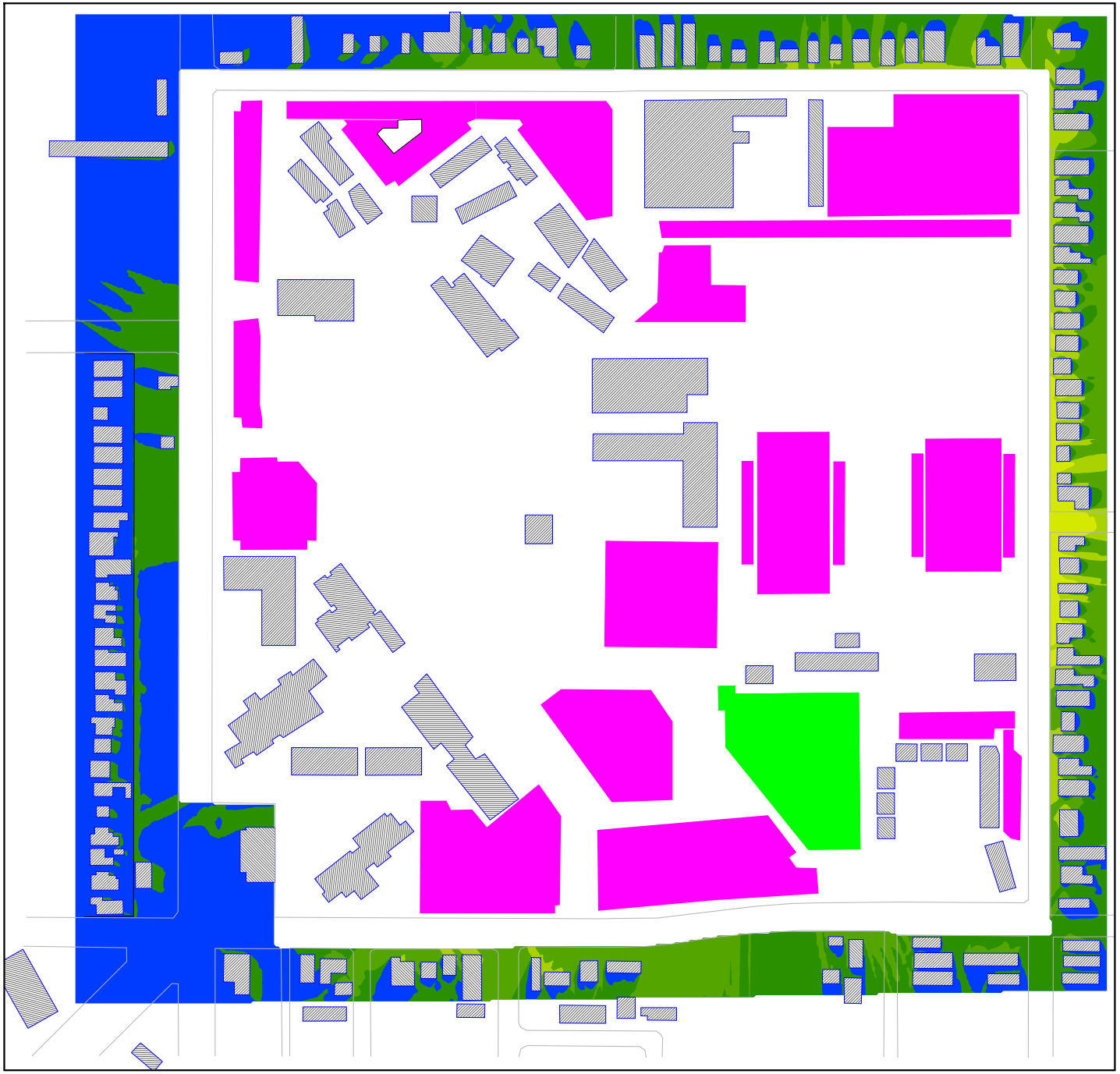

Figure III-6.
Horizon 1 1-Hour Leq,
Fall Afternoon
Sports Activities

1-Hour Leq, dBA

>	85
80 -	85
75 -	80
70 -	75
65 -	70
60 -	65
55 -	60
50 -	55
45 -	50
<=	45

Signs and symbols
- Buildings
- Property Lines
- Noise Source
- Wall
- Parking structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
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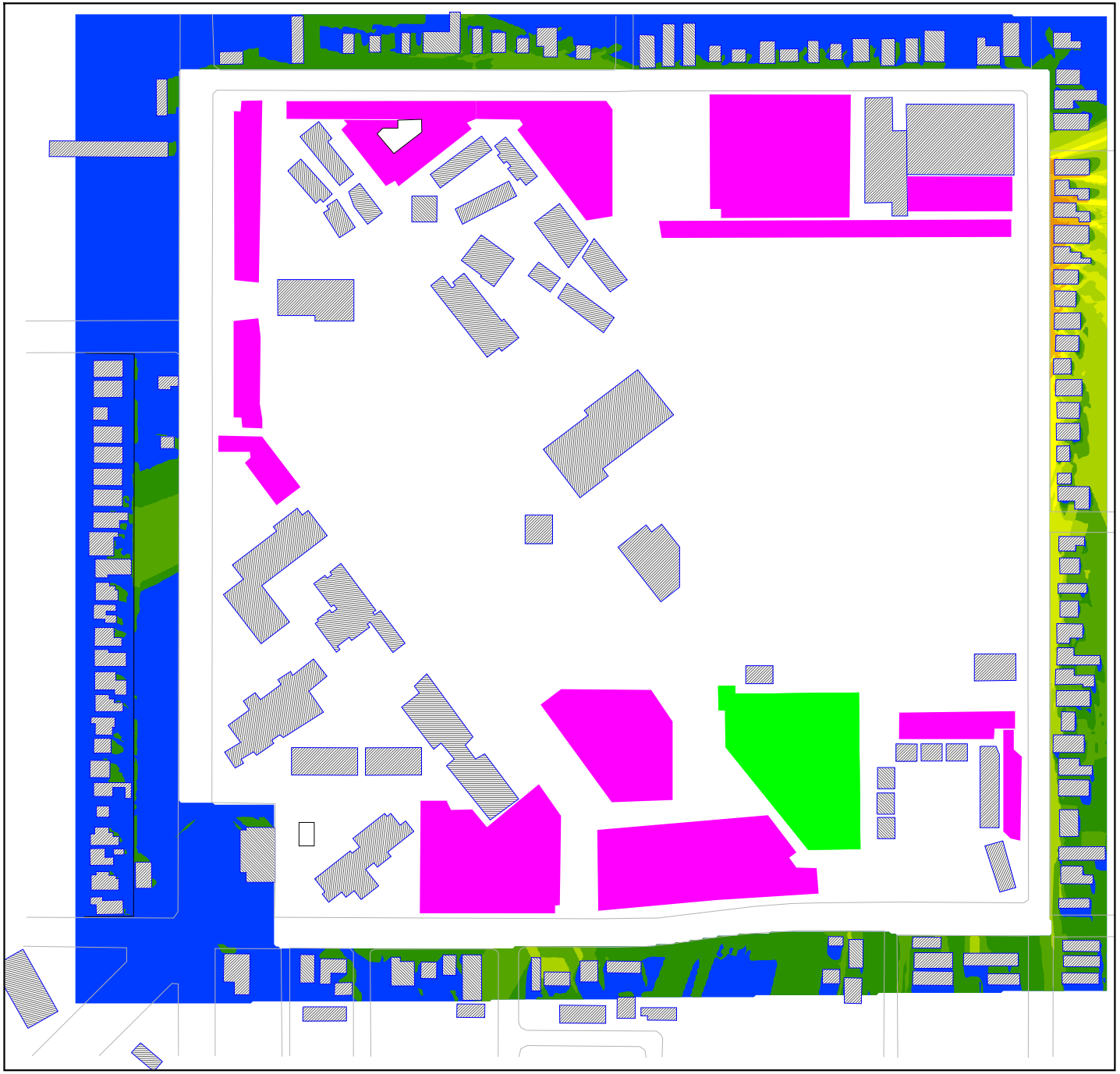

Figure III-7. Horizon 2 1-Hour Leq, Daytime Campus Activities

Calculation Date: July 30, 2009

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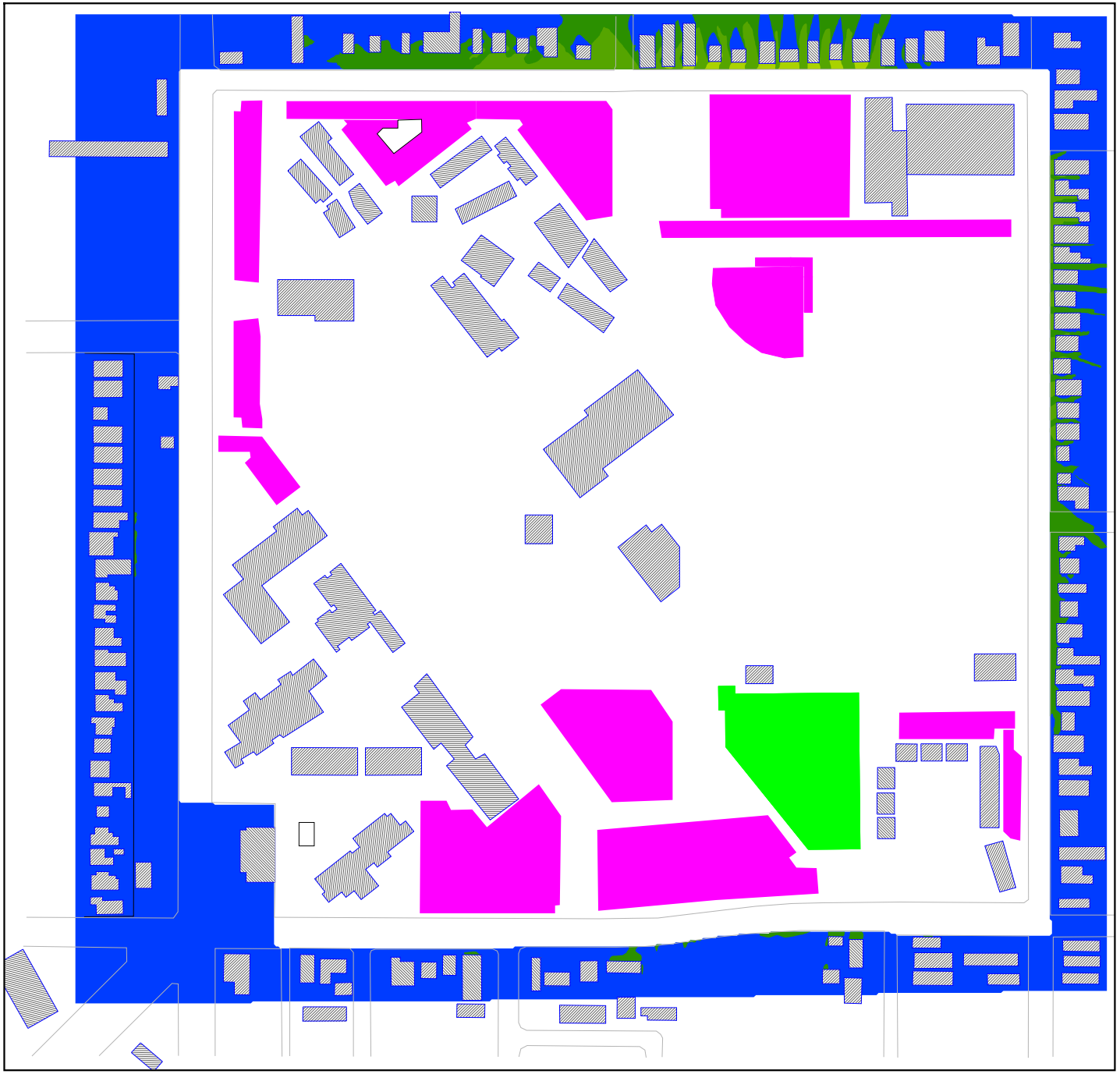

Figure III-8.
Horizon 2 1-Hour Leq,
Spring Afternoon
Sports Activities

1-Hour Leq, dBA

>	85
80 -	85
75 -	80
70 -	75
65 -	70
60 -	65
55 -	60
50 -	55
45 -	50
<=	45

Signs and symbols
- Buildings
- Property Lines
- Noise Source
- Wall
- Parking structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
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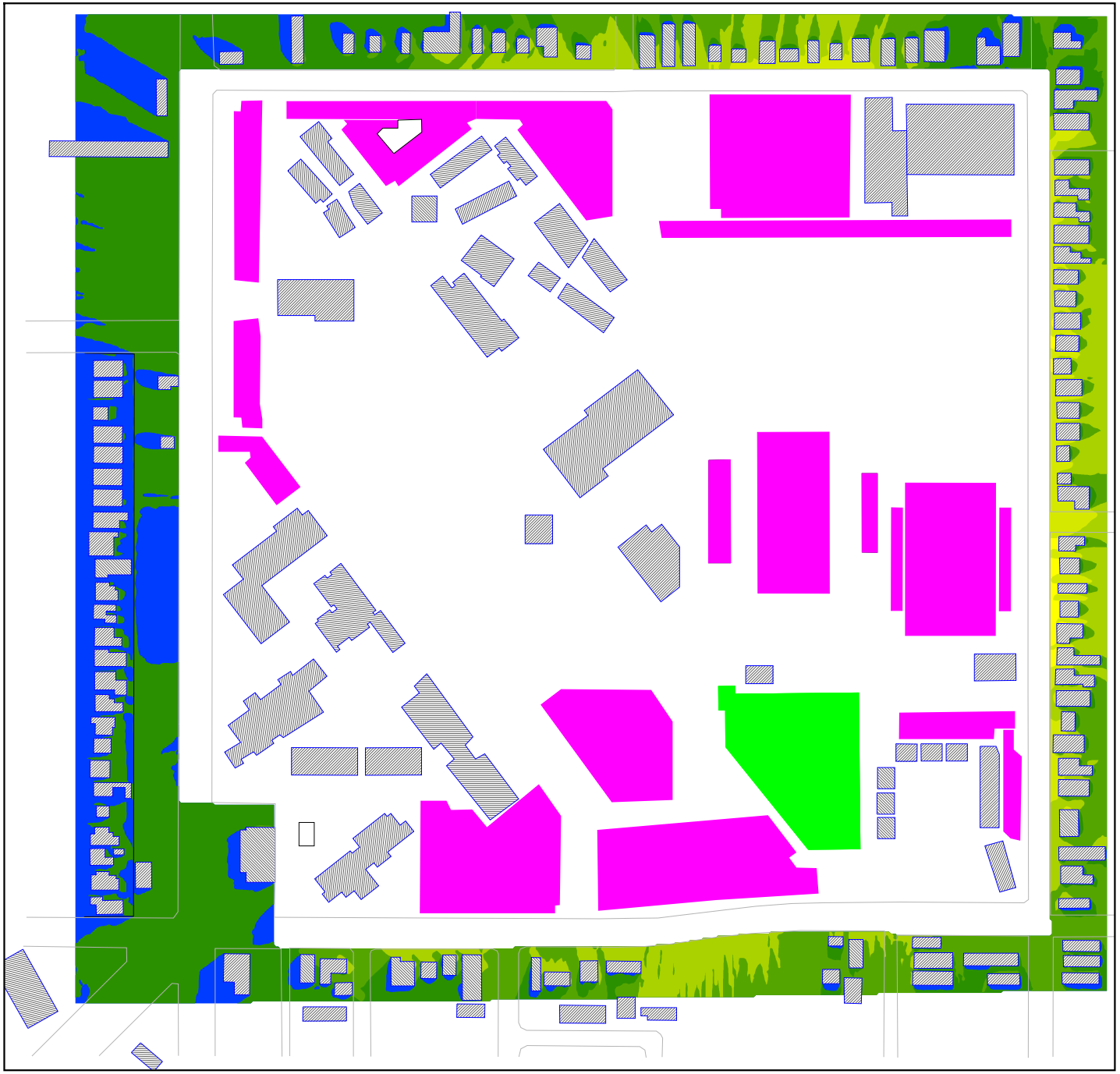

Figure III-9.
Horizon 2 1-Hour Leq,
Fall Afternoon
Sports Activities

1-Hour Leq, dBA

>	85
80 -	85
75 -	80
70 -	75
65 -	70
60 -	65
55 -	60
50 -	55
45 -	50
<=	45

Signs and symbols
- Buildings
- Property Lines
- Noise Source
- Wall
- Parking structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
noise & vibration consultants

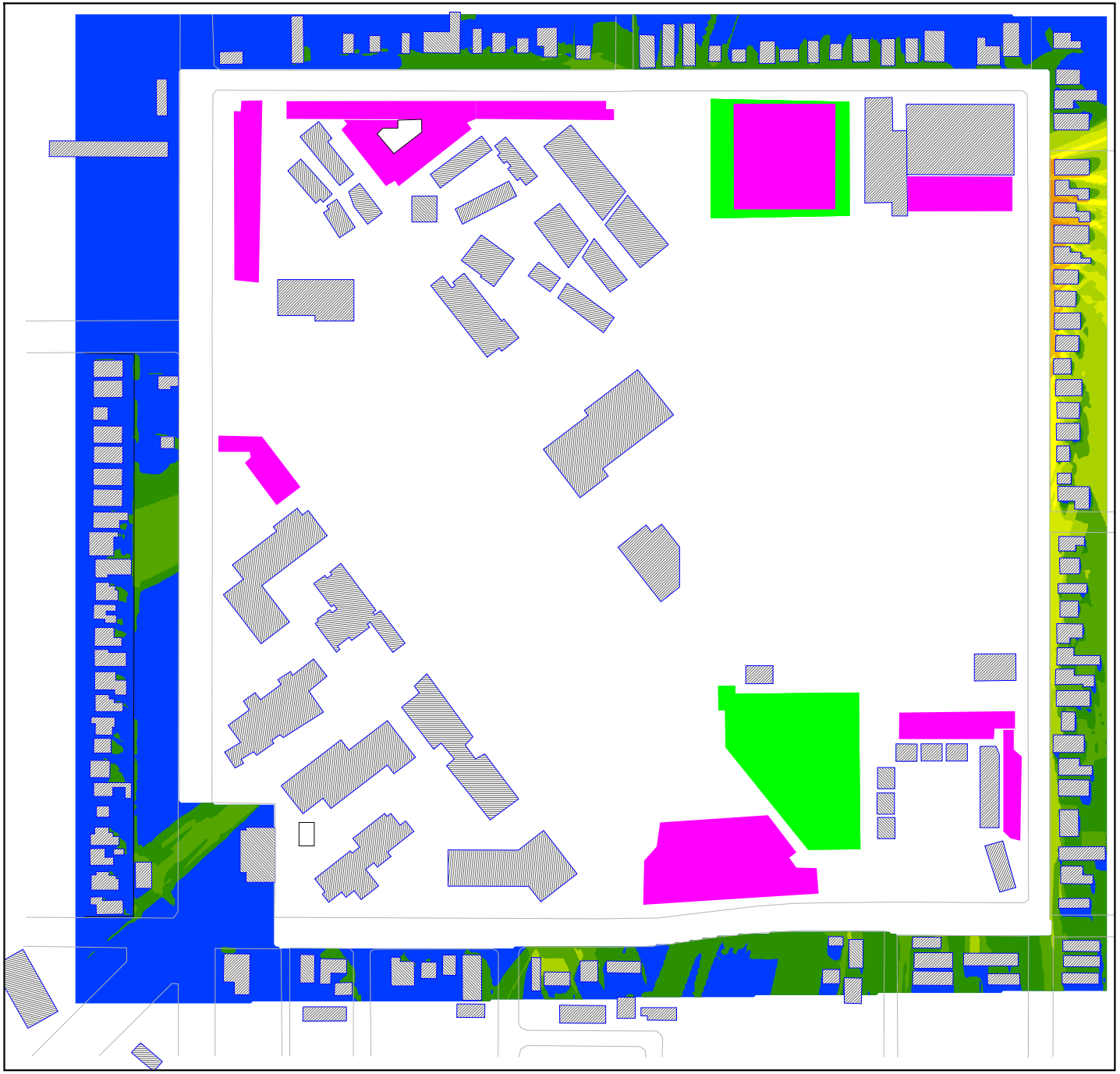

Figure III-10. Horizon 3 1-Hour Leq, Daytime Campus Activities

Calculation Date: July 30, 2009

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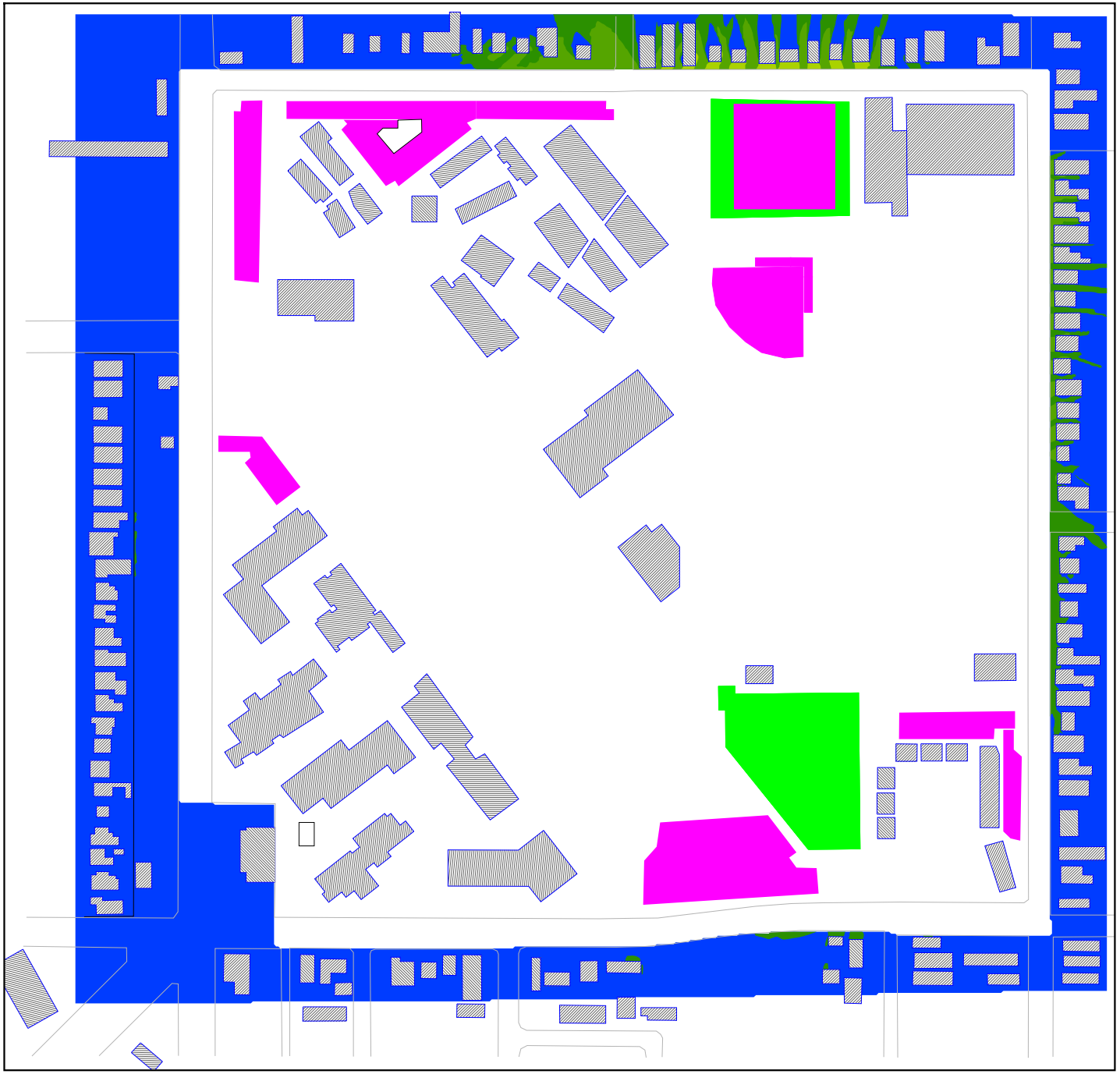

Figure III-11. Horizon 3 1-Hour Leq, Spring Afternoon Sports Activities

1-Hour Leq, dBA

>	85
80 -	85
75 -	80
70 -	75
65 -	70
60 -	65
55 -	60
50 -	55
45 -	50
<=	45

Signs and symbols

- Buildings
- Property Lines
- Noise Source
- Wall
- Parking structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
noise & vibration consultants

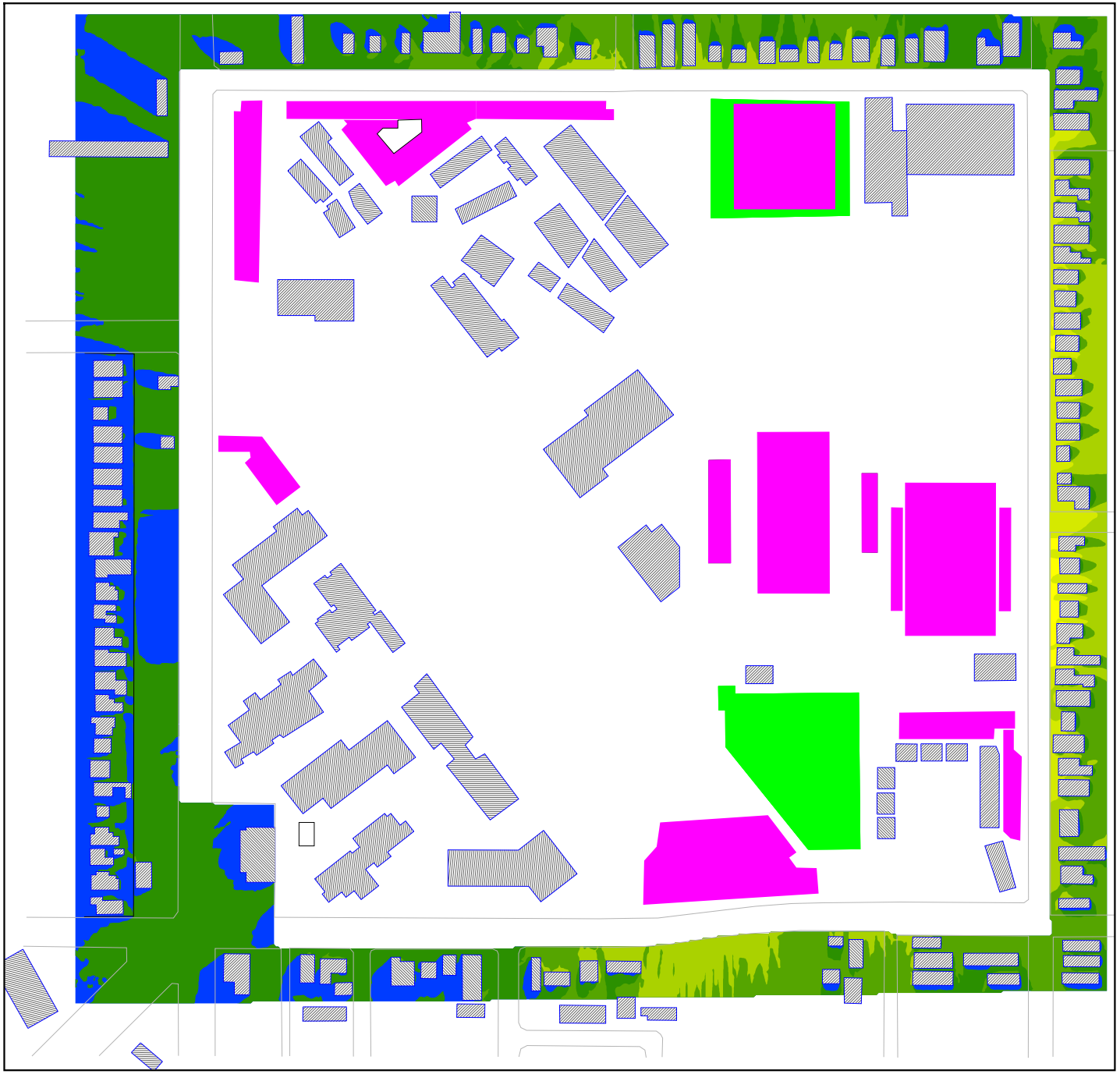

Figure III-12. Horizon 3 1-Hour Leq, Fall Afternoon Sports Activities

1-Hour Leq, dBA

> 85
80 - 85
75 - 80
70 - 75
65 - 70
60 - 65
55 - 60
50 - 55
45 - 50
<= 45

Signs and symbols

- Buildings
- Property Lines
- Noise Source
- Wall
- Parking structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
noise & vibration consultants

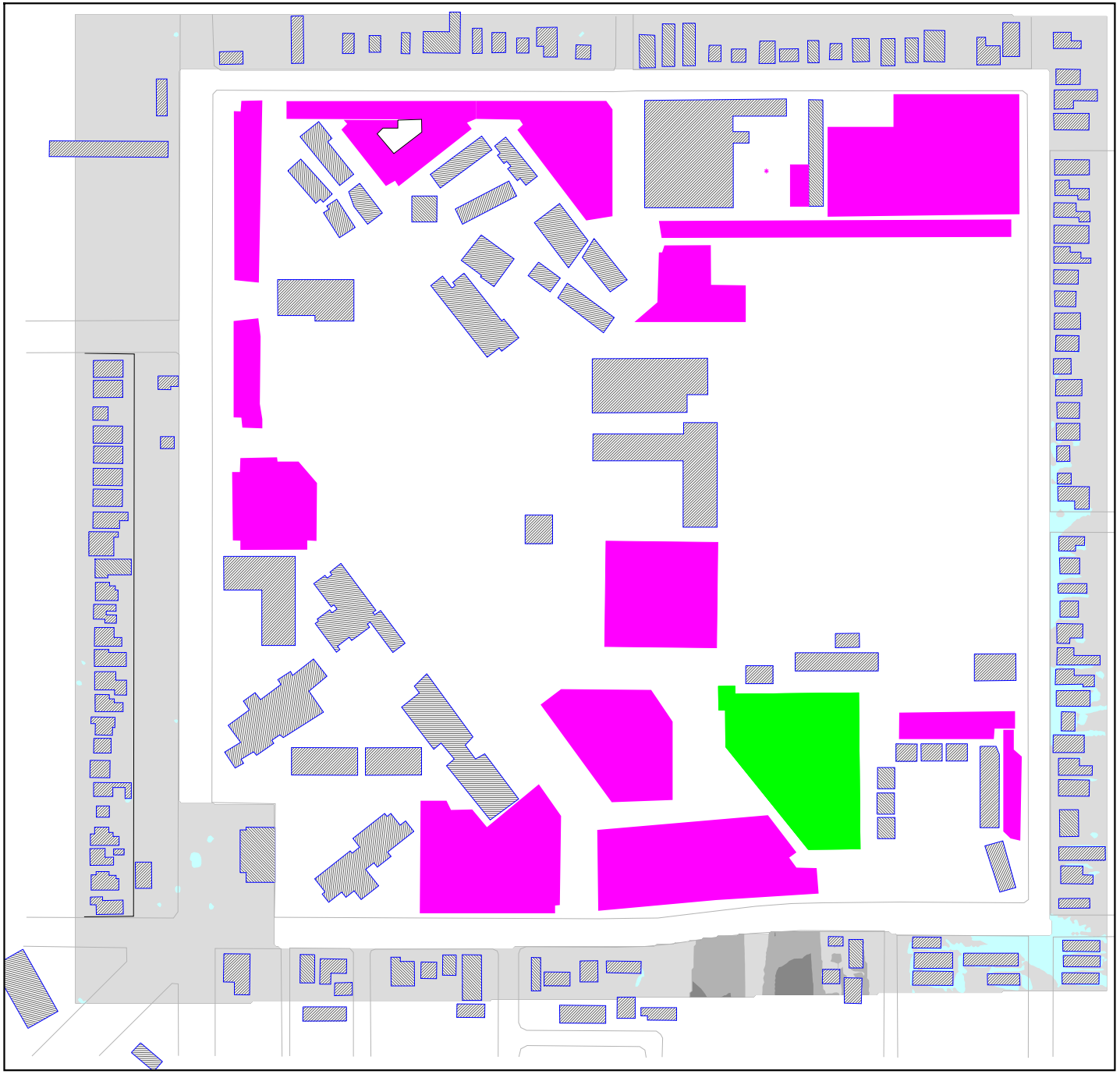

Figure III-13. Change in 1-Hour Leq, Daytime Campus Activities, Existing to Horizon 1

Change in 1-Hour Leq, dBA

> 15
12 - 15
9 - 12
6 - 9
3 - 6
0 - 3
-3 - 0
-6 - -3
-9 - -6
<= -9

Signs and symbols

- Buildings
- Property Lines
- Noise Source
- Wall
- Parking structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
noise & vibration consultants

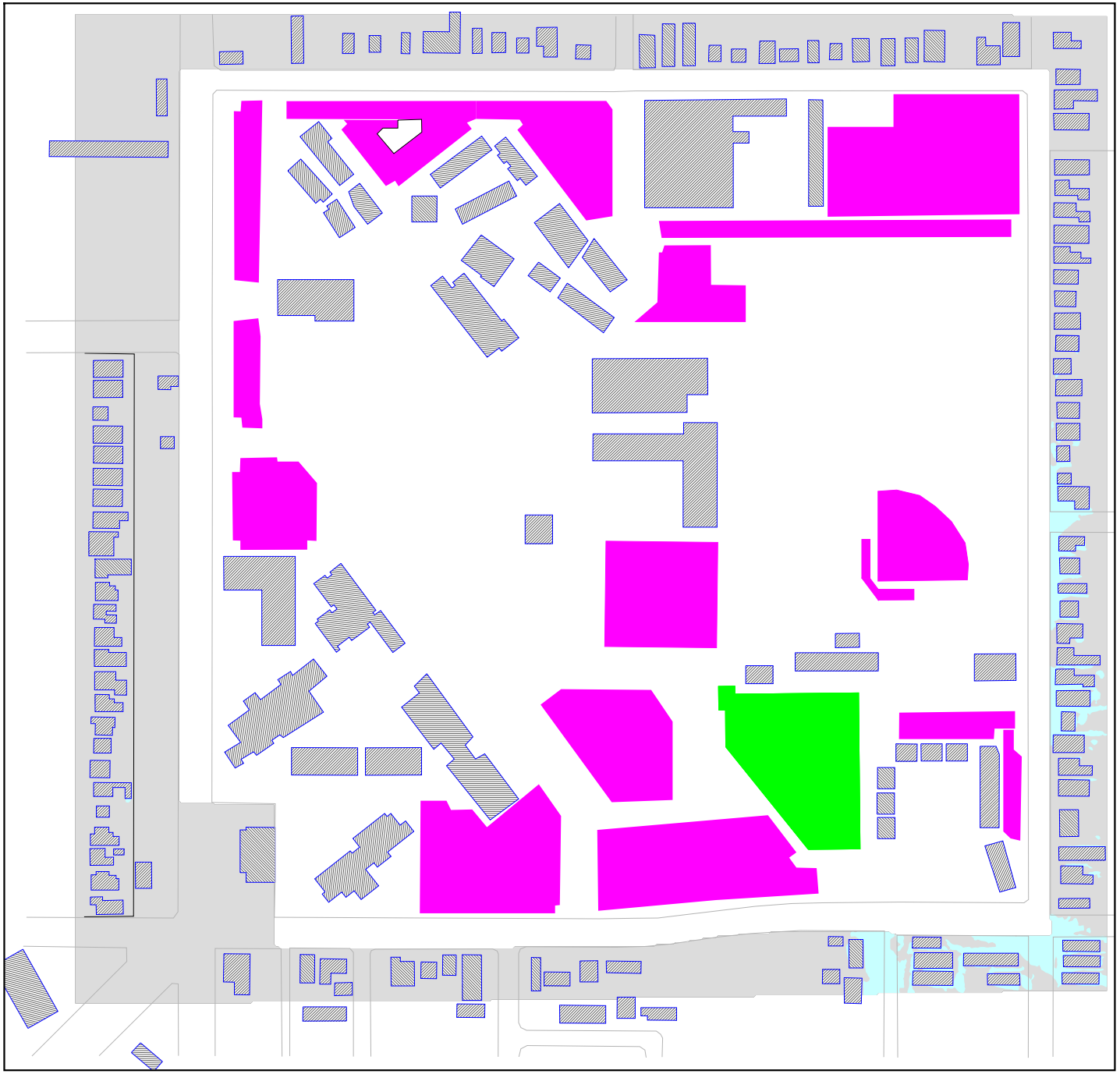

Figure III-14. Change in 1-Hour Leq, Spring Afternoon Sports Activities, Existing to Horizon 1

Change in 1-Hour Leq, dBA

> 15
12 - 15
9 - 12
6 - 9
3 - 6
0 - 3
-3 - 0
-6 - -3
-9 - -6
<= -9

Signs and symbols

- Buildings
- Property Lines
- Noise Source
- Wall
- Parking Structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
noise & vibration consultants

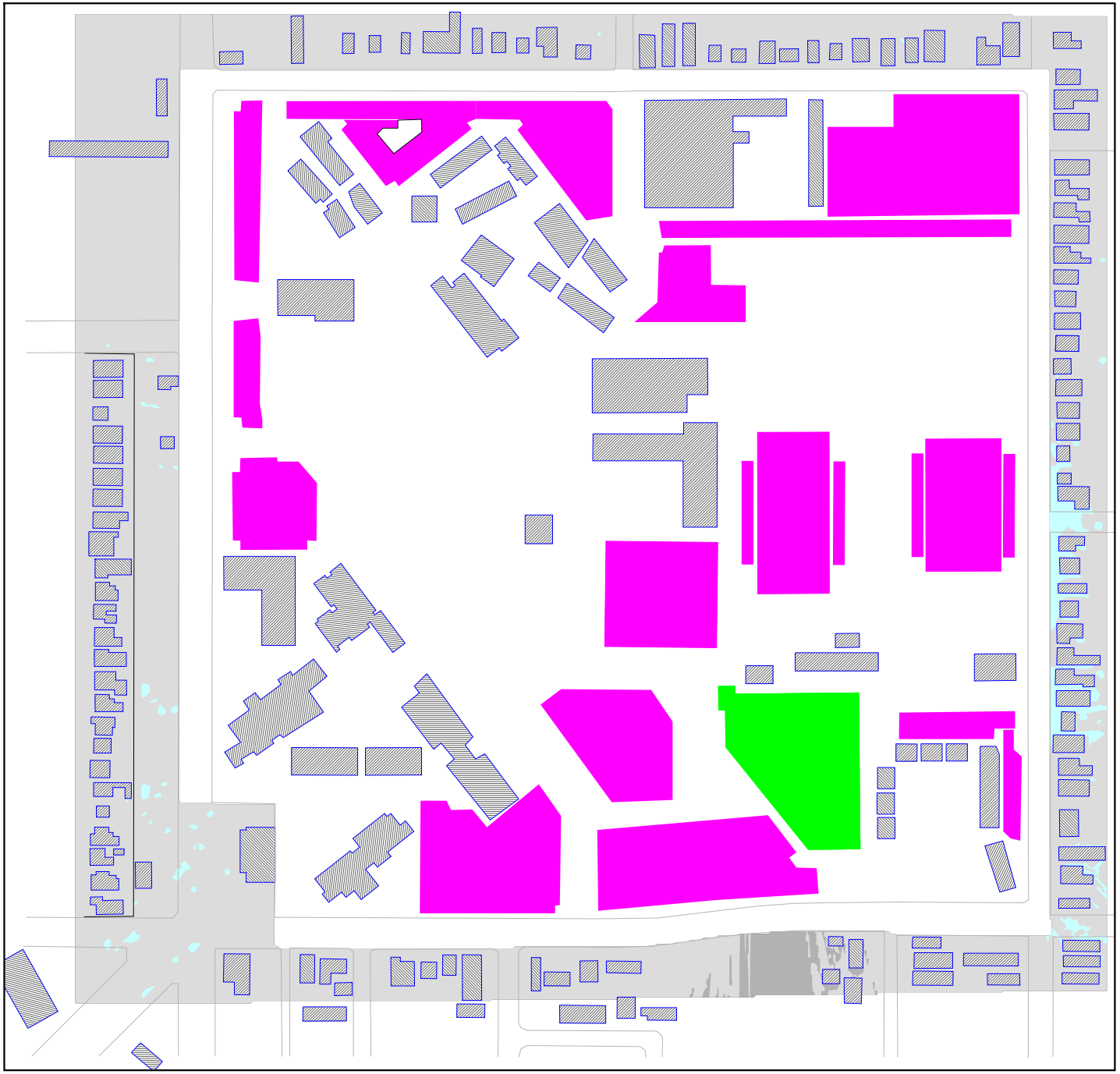

Figure III-15. Change in 1-Hour Leq, Fall Afternoon Sports Activities, Existing to Horizon 1

Change in 1-Hour Leq, dBA

> 15
12 - 15
9 - 12
6 - 9
3 - 6
0 - 3
-3 - 0
-6 - -3
-9 - -6
<= -9

Signs and symbols

- Buildings
- Property Lines
- Noise Source
- Wall
- Parking structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
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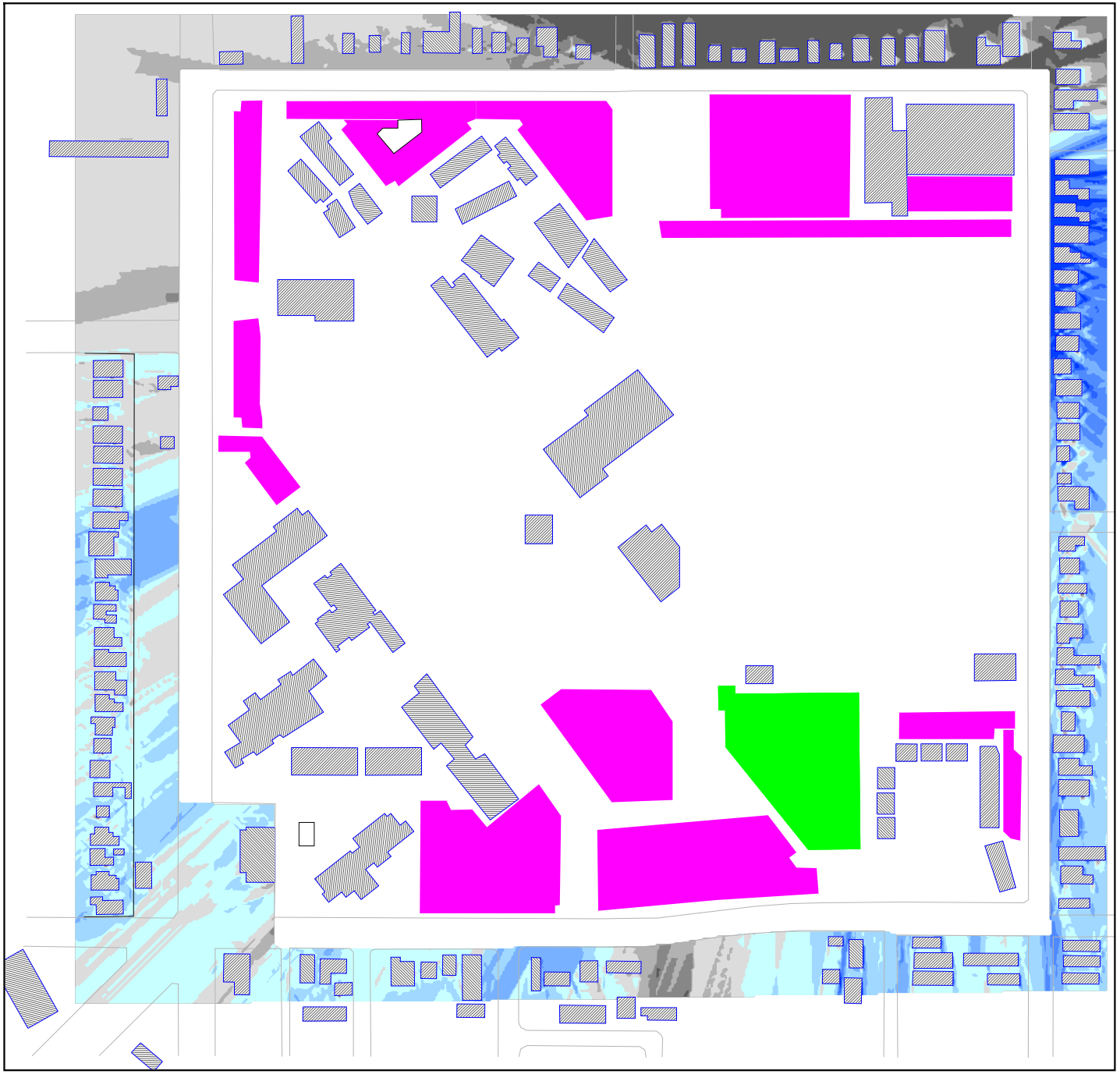

Figure III-16. Change in 1-Hour Leq, Daytime Campus Activities, Horizon 1 to Horizon 2

Change in 1-Hour Leq, dBA

>	15
12 -	15
9 -	12
6 -	9
3 -	6
0 -	3
-3 -	0
-6 -	-3
-9 -	-6
<=	-9

Signs and symbols
- Buildings
- Property Lines
- Noise Source
- Wall
- Parking structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
noise & vibration consultants

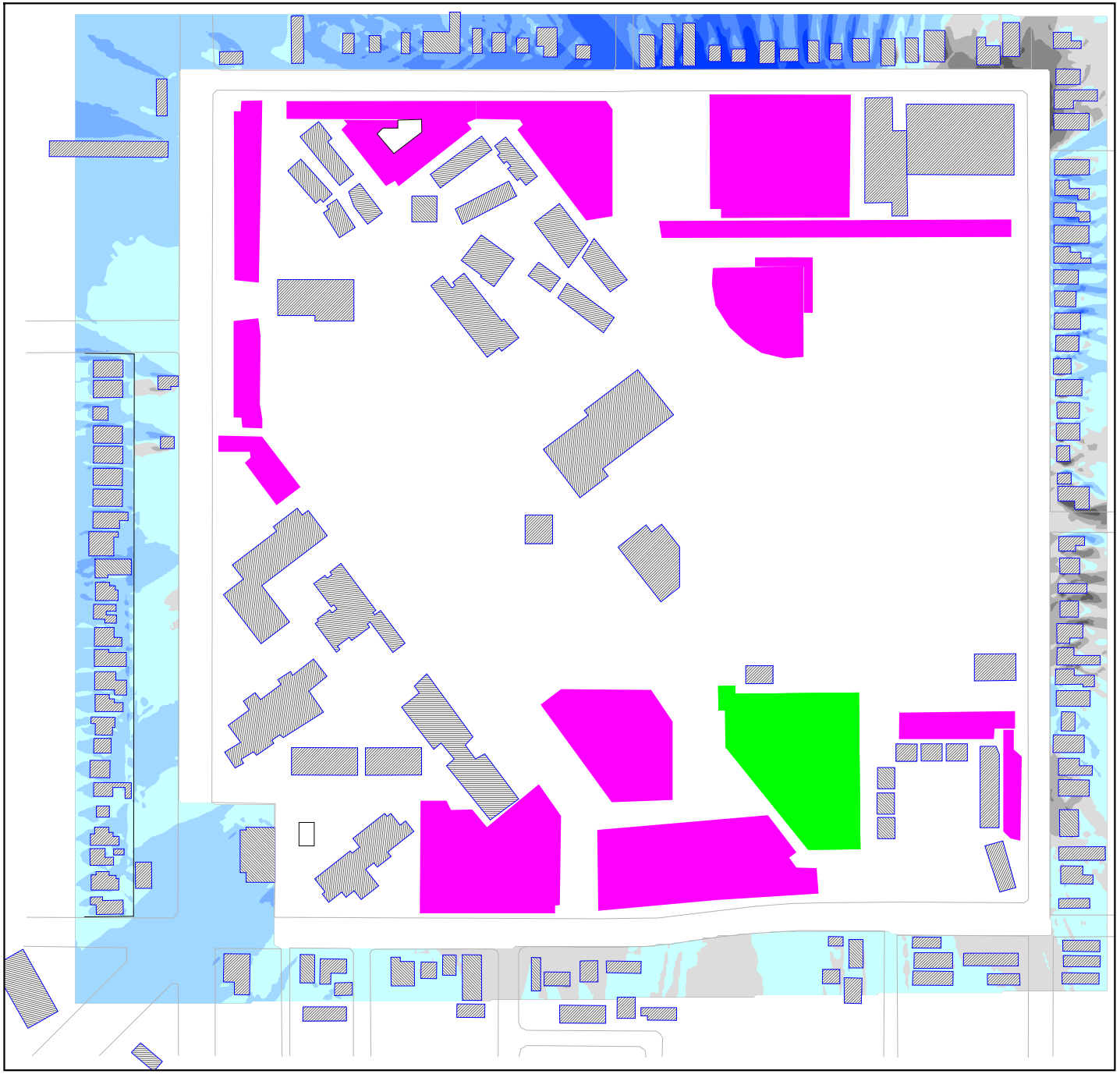

Figure III-17. Change in 1-Hour Leq, Spring Afternoon Sports Activities, Horizon 1 to Horizon 2

Change in 1-Hour Leq, dBA

> 15
12 - 15
9 - 12
6 - 9
3 - 6
0 - 3
-3 - 0
-6 - -3
-9 - -6
<= -9

Signs and symbols

- Buildings
- Property Lines
- Noise Source
- Wall
- Parking structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
noise & vibration consultants

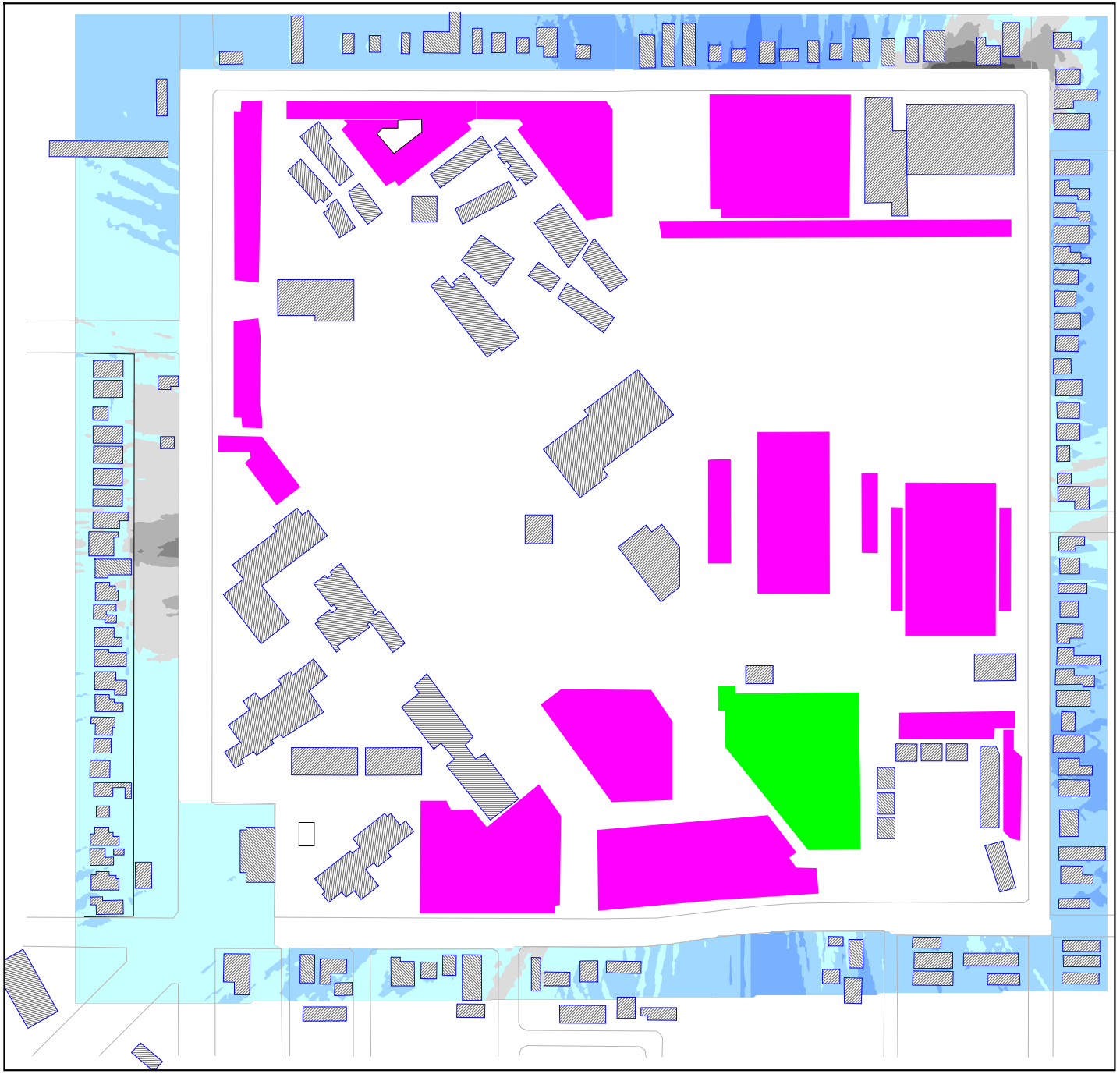

Figure III-18. Change in 1-Hour Leq, Fall Afternoon Sports Activities, Horizon 1 to Horizon 2

Change in 1-Hour Leq, dBA

> 15
12 - 15
9 - 12
6 - 9
3 - 6
0 - 3
-3 - 0
-6 - -3
-9 - -6
<= -9

Signs and symbols

- Buildings
- Property Lines
- Noise Source
- Wall
- Parking structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
noise & vibration consultants

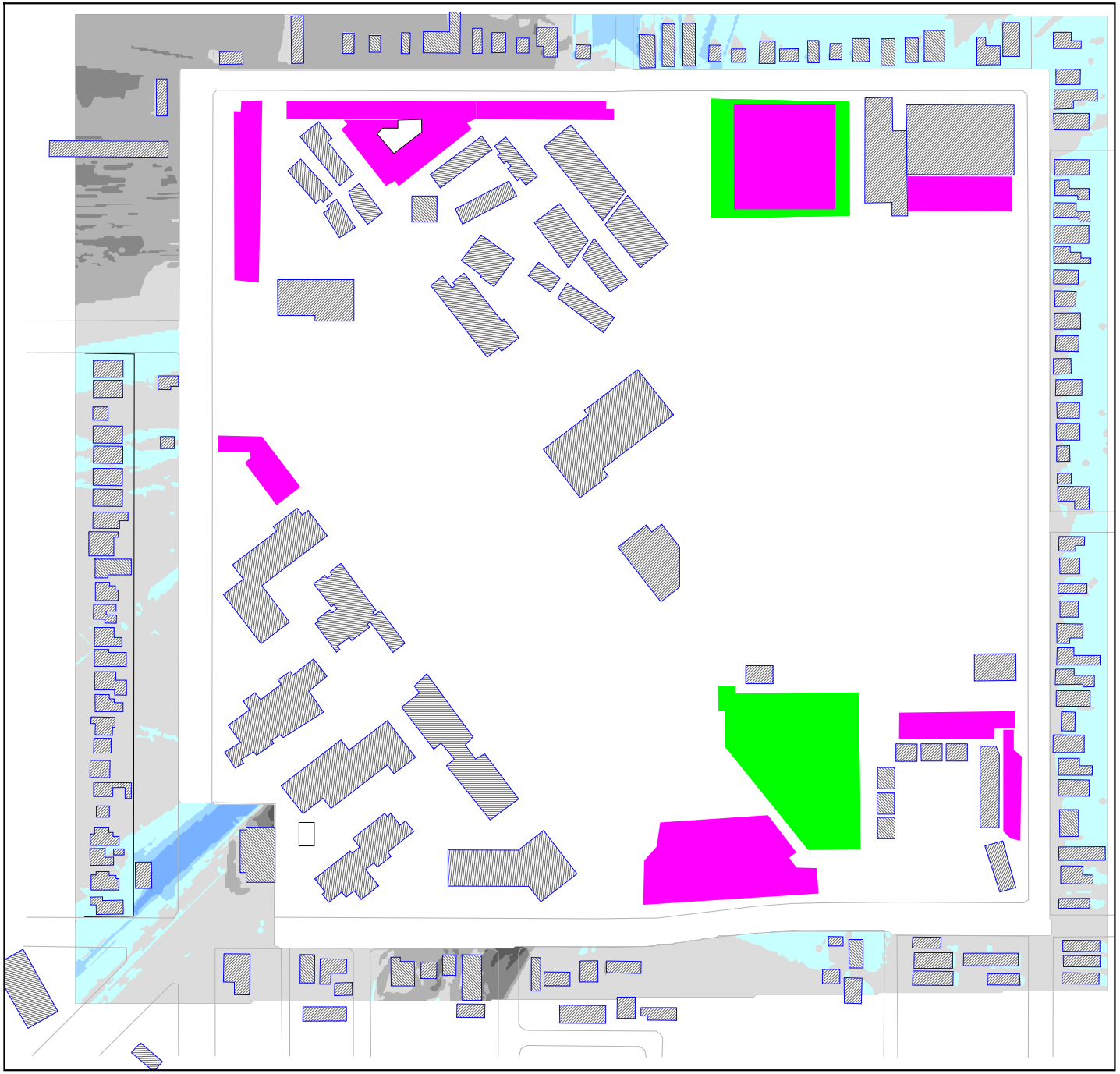

Figure III-19. Change in 1-Hour Leq, Daytime Campus Activities, Horizon 2 to Horizon 3

Change in 1-Hour Leq, dBA

> 15
12 - 15
9 - 12
6 - 9
3 - 6
0 - 3
-3 - 0
-6 - -3
-9 - -6
<= -9

Signs and symbols

- Buildings
- Property Lines
- Noise Source
- Wall
- Parking structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

WIELAND ACOUSTICS
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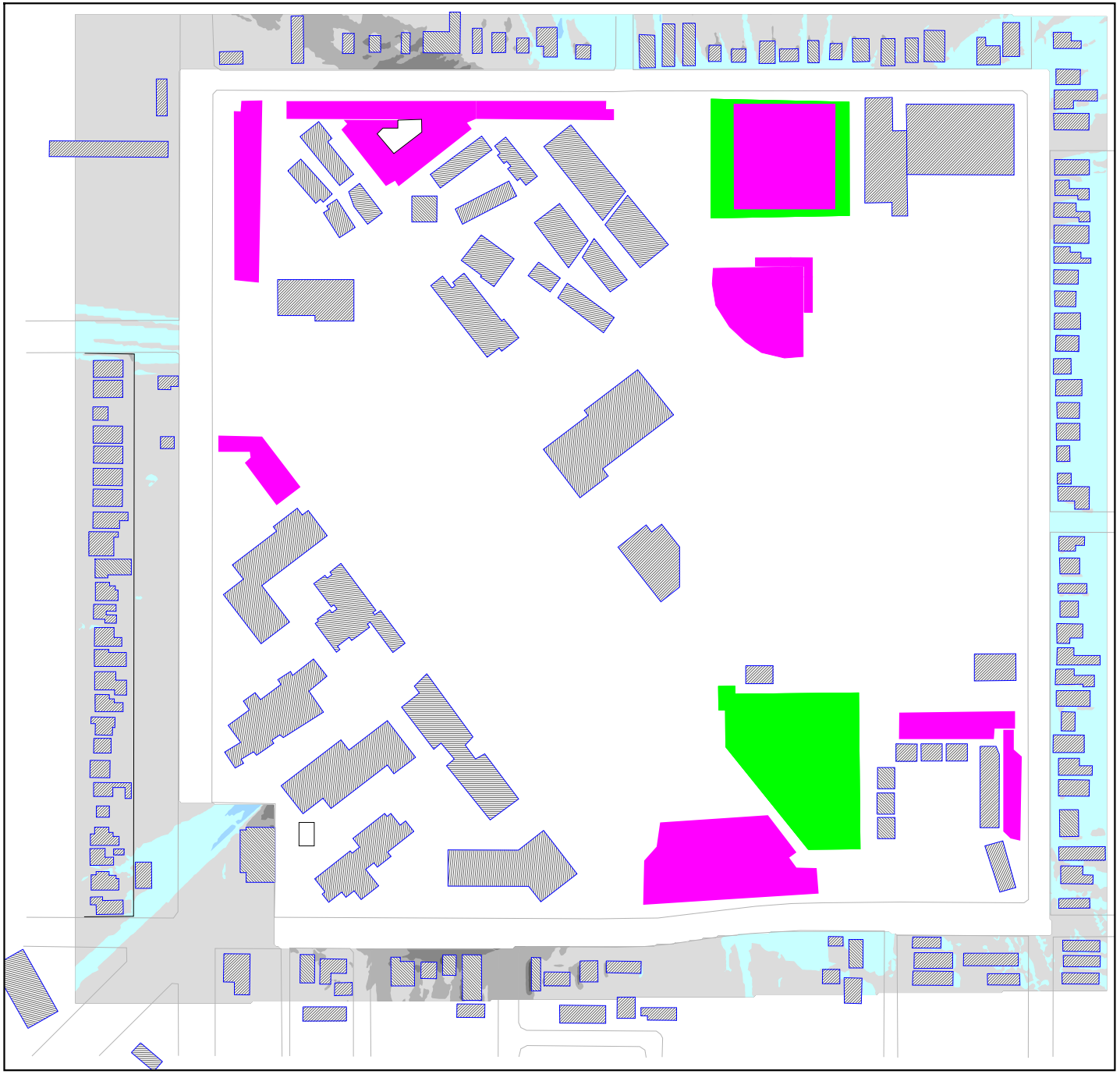

Figure III-20. Change in 1-Hour Leq, Spring Afternoon Sports Activities, Horizon 2 to Horizon 3

Calculation Date: July 30, 2009

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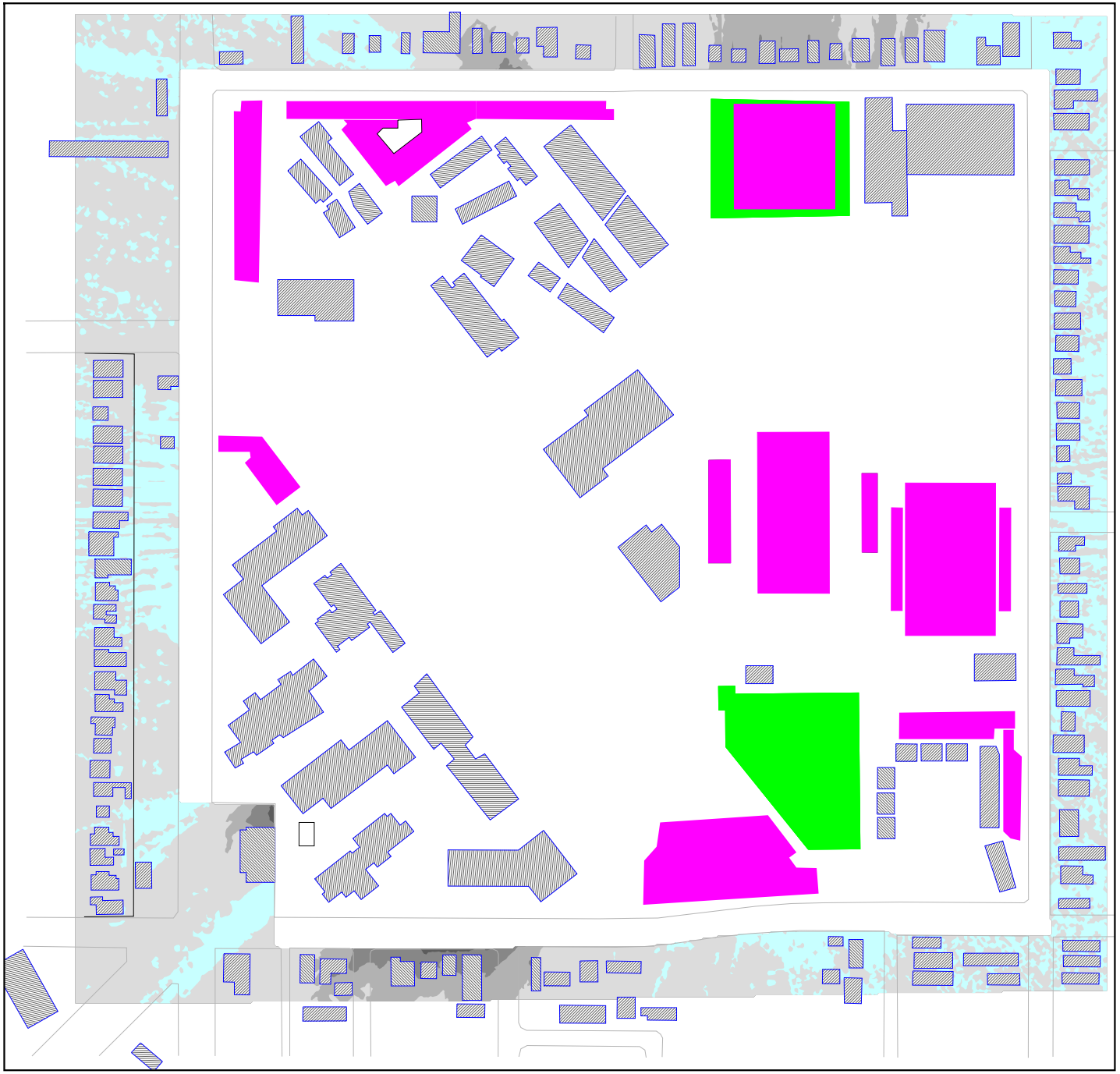

Figure III-21. Change in 1-Hour Leq, Fall Afternoon Sports Activities, Horizon 2 to Horizon 3

Change in 1-Hour Leq, dBA

> 15
12 - 15
9 - 12
6 - 9
3 - 6
0 - 3
-3 - 0
-6 - -3
-9 - -6
<= -9

Signs and symbols

- Buildings
- Property Lines
- Noise Source
- Wall
- Parking structure

N

0 250 500 750 feet

Calculation Date: July 30, 2009

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Appendix G

Transportation Impact Study

FEHR & PEERS
TRANSPORTATION CONSULTANTS

SAN BERNARDINO VALLEY COLLEGE MASTER PLAN
TRANSPORTATION IMPACT STUDY

Prepared for:

San Bernardino Community College District

San Bernardino Valley College

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I. EXECUTIVE SUMMARY

Fehr & Peers has completed its assessment for the proposed redevelopment of San Bernardino Valley College (SBVC). SBVC is bounded by Esperanza Street to the north, Grant Avenue to the South, K Street to the east, and Mt. Vernon Avenue to the west. The project proposes to redevelop the campus in three horizons, targeted for 2010, 2020, and 2030. In Horizon 1, the project plans to construct new buildings to replace those located along the San Jacinto Fault Fold Zone. In Horizon 2, four new buildings are planned to replace those that were assessed to be in poor condition by the San Bernardino Community College District (SBCCD). In Horizon 3, new buildings are planned to accommodate the growing student enrollment. Horizon 3 is the only horizon in which development is intended to increase capacity. In addition, the project proposes to add two parking structures – a 1,250 space structure along Grant Avenue in Horizon 1, and a 1,100 space structure along Esperanza Street in Horizon 3. These structures will provide additional parking for the SBVC community, and will replace parking lots that are planned to be removed or reduced during master plan redevelopment.

As part of Fehr & Peers assessment, the following conditions were evaluated:

- Existing Conditions – Consists of existing counts collected in the study area. When counts were taken, the Mill Street/I-215 interchange was closed, and vehicles were re-routed to the Inland Center Drive/I-215 ramps via I Street.

- Horizon 1 (2010) No Project Conditions – Adds a two year proportion of traffic from growth in the San Bernardino area, as well as the projected 1% per year student enrollment growth (739 students), with vehicles using existing distribution to access SBVC.

- Horizon 1 (2010) With Project Conditions – Adds a two year proportion of traffic from growth in the San Bernardino area, as well as the projected 1% per year student enrollment growth (739 students). Inbound vehicle trips are distributed based on the planned parking supply for this horizon of master plan redevelopment.

- Horizon 2 (2020) No Project Conditions – Adds a twelve year proportion of traffic from growth in the San Bernardino area, as well as the projected 1% per year student enrollment growth (2,439 students), with vehicles using existing distribution to access SBVC.

- Horizon 2 (2020) With Project Conditions – Adds a twelve year proportion of traffic from growth in the San Bernardino area, as well as the projected 1% per year student enrollment growth (2,439 students). Inbound vehicle trips are distributed based on the planned parking supply for this horizon of master plan redevelopment.

- Horizon 3 (2030) No Project Conditions – Adds a twenty-two year proportion of traffic from growth in the San Bernardino area. Adds a growth of 3,439 students to account for full capacity with the existing facilities. In this scenario, vehicles use existing distribution to access SBVC.

- Horizon 3 (2030) With Project Conditions – Adds a twenty-two year proportion of traffic from growth in the San Bernardino area, as well as the projected 1% per year (4,439 students) student enrollment growth. Inbound vehicle trips are distributed based on the planned parking supply for this horizon of master plan redevelopment.

Existing traffic was redistributed to account for the reopening of the Inland Center Drive and Mill Street interchanges prior to Horizon 1. The resulting traffic was used as a baseline for the Horizons 1-3 analysis scenarios.

The potential project impacts to the vehicular circulation and parking, pedestrian, transit, and bicycle facilities were assessed to identify if the proposed project results in a significant impact to area facilities. The intersections studied, whether there is a significant project impact at the intersection, under which analysis the impact occurs, and the identified significance after mitigation are summarized below:

TABLE 1
INTERSECTION RESULTS SUMMARY

Study Intersection	Impact?	Analysis Scenarios where Impact Occurs	Significance After Mitigation
W. Mill Street/S. Mt. Vernon Avenue	No		
W. Mill Street/S. K Street	No		
Esperanza Street/S. Mt. Vernon Avenue	No		
Esperanza Street/S. Eureka Avenue	No		
Esperanza Street/S. K Street	No		
Grant Avenue/S. Mt. Vernon Avenue/N. La Cadena Drive	No		
Grant Avenue/Fairview Avenue	No		
Grant Avenue/S. K Street	Yes	Horizon 3	Significant and Unavoidable
Grant Avenue/S. J Street	No		
Grant Avenue/S. I Street	Yes	Horizon 3	Significant and Unavoidable
Inland Center Drive/S. I Street	Yes	Horizon 2, Horizon 3	Less than Significant
Inland Center Drive/I-215 Southbound Ramps	No		
Inland Center Drive/I-215 Northbound Ramps	No		
Colton Avenue/Mt. Vernon Avenue	No		

Source: Fehr and Peers, 2009.

The project is responsible for a fair-share contribution toward impacts in the identified horizon years. However, the lead agency for the project (San Bernardino Community College District) does not have control over these intersections and therefore cannot guarantee the improvement to be implemented. For this reason, project impacts are considered significant and unavoidable.

The City of San Bernardino has indicated that the intersection of Inland Center Drive/I Street will be signalized by 2020, resulting in a reduction of impacts to this intersection to a less than significant level (Tim Porter, personal communication, 2009). We have therefore considered the impact at this intersection to be less than significant after mitigation, even though it is not under the jurisdiction of the lead agency.

1. ANALYSIS PARAMETERS

This chapter outlines the geographic scope of the traffic impact analysis, including the study intersections and roadways, and the analysis methodologies and significance criteria employed in this study.

PROJECT DESCRIPTION

San Bernardino Valley College (SBVC) was developed in the 1920s and is part of the San Bernardino Community College District (SBCCD). In 1996, as a result of the 1992 Landers and Big Bear earthquakes, SBCCD began investigating where the San Jacinto fault was located on the SBVC campus. The results of that study recommended building replacement projects for areas within the major influence area of the fault.

There are three horizon years of the Master Plan: 2010, 2020, and 2030. Horizons 1 (2010) and 2 (2020) consist of constructing new buildings to replace existing facilities that fall in the San Jacinto Fault Zone, or were assessed to be in poor condition. In Horizon 3, new buildings will also be constructed to accommodate the growing student population that the existing structures cannot sufficiently hold. The expanded facilities will be able to accommodate an additional 1,000 enrolled students by Year 2030 at the campus than could be accommodated at the existing campus.

PROJECT STUDY AREA

The project is bounded by Mt. Vernon Avenue to the west, Esperanza Street to the north, K Street to the east, and Grant Avenue to the south. The major roadways within the study area are Mt. Vernon Avenue, Esperanza Street, K Street, Grant Avenue, Mill Street, and Colton Avenue/Inland Center Drive. The study area contains intersections located in both the City of San Bernardino and the City of Colton. Figure 1 shows the project study area.

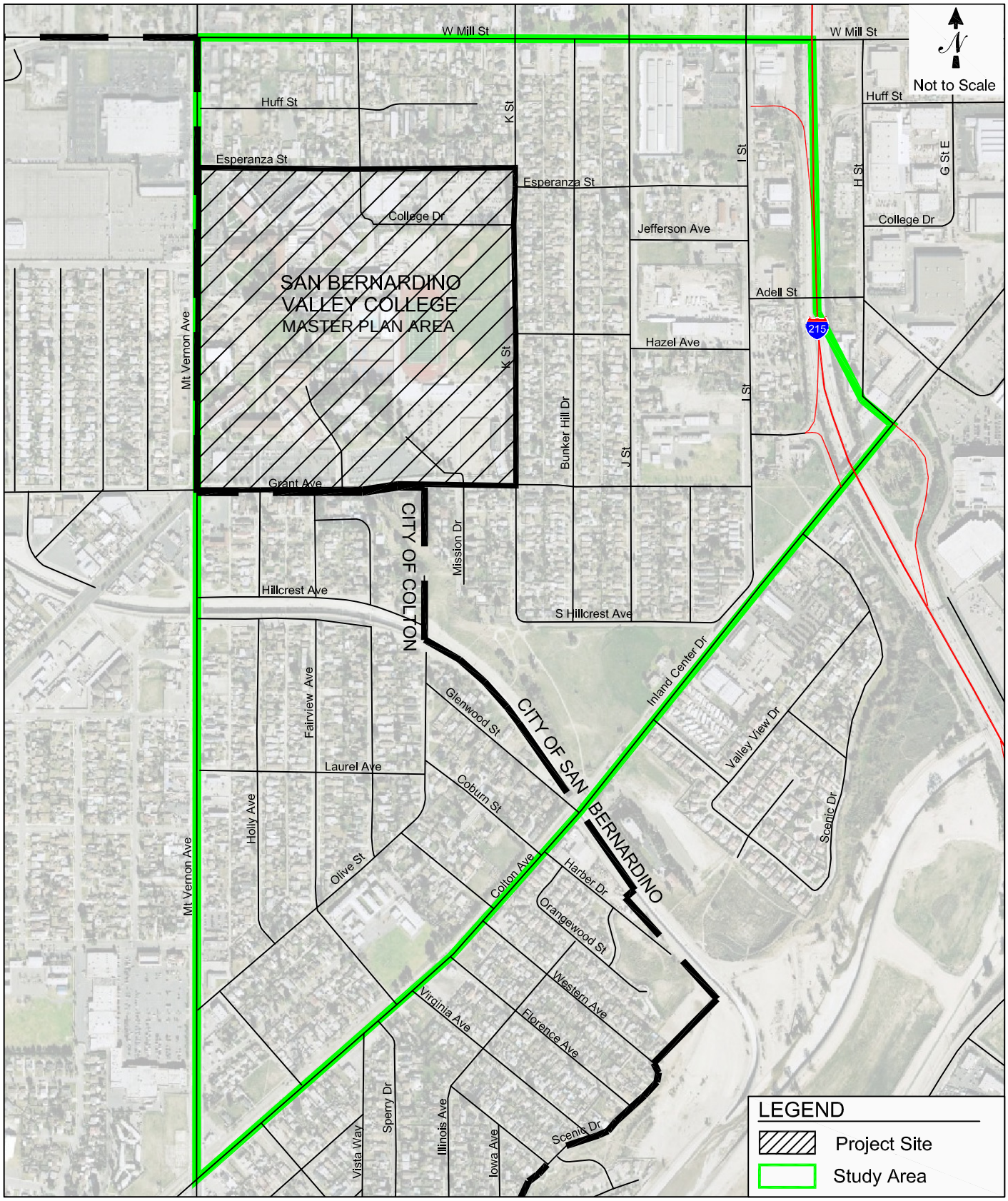
PROJECT DRIVEWAYS & ROADWAYS

There are currently nine driveways providing access to SBVC. Vehicles can access the college along Grant Avenue, Mt. Vernon Avenue, Esperanza Street, College Drive, and K Street. Each driveway leads to one or more parking areas. At present, the major parking areas are found along Grant Avenue, but smaller parking areas along Mt. Vernon Avenue and Esperanza Street are the most utilized.

In Horizons 1 (2010), 2 (2020), and 3 (2030), there are 9-10 project driveways, found along Grant Avenue, Mt. Vernon Avenue, Esperanza Street, and K Street. However, the project plans to reconfigure some parking areas – such as the three adjacent to Mt. Vernon Avenue – and add two parking structures to accommodate parking for the site. In Horizon 1, a 1,250 space parking structure is planned to be constructed, accessible from Grant Avenue. In Horizon 3, a second structure with 1,100 spaces would be constructed along Esperanza Street, with access from K Street and College Drive. Figures 2 through 5 present the proposed college master plan by horizon year.

PROJECT STUDY INTERSECTIONS

Within the study area, the following intersections were selected for analysis based on a review of the roadway network, the likely approach and departure routes for the project traffic, their proximity to the project site, and initial input received from adjacent intersections:



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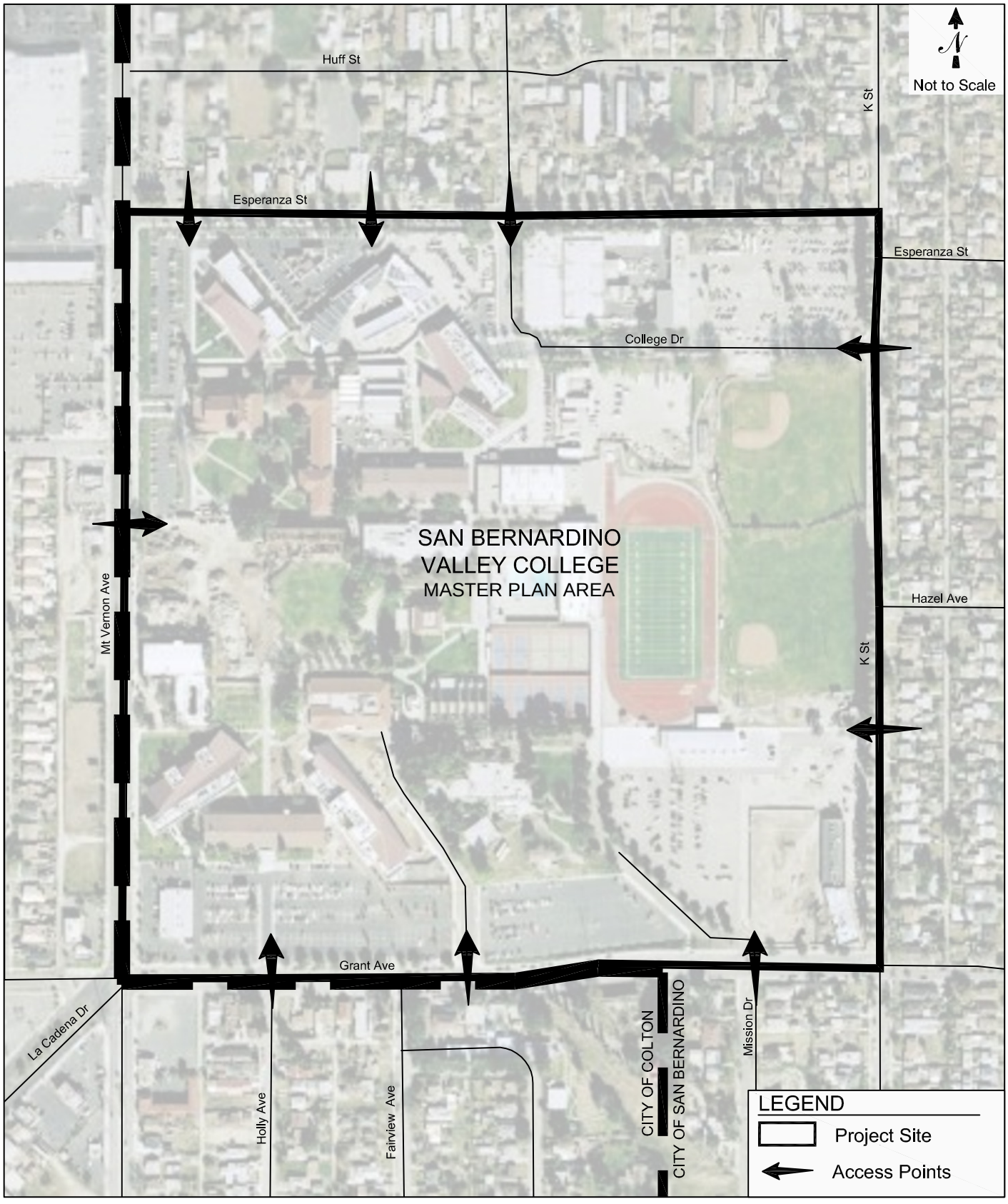
PROJECT STUDY AREA

FIGURE 1



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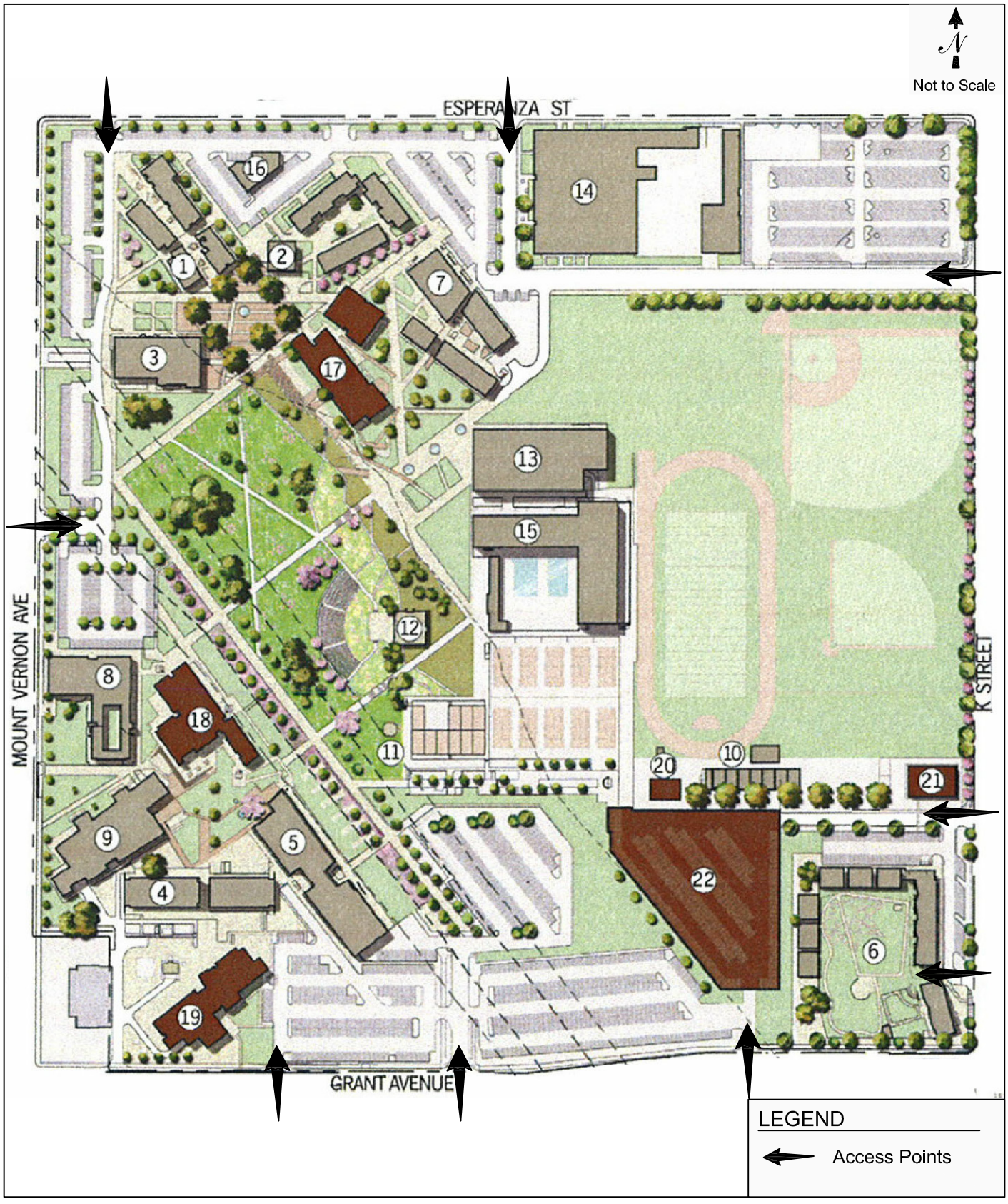
EXISTING ACCESS POINTS

FIGURE 2



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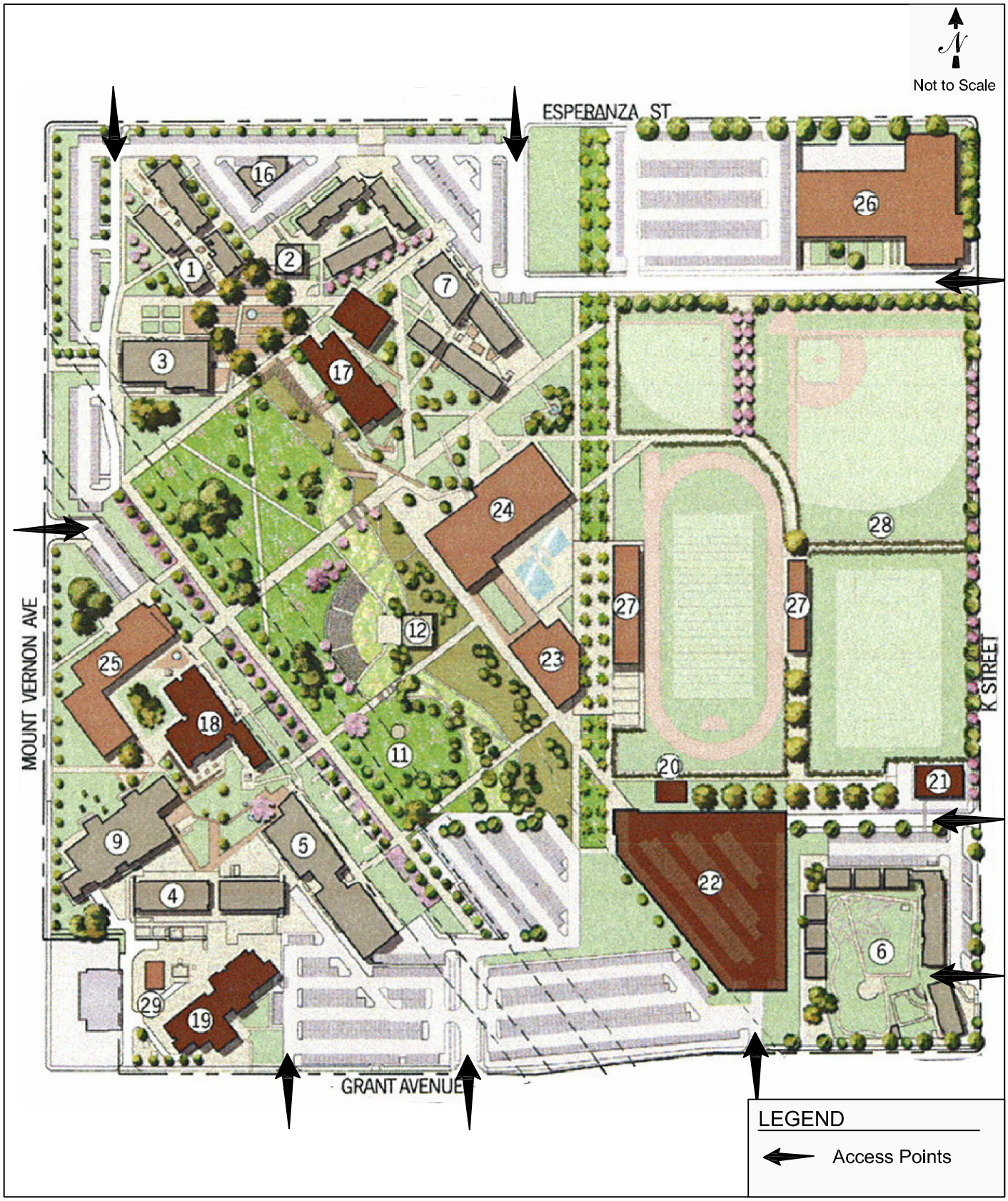
HORIZON 1 (2010) ACCESS POINTS

FIGURE 3



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HORIZON 2 (2020) ACCESS POINTS

FIGURE 4

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HORIZON 3 (2030) ACCESS POINTS

FIGURE 5

1. W. Mill Street/S. Mt. Vernon Avenue
2. W. Mill Street/S. K Street
3. Esperanza Street/S. Mt. Vernon Avenue
4. Esperanza Street/S. Eureka Avenue
5. Esperanza Street/S. K Street
6. Grant Avenue/S. Mt. Vernon Avenue/N. La Cadena Drive
7. Grant Avenue/Fairview Avenue
8. Grant Avenue/S. K Street
9. Grant Avenue/S. J Street
10. Grant Avenue/S. I Street
11. Inland Center Drive/S. I Street
12. Inland Center Drive/I-215 Southbound Ramps
13. Inland Center Drive/I-215 Northbound Ramps
14. Colton Avenue/Mt. Vernon Avenue

The project study intersections are shown on Figure 6.

ANALYSIS SCENARIOS

Our analysis scenarios include the existing operations and the three horizon years of the San Bernardino Valley College Master Plan. The analysis scenarios are:

- Existing
- Horizon 1 (2010) No Project
- Horizon 1 (2010) Plus Project
- Horizon 2 (2020) No Project
- Horizon 2 (2020) Plus Project
- Horizon 3 (2030) No Project
- Horizon 3 (2030) Plus Project

ANALYSIS METHODOLOGIES

Operations

The intersection analysis employs a methodology based on empirical research conducted by the Transportation Research Board and other authorities.

Signalized intersection operations are evaluated using methodologies provided in the 2000 Highway Capacity Manual (HCM) (Transportation Research Board). These methodologies assess average control delays and then assign a corresponding letter grade that represents the overall condition of the intersection. These grades range from level of service (LOS) A (minimal delay) to LOS F (excessive congestion). LOS E represents at-capacity operations. For this study, levels of service are calculated using Synchro 6.0 software, which implements 2000 HCM methodologies. Synchro software allows the input of signal timing and coordination data to more accurately reflect actual conditions. Descriptions of the LOS letter grades for signalized intersections are provided in Table 2.

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STUDY INTERSECTIONS

FIGURE 6

Table 2 also documents the relationship between the various volume-to-capacity (V/C) ratios, Delay, and Level of Service for signalized intersections, while Table 3 provides the LOS value at various levels of delay for unsignalized intersections. Please note that V/C ratios are provided as they are used in the impact assessment based on requirements set forth by the San Bernardino County Congestion Management Program (CMP).

TABLE 2
SIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description	V/C Ratio	Delay (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	0.000-0.600	≤ 15.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	0.601-0.700	> 15.0 to 25.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	0.701-0.800	> 25.0 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	0.801-0.900	> 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.	0.901-1.000	> 55.0 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	Over 1.000	> 80.0

Note: The San Bernardino CMP guidelines consider all intersections with a V/C ratio above 1.0 to be operating at LOS F, regardless of delay LOS.
Source: *Highway Capacity Manual* (Transportation Research Board, 2000).

TABLE 3
UNSIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description	Delay
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).

Traffic Forecasts

Several sets of traffic forecasts were developed to evaluate the project. These forecasts are described in detail below:

Existing Traffic Redistribution

Caltrans is currently widening Interstate 215 (I-215) mainline between Orange Show Road and Rialto Avenue from three lanes to five lanes. In addition, the on- and off-ramps along I-215 are being modified as a collector-distributor system. This construction project affects the Inland Center Drive and Mill Street interchanges, which are proximate to San Bernardino Valley College.

Traffic counts were collected in October 2008, at which time the Mill Street interchange was closed for construction, with a detour along I Street to the Inland Center Drive interchange.

By the first horizon year (2010), the I-215 improvement project will be completed and both the Mill Street and Inland Center Drive interchanges will be opened with their new configuration. As a result, the first set of forecasts was developed by redistributing existing traffic to account for the reopening of both interchanges prior to the first horizon year (2010). We based the redistribution on the vehicle traffic along the I Street detour, as well as existing traffic patterns to- and from- the college. Reassigned traffic is shown on Figure 7. The resulting traffic was used as a baseline for the three Horizon analysis scenarios.

Horizon 1 and Horizon 2 Traffic Estimates

Traffic is expected to increase for the college campus for the first two horizons, with or without the proposed project. Therefore, the No Project forecasts assume that traffic to/from the campus due to the increased enrollment would be destined for the existing parking facilities around the campus. The With Project scenario assumes the same amount of traffic growth, but accounts for the redistribution of trips to the campus due to relocated and new parking facilities.

Horizon 3 Traffic Estimates

Similar to Horizons 1 and 2, some of the enrollment increase expected by Year 2030 would be accommodated with or without the proposed project. However, Horizon 3 provides for increased capacity to serve expected enrollment which could not be accommodated at the existing campus. The additional 1,000 enrolled students are considered as part of the proposed project by Year 2030 and are not included in the No Project scenario.

Enrollment Forecasts

As described above, the project is being built primarily to replace buildings that were constructed along the San Jacinto Fault Fold Zone, or were assessed to be in poor condition. As a result, the project itself does not generate new trips. However, the growth in student population would occur with or without the proposed project.

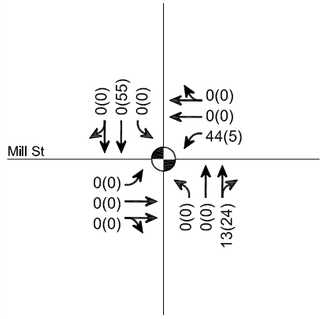
This section outlines the growth of the student population, and resulting added trips, that were applied to both the No Project and With Project scenarios. This chapter also discusses the distribution and assignment of student growth trips.

Trips generated by the expected increased enrollment were estimated, as described below. First, the number of trips generated was estimated. Next, the trip distribution for the campus was estimated. Using the trip generation and distribution information, trips were assigned to the study facilities.

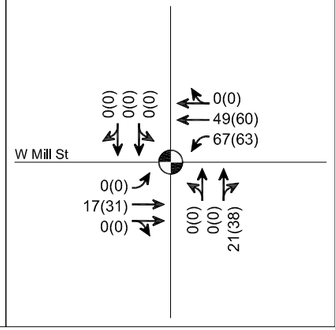
Trip Generation

We estimated the growth in trips to SBVC by applying standard trip generation rates, based on the Institute of Transportation Engineers' (ITE) *Trip Generation* (8th Edition) Handbook using land use category 540: Junior/Community Colleges. The identified trip generation rates are presented in Table 4.

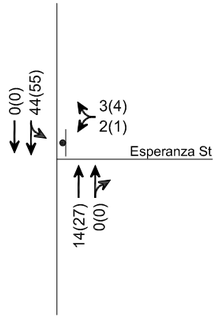
1. Mount Vernon Ave & Mill St



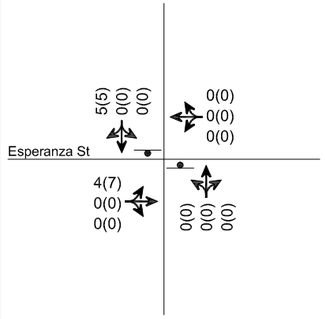
2. S K St & W Mill St



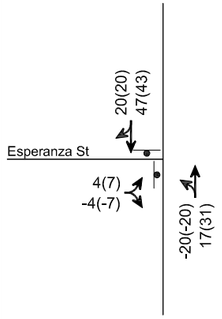
3. Mount Vernon Ave & Esperanza St



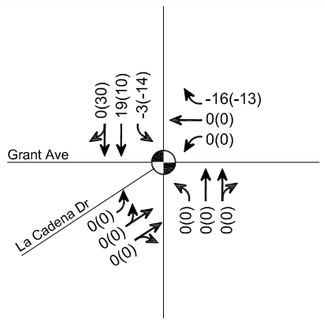
4. S Eureka Ave & Esperanza St



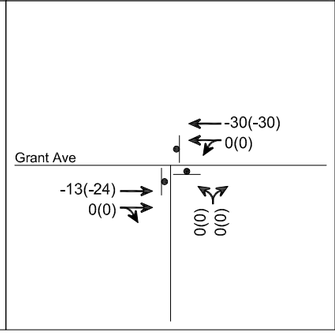
5. K St & Esperanza St



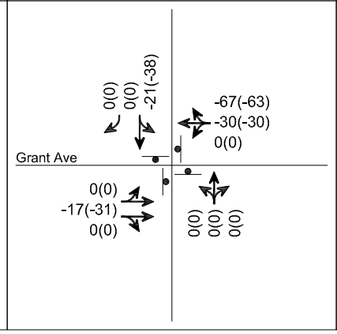
6. Mount Vernon Ave & La Cadena Dr/Grant Ave



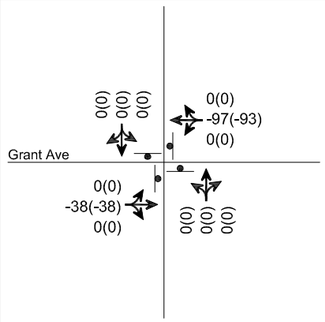
7. Fairview Ave & Grant Ave



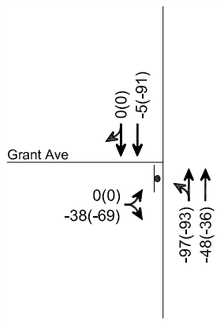
8. S K St & Grant Ave



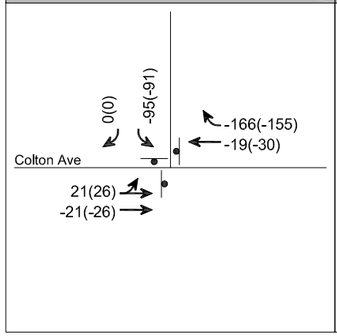
9. S J St & Grant Ave



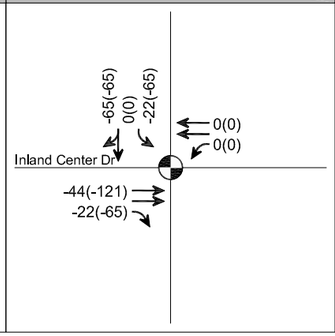
10. S I St & Grant Ave



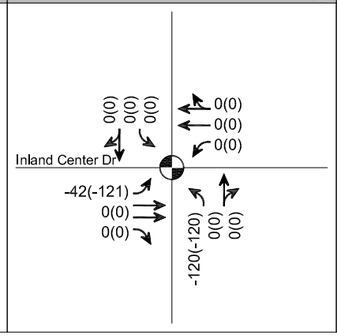
11. S I St & Inland Center Dr



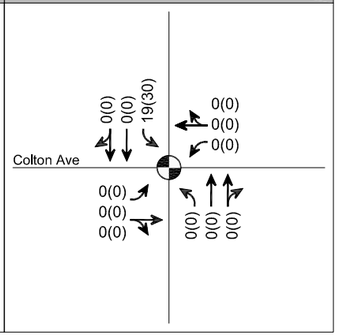
12. I-215 SB Ramps & Inland Center Dr



13. I-215 NB Ramps & Inland Center Dr



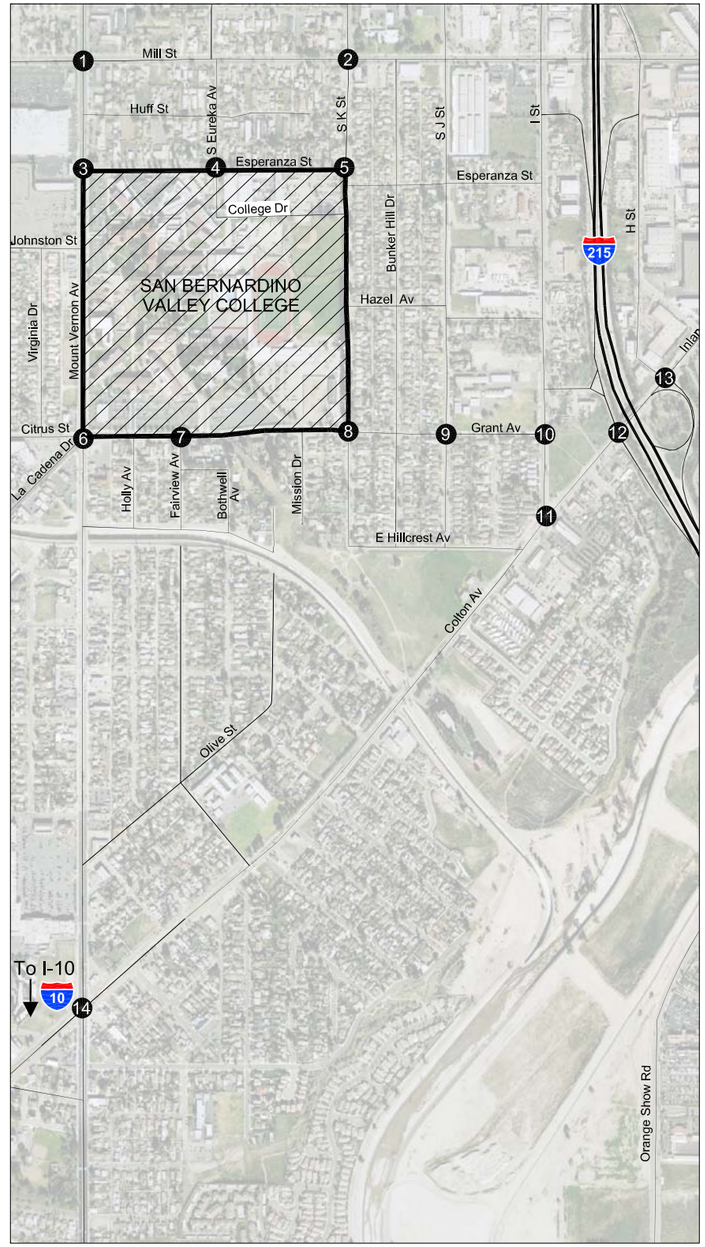
14. Mount Vernon Ave & Colton Ave



LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
- Traffic Signal
- Stop Sign
- Analyzed Intersection
- Project Site

Not to Scale



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REDISTRIBUTED PEAK HOUR TRIPS
FIGURE 7

TABLE 4 TRIP GENERATION RATES							
Use	**Unit**	**AM**			**PM**		
		Rate	**% In**	**% Out**	**Rate**	**% In**	**% Out**
Junior/Community College	Students	.12	82%	18%	.12	64%	36%
Source: *Trip Generation* (8th Edition), (Institute of Transportation Engineers).							

Because the student population is forecasted to increase regardless of Master Plan development, we applied the "student growth" trips to both the No Project and With Project scenarios for Horizons 1 and 2. In Horizon 3, the projected student growth is greater than what the existing facilities can accommodate. For this Horizon, the No Project "student growth" trips are based on the maximum students that can be accommodated by the existing facilities, while the With Project "student growth" trips are calculated using the enrollment forecasts.

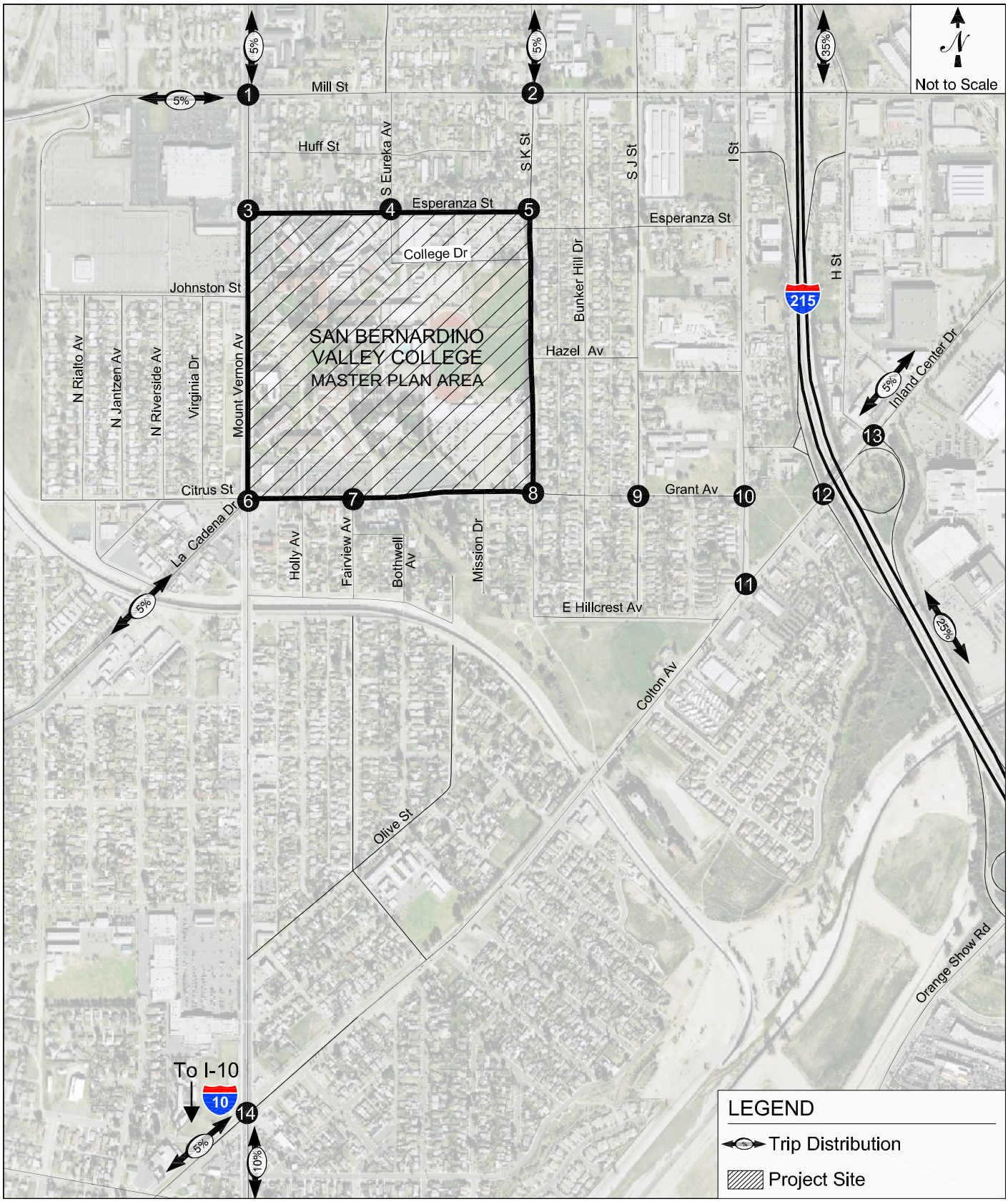
Table 5 summarizes the expected increase in students by analysis horizon and summarizes the number of trips generated by the increased enrollment at the campus.

TABLE 5 STUDENT GROWTH TRIP GENERATION								
Horizon	**Projected Enrollment Increase[1]**		**Trips**					
			AM Peak Hour			**PM Peak Hour**		
			Total	**In**	**Out**	**Total**	**In**	**Out**
Horizon 1	739	Students	89	73	16	89	57	32
Horizon 2	2,439	Students	293	240	53	293	188	105
Horizon 3 – No Project	3,439	Students	413	339	74	413	264	149
Horizon 3 – With Project	4,439	Students	533	437	96	533	341	192
Sources: *Trip Generation* (8th Ed.), (Institute of Transportation Engineers), Fehr and Peers, 2009. [1] Provided by SBVCC staff and are based off of projections provided by the Maas Companies.								

Trip Distribution

The no project and with project trip distributions reflect the likely approach and departure route to the campus. These directions were primarily derived from zip code data for existing enrolled students and are summarized on Figure 8.

We grouped the existing access points into five "zones." We collected parking inventory and utilization counts in October 2008, and calculated the percentage of available supply for each existing zone. In the No Project scenario, we distributed student growth trips to the project site using the percentage of available supply in each zone. For the With Project scenario, we subtracted occupied parking spaces from the Horizon 1 Master Plan



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OUTBOUND TRIP DISTRIBUTION

FIGURE 8

parking inventory, and used the percentage of available supply in each zone to allocate student growth trips. The results are summarized in Tables 6 through 8.

TABLE 6
SBVC TRIP DISTRIBUTION – HORIZON 1

Zone	Trips											
	No Project						With Project					
	AM			PM			AM			PM		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
1 – Lots 1-3	6	5	1	3	2	1	3	2	1	1	1	0
2 – Lots 4-6	8	7	1	7	5	3	-4	-4	-4	1	0	0
3 – Lot 7, Temporary Lot, Second Structure, and College Drive	43	35	8	2	14	8	25	20	20	12	7	4
4 – Child Development Center, Lots 8-10, and the First Structure	61	50	11	68	44	25	150	123	123	115	74	41
5 – Lots 11 & 12	29	24	5	22	14	8	-25	-21	-21	-6	-4	-2

Source: Fehr & Peers, 2009

TABLE 7
SBVC TRIP DISTRIBUTION – HORIZON 2

Zone	Trips											
	No Project						With Project					
	AM			PM			AM			PM		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
1 – Lots 1-3	15	12	3	7	4	2	25	21	5	12	8	4
2 – Lots 4-6	20	16	4	19	12	7	33	27	6	34	22	12
3 – Lot 7, Temporary Lot, Second Structure, and College Drive	103	84	19	58	37	21	173	142	31	101	65	37
4 – Child Development Center, Lots 8-10, and the First Structure	144	118	26	182	117	66	243	199	44	316	202	114
5 – Lots 11 & 12	70	57	13	59	38	21	118	97	21	103	66	37

Source: Fehr & Peers, 2009

TABLE 8
SBVC TRIP DISTRIBUTION – HORIZON 3

Zone	Trips											
	No Project						With Project					
	AM			PM			AM			PM		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
1 – Lots 1-3	20	16	4	9	6	3	-83	-68	-15	-95	-61	-34
2 – Lots 4-6	27	22	5	27	17	10	-78	-64	-14	-65	-41	-23
3 – Lot 7, Temporary Lot, Second Structure, and College Drive	138	113	25	80	51	29	354	291	64	298	191	107
4 – Child Development Center, Lots 8-10, and the First Structure	194	159	35	249	159	90	613	503	110	624	399	225
5 – Lots 11 & 12	94	77	17	81	52	29	-215	-176	-39	-196	-126	-71

Source: Fehr & Peers, 2009

Trip Assignment

Based on the trip distribution, the student growth trips were distributed and assigned to the study area roadways and intersection for the AM and PM peak hours. Figures 9 and 10 show the Horizon 1 trip assignment, Figures 11 and 12 show the Horizon 2 trip assignment, and Figures 13 and 14 show the Horizon 3 trip assignment.

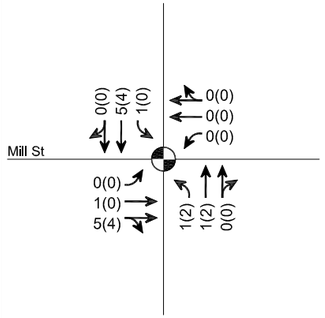
SIGNIFICANCE CRITERIA

The lead agency for this project study area is the San Bernardino Community College District (SBCCD). As lead agency, SBCCD can establish its own significance criteria for the community colleges in its jurisdiction. However, at present, SBCCD does not have significance criteria for conducting traffic studies. Therefore, we used the City of San Bernardino's significance criteria coupled with standard engineering guidelines for conducting our analysis.

1. The project, including project driveways, will disrupt existing traffic operations. Traffic operations were assessed using both quantitative (Level of Service (LOS)) and qualitative criteria. A disruption of traffic operations is defined as any of the following:

    a. The addition of project traffic causes a roadway segment's volume-to-capacity ratio to increase by 0.04 if the signalized intersection is operating at LOS C prior to the introduction of project trips (City of San Bernardino threshold).
    b. The addition of project traffic causes a roadway segment's volume-to-capacity ratio to increase by 0.02 if the signalized intersection is operating at LOS D prior to the introduction of project trips (City of San Bernardino threshold).

1. Mount Vernon Ave & Mill St



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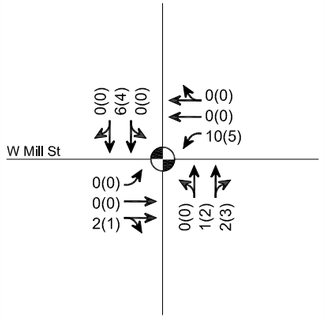

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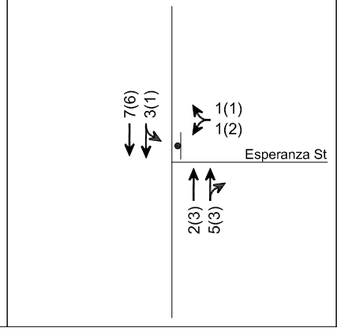

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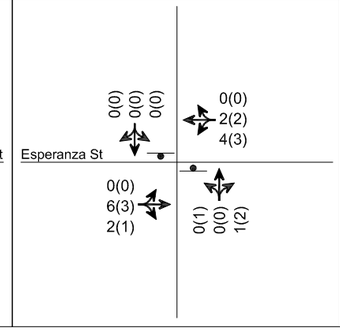

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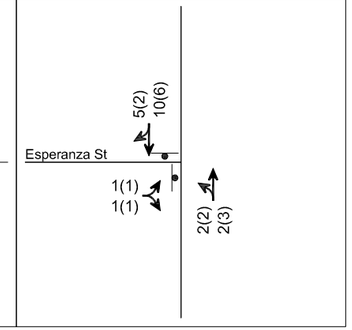
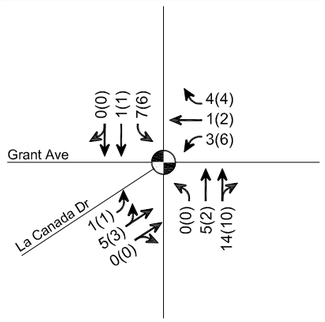
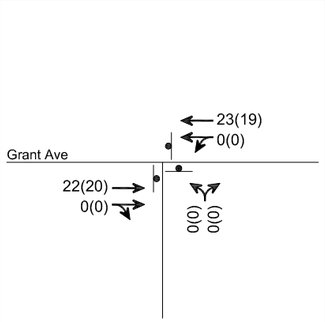


6. Mount Vernon Ave & La Canada Dr/Grant Ave



7. Fairview Ave & Grant Ave



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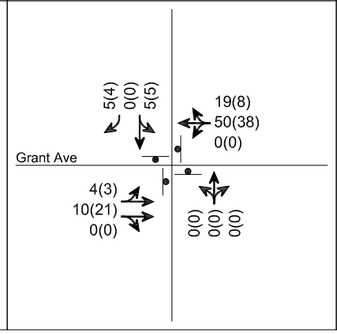

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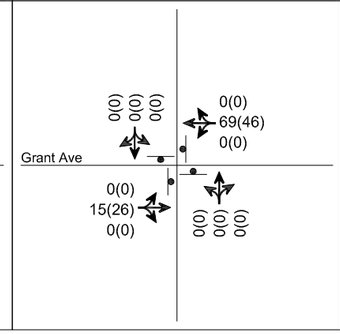

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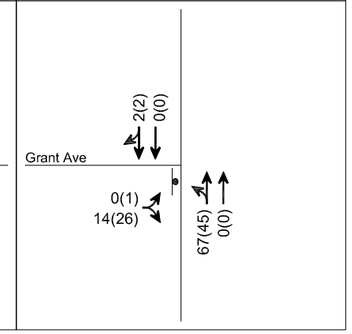

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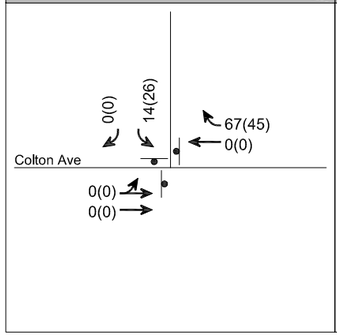

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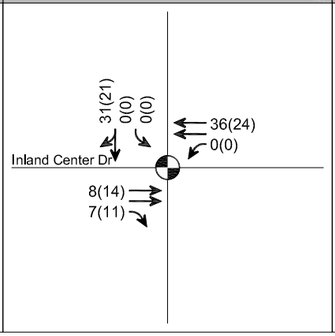

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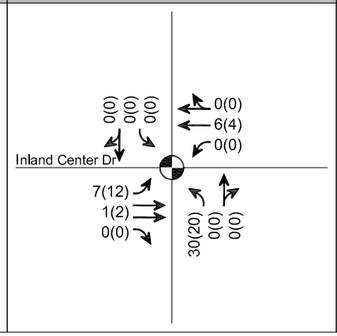

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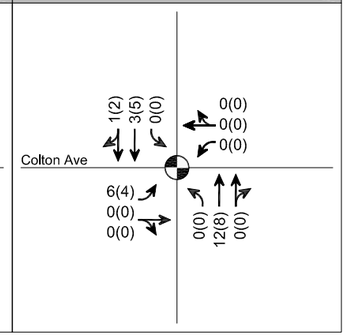

LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
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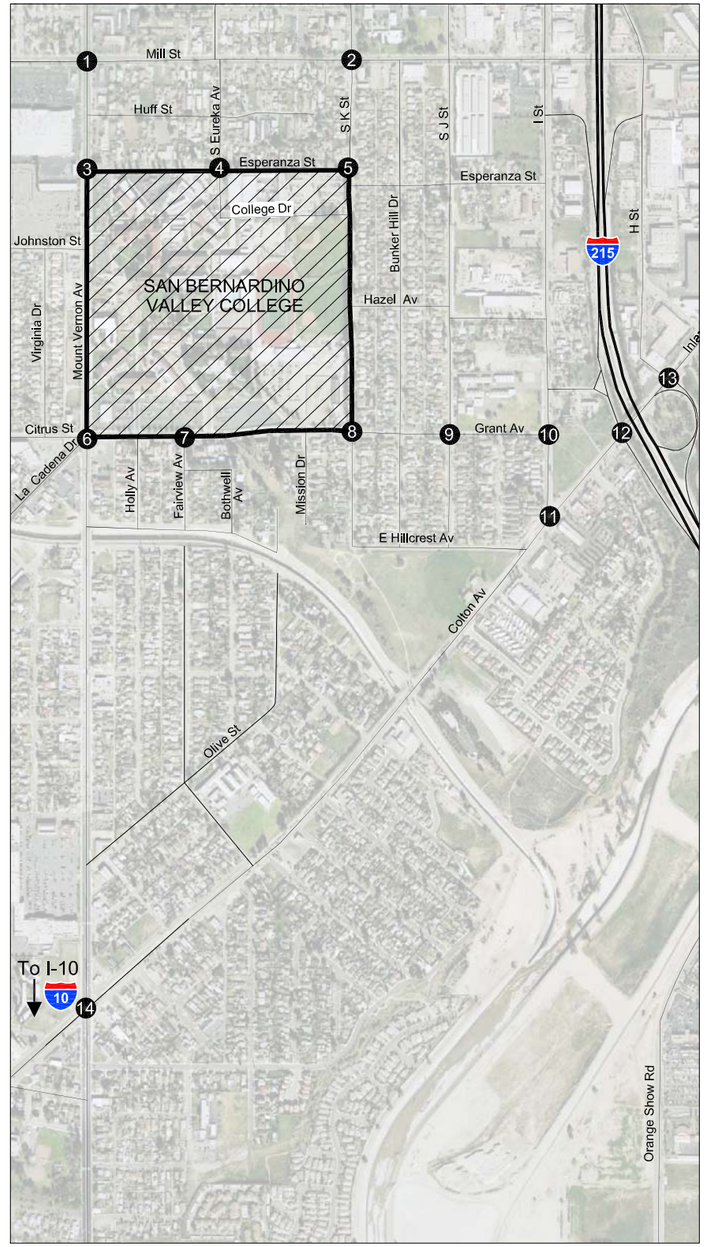
Not to Scale



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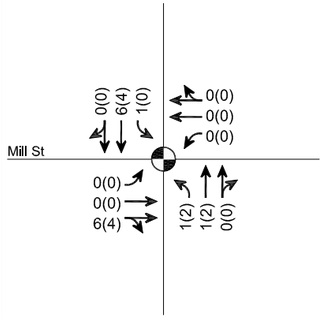
HORIZON 1 (2010) NO PROJECT ENROLLMENT GROWTH TRIP ASSIGNMENT

FIGURE 9

1. Mount Vernon Ave & Mill St



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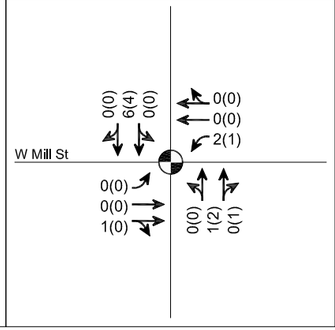

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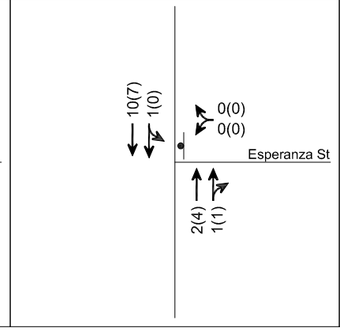

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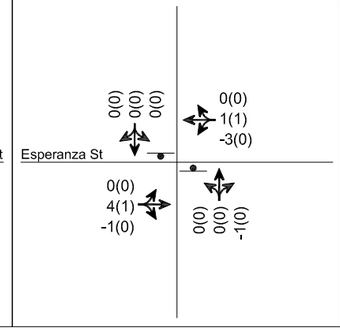

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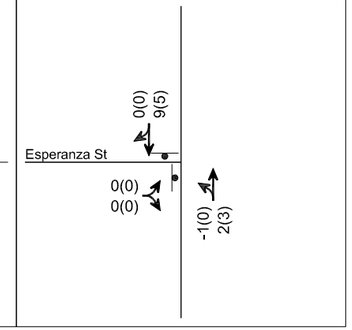

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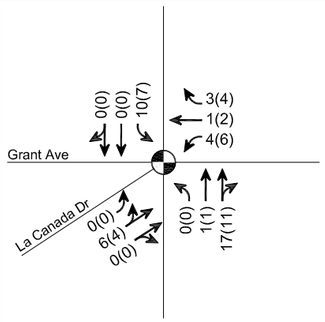

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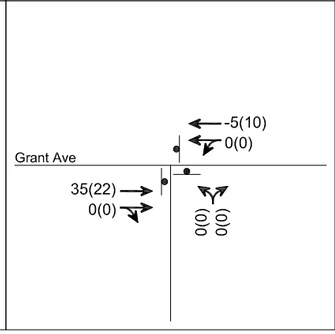

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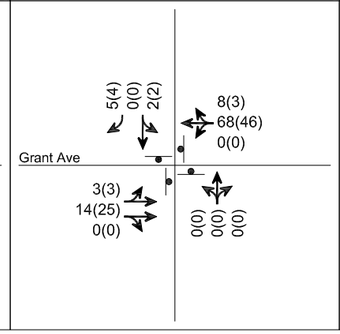

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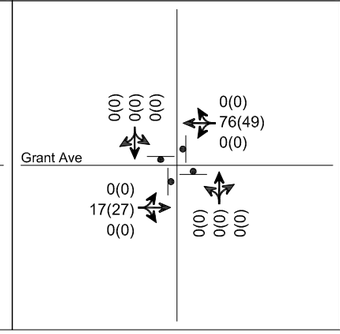

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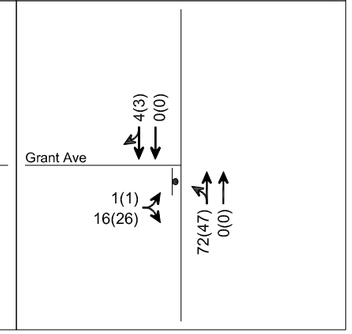

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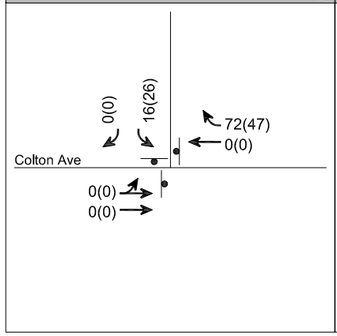

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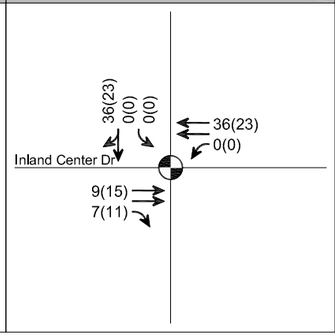

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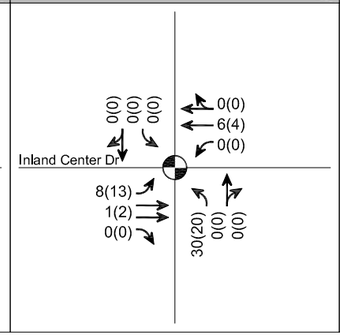

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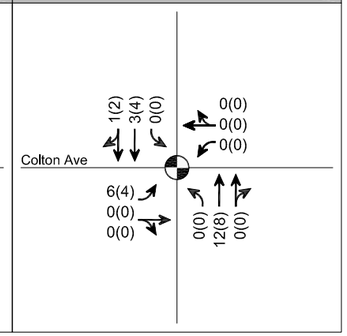

LEGEND

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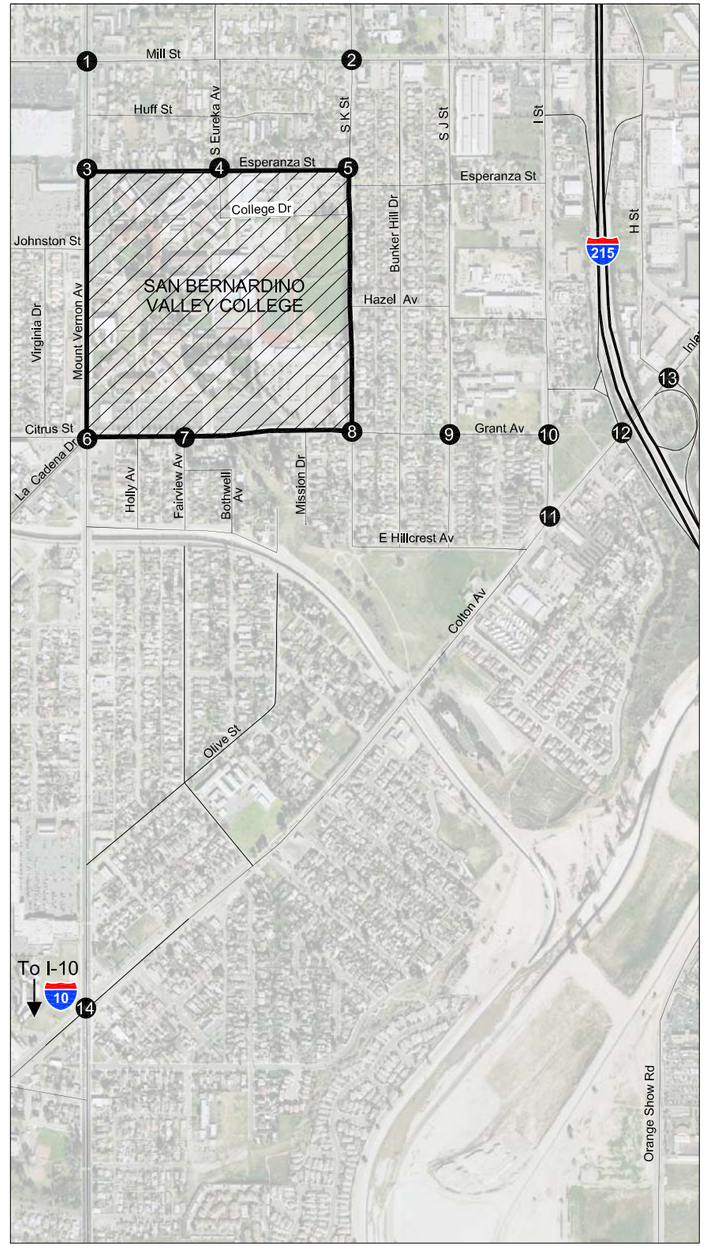

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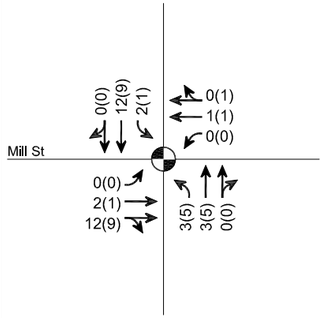
HORIZON 1 (2010) PROJECT ENROLLMENT GROWTH TRIP ASSIGNMENT

FIGURE 10

1. Mount Vernon Ave & Mill St



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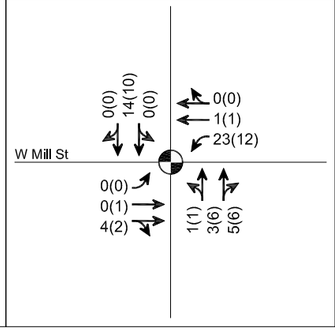

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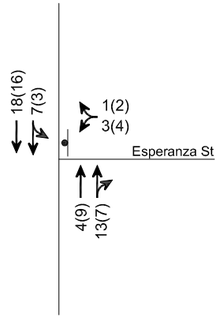

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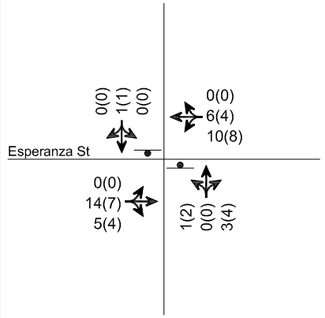

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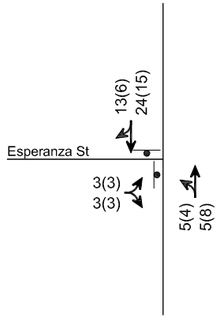

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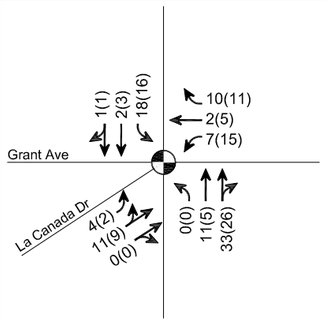

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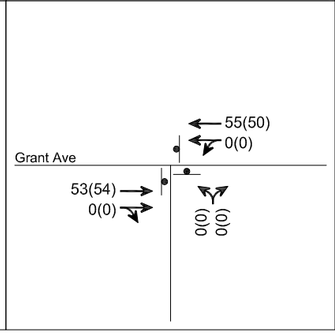

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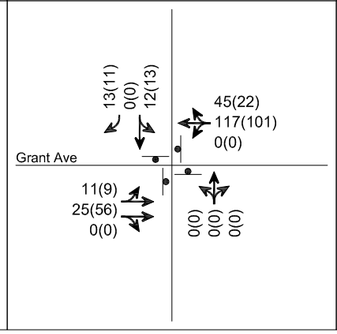

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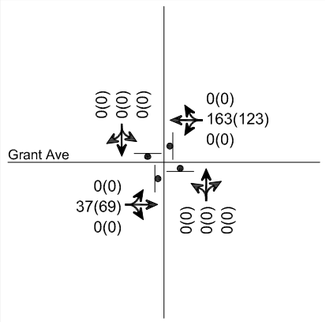

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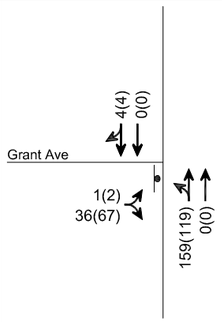

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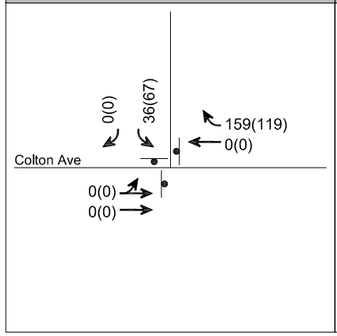

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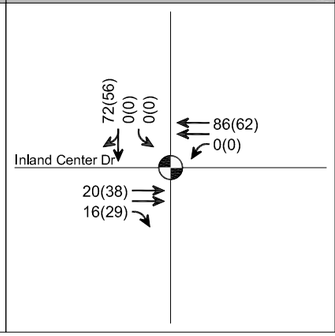
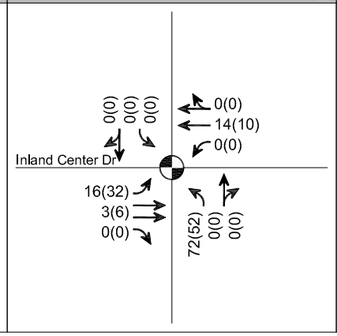
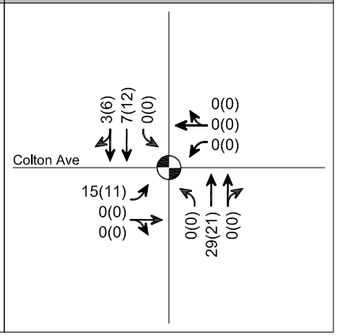


13. I-215 NB Ramps & Inland Center Dr



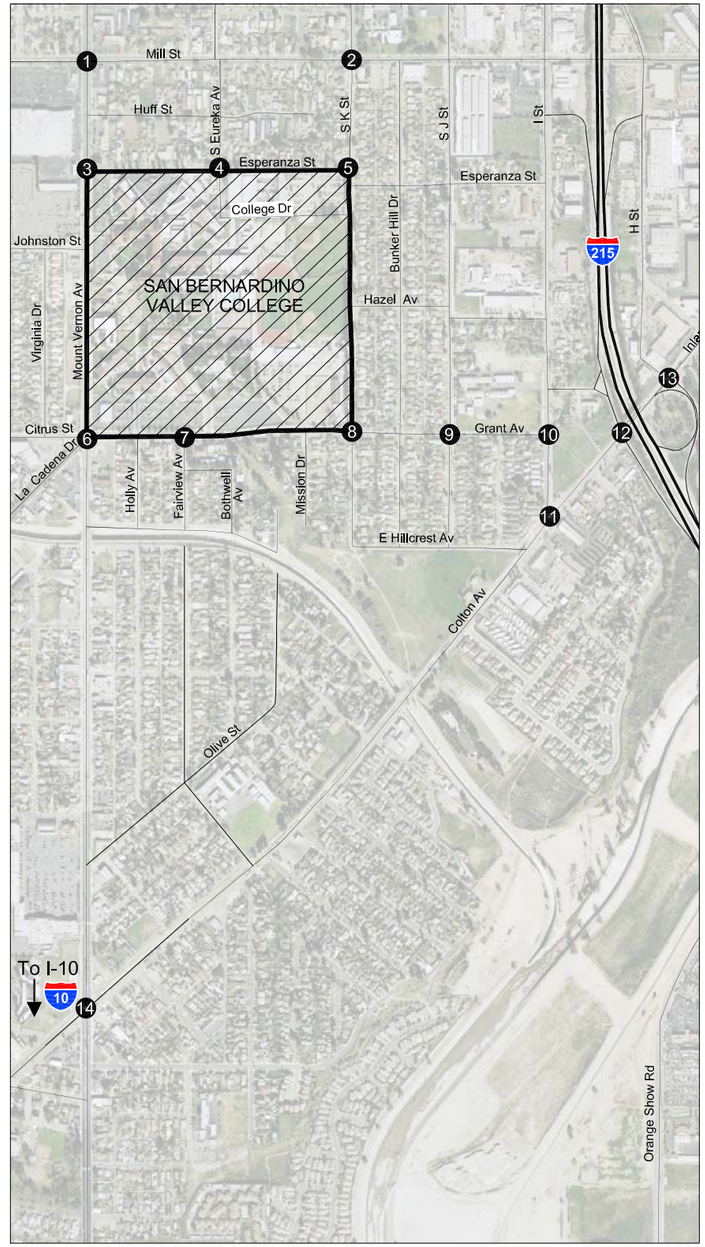
14. Mount Vernon Ave & Colton Ave



LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
- Traffic Signal
- Stop Sign
- Analyzed Intersection
- Project Site

Not to Scale



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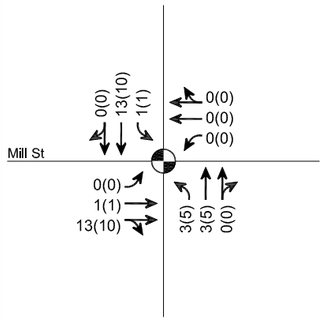
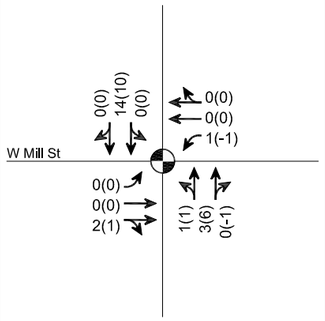
HORIZON 2 (2020) NO PROJECT ENROLLMENT GROWTH TRIP ASSIGNMENT

FIGURE 11

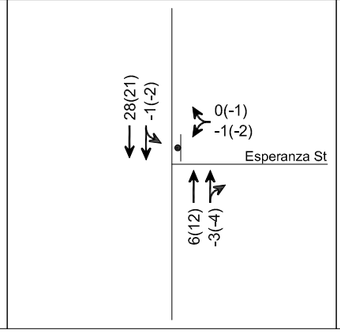
1. Mount Vernon Ave & Mill St



2. S K St & W Mill St



3. Mount Vernon Ave & Esperanza St



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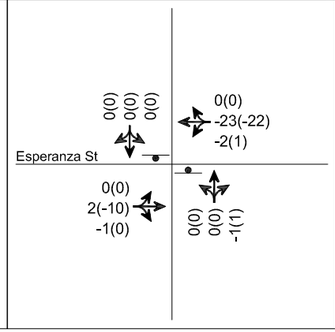
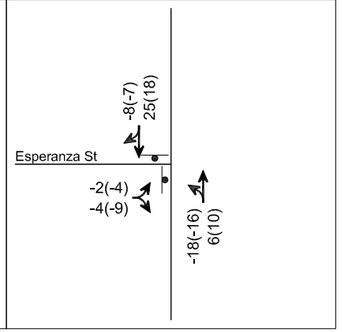
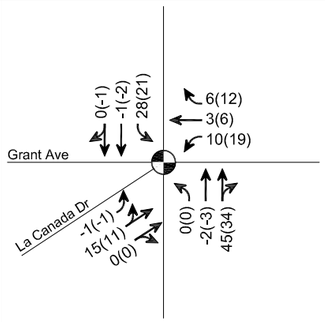


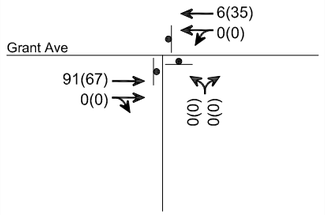
5. K St & Esperanza St



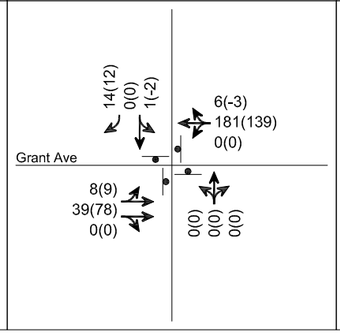
6. Mount Vernon Ave & La Canada Dr/Grant Ave



7. Fairview Ave & Grant Ave



8. S K St & Grant Ave



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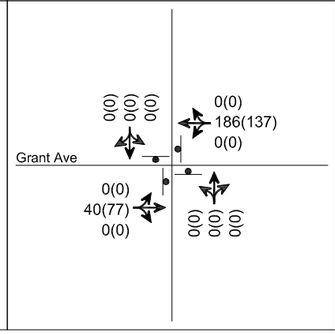

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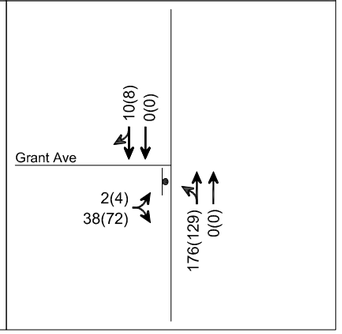
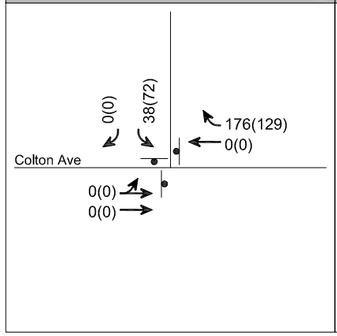
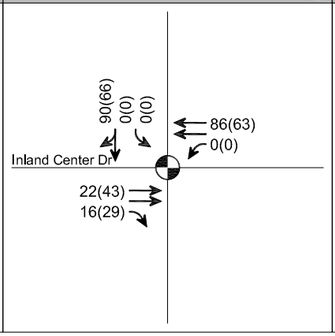


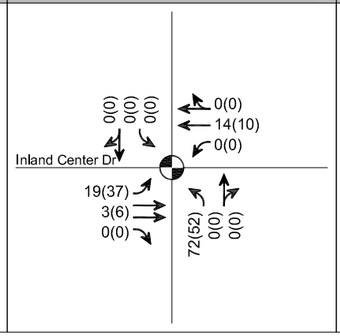
11. S I St & Inland Center Dr



12. I-215 SB Ramps & Inland Center Dr



13. I-215 NB Ramps & Inland Center Dr



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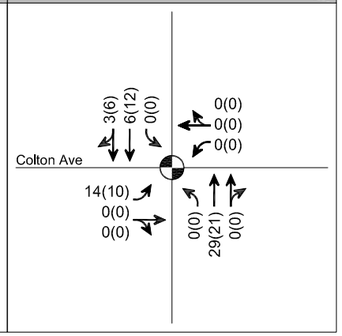
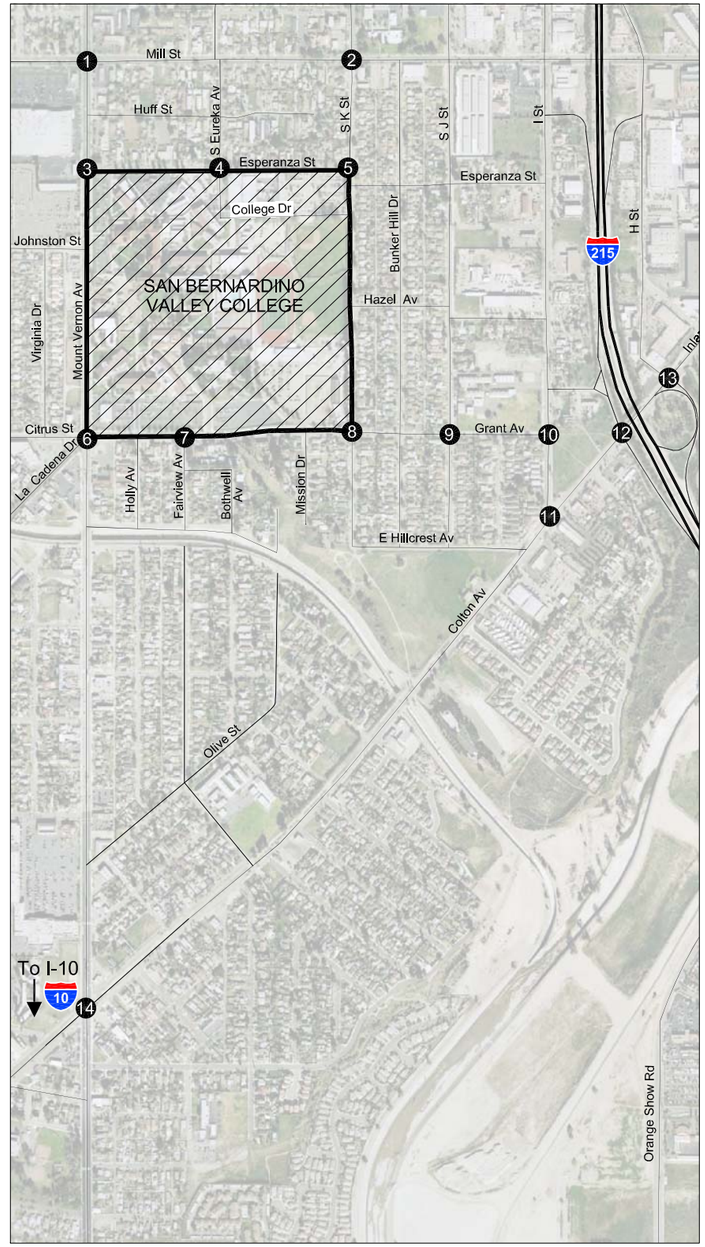


LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
- Traffic Signal
- Stop Sign
- Analyzed Intersection
- Project Site

Not to Scale



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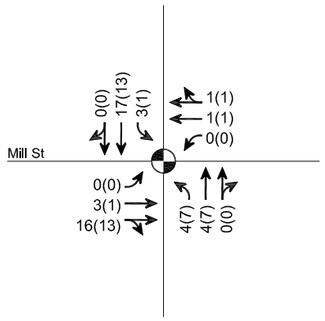
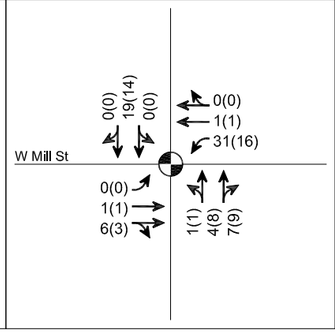
HORIZON 2 (2020) PROJECT ENROLLMENT GROWTH TRIP ASSIGNMENT

FIGURE 12

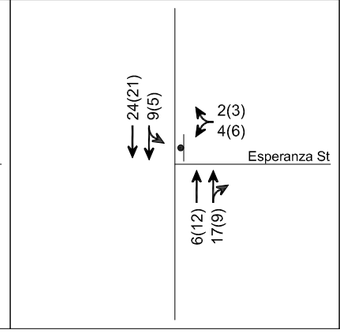
1. Mount Vernon Ave & Mill St



2. S K St & W Mill St



3. Mount Vernon Ave & Esperanza St



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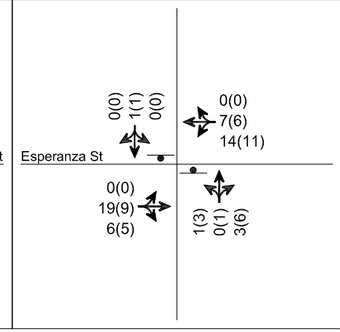
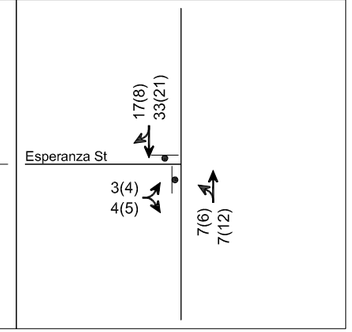
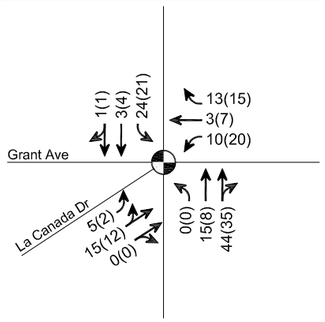


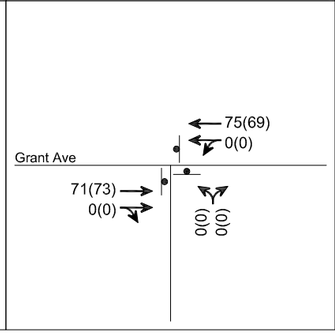
5. K St & Esperanza St



6. Mount Vernon Ave & La Canada Dr/Grant Ave



7. Fairview Ave & Grant Ave



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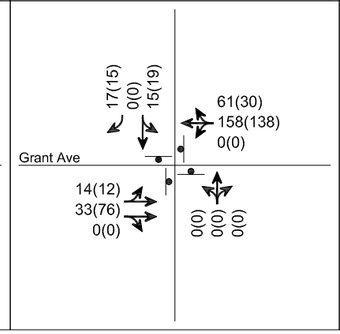
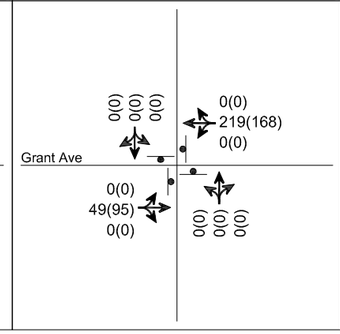


9. S J St & Grant Ave



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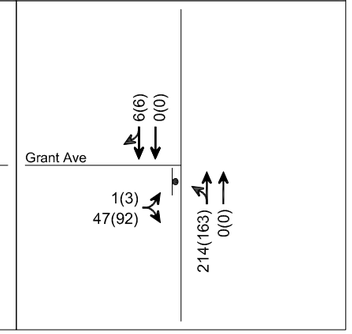
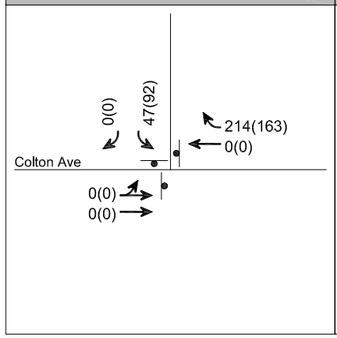


11.S I St & Inland Center Dr



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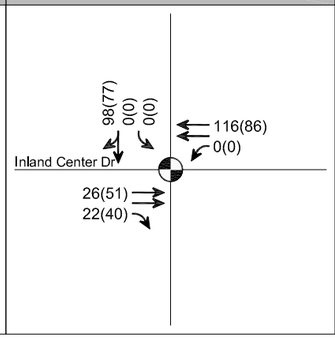
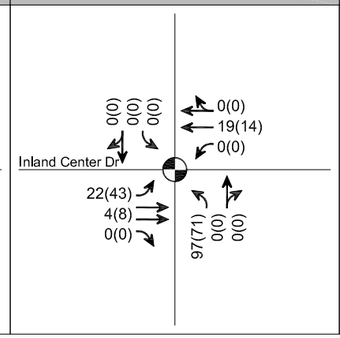


13.I-215 NB Ramps & Inland Center Dr



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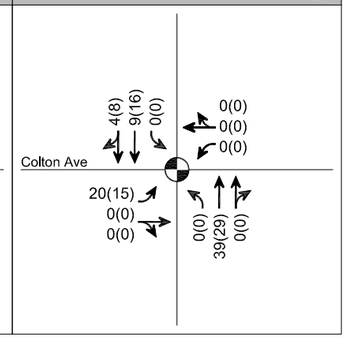
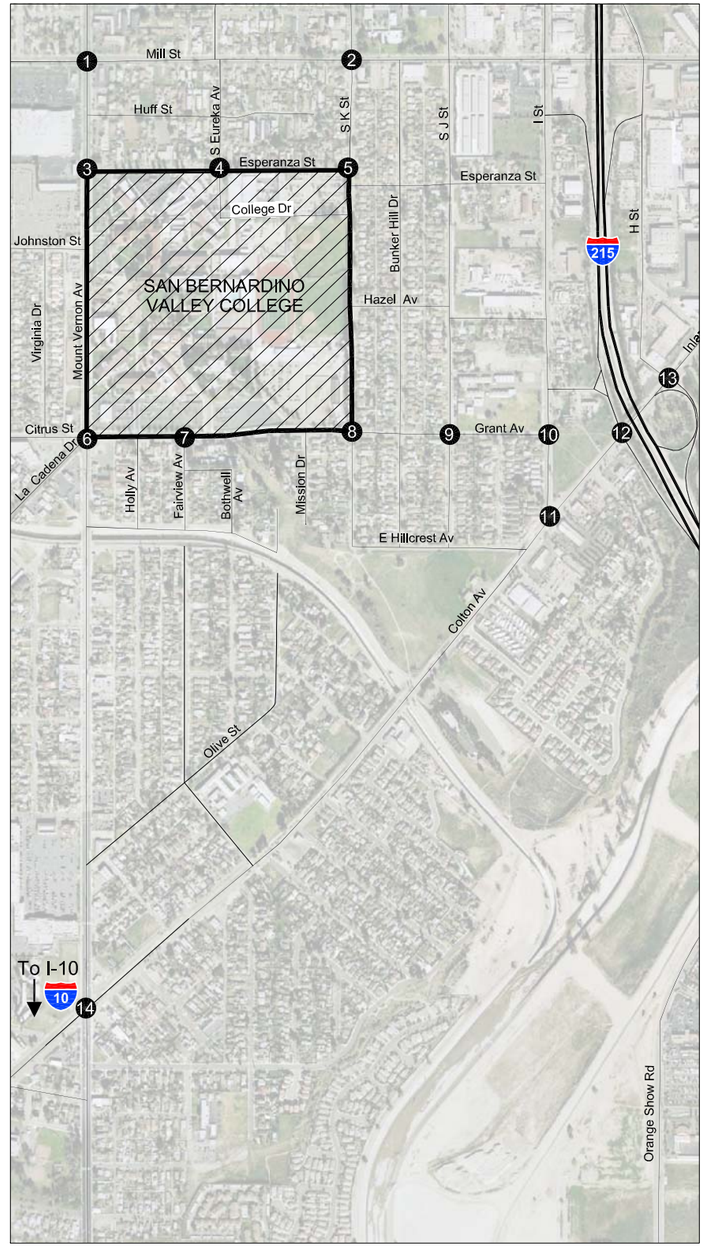


LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
- Traffic Signal
- Stop Sign
- # Analyzed Intersection
- Project Site

Not to Scale



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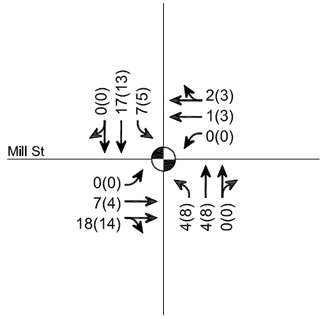
N: Jobs Active IE Jobs IE08-0008 2009-Basemap_JS.dwg

HORIZON 3 (2030) NO PROJECT ENROLLMENT GROWTH TRIP ASSIGNMENT

FIGURE 13

1. Mount Vernon Ave & Mill St



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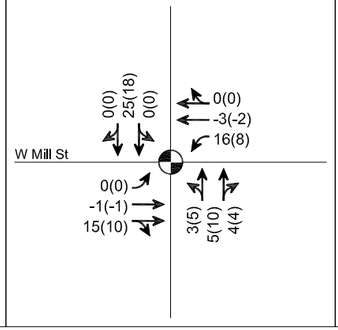

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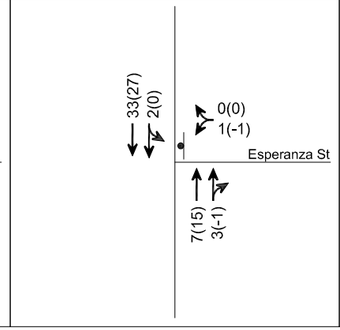

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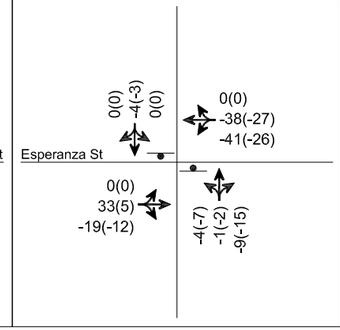

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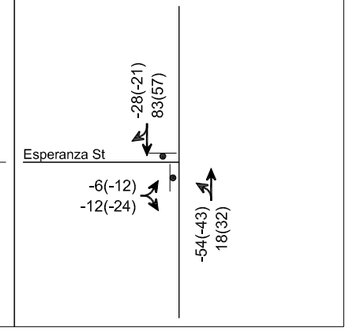

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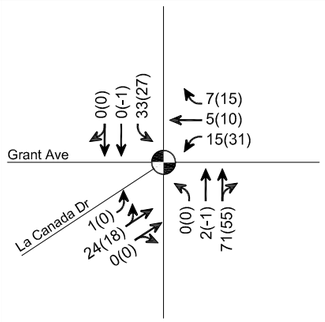

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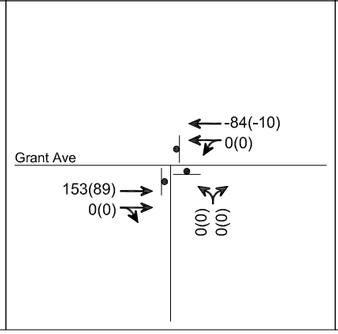

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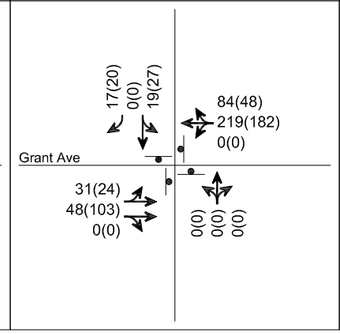

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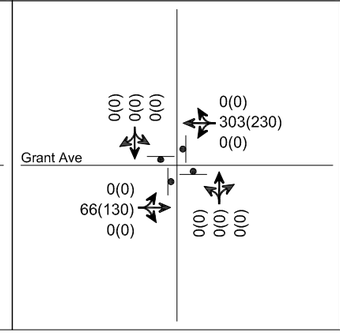

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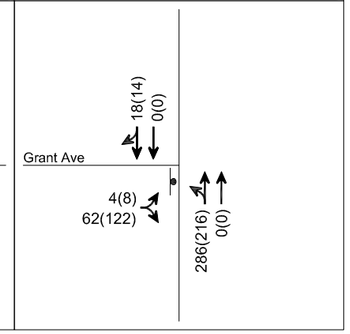

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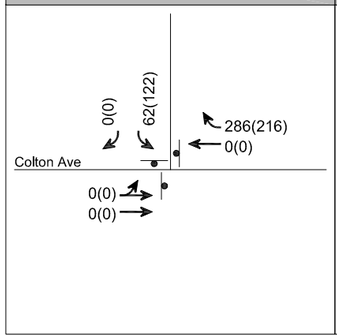

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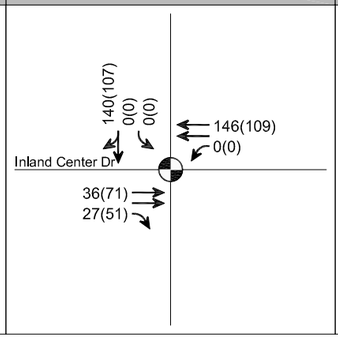

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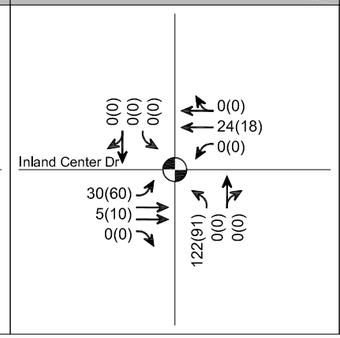

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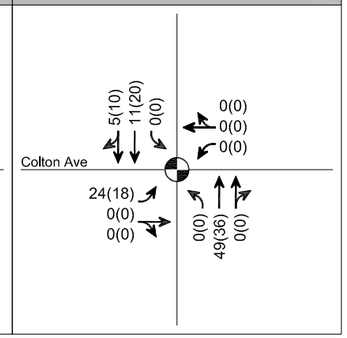

LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
- Traffic Signal
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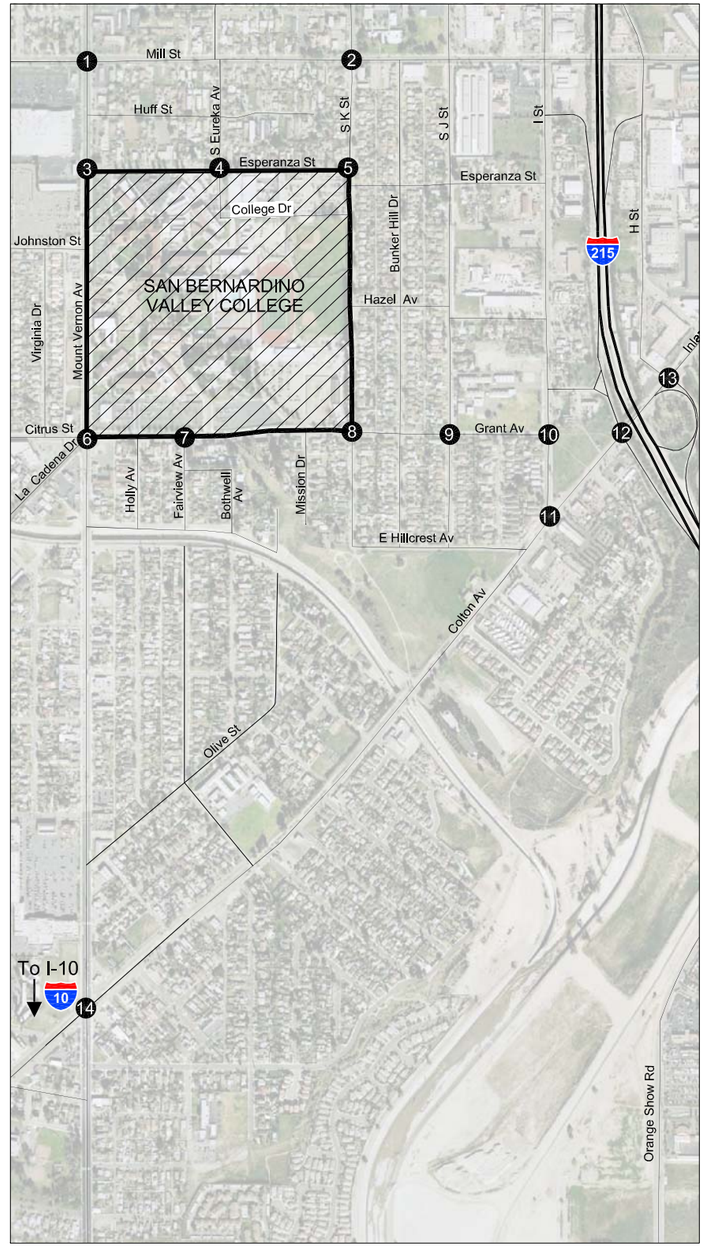
Not to Scale



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Aug 13, 2009 JS
N:\Jobs\Active\IE Jobs\IE08-0008\2009-Basemap_JS.dwg

HORIZON 3 (2030) PROJECT ENROLLMENT GROWTH TRIP ASSIGNMENT

FIGURE 14

c. The addition of project traffic causes a roadway segment's volume-to-capacity ratio to increase by 0.01 if the signalized intersection is operating at LOS E or F prior to the introduction of project trips (City of San Bernardino threshold).

d. The project adds 10 or more trips at an unsignalized intersection already operating at LOS E or F, if the intersection meets signal warrants (standard engineering practice).

e. The addition of 10 or more project trips at an unsignalized intersection causes the intersection to operate at LOS E or F, if the intersection meets signal warrants (standard engineering practice).

f. A project interferes with, conflicts with or precludes other planned improvements such as roadway extensions/expansions, planned trail facilities, proposed creek restoration projects, etc. (consistent with CEQA guidelines).

g. A project conflicts or creates inconsistencies with adopted traffic plans, guidelines, policies or standards (consistent with CEQA guidelines).

h. The construction of a project creates a temporary but prolonged impact due to lane closures, need for temporary signals, emergency vehicles access, traffic hazards to bikes/pedestrians, damage to roadbed, truck traffic on roadways not designated as truck routes, etc. (consistent with CEQA guidelines).

2. For CMP intersections, a V/C ratio of 1.0 or greater is considered to be LOS F, regardless of intersection delay LOS. The significance criteria identified in the San Bernardino CMP guidelines and consistent with standard traffic engineering practice for intersection operations are summarized in Tables 9 and 10.

TABLE 9
CITY OF SAN BERNARDINO SIGNALIZED INTERSECTION SIGNIFICANCE CRITERIA

Level of Service	ΔV/C
C	>0.04
D	>0.02
E	>0.01
F	>0.01

Source: *City of San Bernardino Traffic Impact Study Guidelines, 2004.*

TABLE 10
UNSIGNALIZED INTERSECTION SIGNIFICANCE CRITERIA

Level of Service	PROJECT TRIPS
E	10 or More
F	10 or More

Source: *Fehr & Peers, 2009.*

3. Transit impacts are considered significant if:

a. A project or project-related mitigation disrupts existing transit services or facilities. This includes disruptions caused by proposed-project driveways on transit streets and impacts to transit stops/shelters; and impacts to transit operations from traffic improvements proposed or resulting from a project (consistent with CEQA guidelines).
b. A project interferes with planned transit services or facilities (consistent with CEQA guidelines).
c. A project conflicts or creates inconsistencies with adopted transit system plans, guidelines, policies or standards (consistent with CEQA guidelines).
d. A project creates demand for public transit services above the capacity which is provided, or planned (consistent with CEQA guidelines).

4. Bicycle impacts are considered significant if:

a. A project disrupts existing bicycle facilities (consistent with CEQA guidelines).
b. A project interferes with planned bicycle facilities. This includes failure to dedicate right-of-way for planned on- and off-street bicycle facilities included in an adopted Bicycle Master Plan or to contribute toward construction of planned bicycle facilities along the project's frontages (consistent with CEQA guidelines).
c. A project conflicts or creates inconsistencies with adopted bicycle system plans, guidelines, policies or standards (consistent with CEQA guidelines).

5. Pedestrian impacts are considered significant if:

a. A project disrupts existing pedestrian facilities. This can include adding new vehicular, pedestrian or bicycle traffic to an area experiencing pedestrian safety concerns such as an adjacent crosswalk or school, particularly if the added traffic reduces the number of pedestrian acceptable gaps at unsignalized crossings or cause queues to spillback through pedestrian crossings (consistent with CEQA guidelines).
b. A project interferes with planned pedestrian facilities. In existing and/or planned urbanized areas, main streets or pedestrian districts, this can include impacts to the quality of the walking environment (consistent with CEQA guidelines).
c. A project conflicts or creates inconsistencies with adopted pedestrian system plans, guidelines, policies or standards (consistent with CEQA guidelines).

6. Project site plans and proposed off-site improvements, including mitigation, were reviewed for consistency with local design standards, parking codes, and other adopted guidelines. Project impacts were considered significant if:

a. Project designs for on-site circulation, access and parking areas fail to meet industry standard design guidelines (consistent with CEQA guidelines).
b. A project fails to provide a sufficient quantity of on-site parking for vehicles. This analysis will consider both the anticipated parking demand and the parking (consistent with CEQA guidelines).
c. A project fails to provide a sufficient quantity of on-site parking for bicycles (consistent with CEQA guidelines).
d. A project fails to provide accessible and safe pedestrian connections between buildings and to adjacent streets and transit facilities (consistent with CEQA guidelines).
e. A project fails to provide adequate accessibility for service and delivery trucks on-site including access to truck loading areas (consistent with CEQA guidelines).

f. A project violates access management standards (e.g., driveway spacing, signal spacing, sight distance, etc.) in a way that causes an adverse effect on the environment or reduction in public safety (consistent with CEQA guidelines).

2. EXISTING CONDITIONS

This chapter discusses the existing transportation conditions in the project study area. This discussion addresses the roadway network, the bus and rail transit network, the existing bicycle and pedestrian facilities, and current intersection operations.

SAN BERNARDINO VALLEY COLLEGE

San Bernardino Valley College is a junior college located in the City of San Bernardino, just north of the Colton-San Bernardino City Border. The College was the first junior college in California, and first opened its doors in 1926. The college has a current enrollment of approximately 12,561 students, including 8,600 full-time equivalent students.

EXISTING ROADWAY FACILITIES

San Bernardino Valley College is located in the City of San Bernardino. The project study area is generally bounded by Mill Street to the north, Colton Avenue to the south, Mt. Vernon Avenue to the west and the Interstate 215 (I-215) to the east. Major roadways within the study area include:

I-215 is a north-south freeway, which provides access to Riverside and San Diego counties. I-215 has limited access, and varies between four- and eight- lanes in width. I-215 begins at its junction with I-15 North in San Bernardino, approximately 12 miles north of the project site, and terminates at its junction with I-15 South in Murrieta, approximately 42 miles south of the project site. Near the project site, I-215 has three lanes of travel in each direction. Freeway entrances and exits near the project site are along Inland Center Drive and Mill Street.

Mt. Vernon Avenue is classified as a Major Arterial by the City of San Bernardino General Plan, which serves as a thoroughfare linking San Bernardino to adjacent cities. Mt. Vernon Avenue begins in San Bernardino with its intersection at I-215, approximately 4 miles north of the project site, and terminates in Grand Terrace at its intersection with Pigeon Pass Road, approximately 6 miles south of the project site. Near the project site, Mt. Vernon Avenue is a four-lane, north-south road and provides direct access to San Bernardino Valley College.

Colton Avenue/Inland Center Drive is classified as a Major Arterial by the City of Colton General Plan. Colton Avenue/Inland Center Drive begins at its intersection with Mill Street in San Bernardino, 1.5 miles northeast of the project site, and terminates at its intersection with N 10th Street in Colton, 1.5 miles southwest of the project site. Near the project site, it is a four-lane northeast-southwest road.

La Cadena Drive is classified as a Major Arterial by the City of Colton General Plan. La Cadena Drive begins at its intersection with Mt. Vernon Avenue, at the southwest corner of the project site, and terminates at its intersection with I-215 in Colton, approximately 4.5 miles south of the project site. Near the project site, it is a four-lane northeast-southwest road.

Mill Street is classified as a Secondary Arterial by the City of San Bernardino General Plan. Mill Street begins at its intersection with Tippecanoe Avenue, approximately 3 miles east of the project site, and terminates at its intersection with Pepper Avenue in Rialto, 2.5 miles west of the project site. Near the project site, it is a four-lane east-west road, and links to major arterials within the City of San Bernardino.

Minor roadways within the study area include:

Grant Avenue is classified as a collector street for most of its length, according to the City of San Bernardino General Plan. Grant Avenue begins at its intersection with I Street, approximately .25 miles east of the project

site, and terminates at its intersection with Mt. Vernon Avenue at the southwest corner of the project site, when it becomes Citrus Avenue. It is generally a two-lane east-west street, although it widens to a four-lane road near its intersection with Mt. Vernon Avenue. Grant Avenue provides direct access to four parking lots at San Bernardino Valley College.

K Street is classified as a collector street, according to the City of San Bernardino General Plan. K Street begins at its intersection with 3rd Street, approximately one mile north of the project site, and terminates at its intersection with Hillcrest Avenue, just south of the project site. It is a two-lane, north-south street, and provides direct access to College Drive and the Child Development Center parking lots.

J Street is classified as a collector street, according to the City of San Bernardino General Plan. J Street begins at its intersection with 3rd Street, approximately one mile north of the project site, and terminates at its intersection with Hillcrest Avenue, just south of the project site. It is a two-lane, north-south street near the project site.

I Street is classified as a collector street, according to the City of San Bernardino General Plan. I Street begins at its intersection with I-215, approximately one mile north of the project site, and terminates at its intersection with Inland Center Drive just south of the project site. It is a two-lane, north-south street near the project site.

Esperanza Street is classified as a collector street, according to the City of San Bernardino General Plan. Esperanza Street begins at its intersection with I Street, approximately 0.25 miles east of the project site and terminates at its intersection with Mt. Vernon Avenue, on the northwest corner of the project site. Esperanza Street is a two-lane, east-west street.

Eureka Avenue is classified as a collector street, according to the City of San Bernardino General Plan. Eureka Avenue begins at its intersection with Walnut Street, approximately 0.5 miles north of the project, and terminates at its intersection with Esperanza Street, on the northern boundary of the project site. Eureka Avenue is a two-lane, north-south street.

EXISTING BUS TRANSIT FACILITIES

There are two transit lines which operate within the project study area. The lines are operated by Omnitrans, which provides service within San Bernardino County.

- Omnitrans Line 1 – Line 1 provides service between the cities of Colton and San Bernardino. Near the study area, Line 1 travels along Valley Boulevard, Mt. Vernon Avenue, and 3rd Street. There is a marked stop on Mt. Vernon Avenue at the western entrance to the project site. There is also a transfer point with Line 15 at the intersection of Mill Street and Mt. Vernon Avenue. Line 1 operates at 15- minute to 30-minute headways (interval times) during peak periods Monday-Friday, and at 30-minute headways on Saturdays and Sundays.

- Omnitrans Line 15 – Line 15 provides service between the cities of Fontana, Rialto, San Bernardino and Redlands. Proximate to the study area, Line 15 travels along Rancho Avenue, Mill Street, and E Street. There is a marked stop at Mill Street and Mt. Vernon Avenue, where it connects with Line 1. Line 15 operates at 30-minute headways Monday-Saturday, and at one-hour headways on Sunday.

BICYCLE/PEDESTRIAN NETWORK

All of the roadways within the project study area, with the exception of Eureka Avenue, have sidewalks. There are marked crosswalks along the following intersections:

- W. Mill Street/S. Mt. Vernon Avenue

- W. Mill Street/S. K Street
- Grant Avenue/S. Mt. Vernon Avenue/N. La Cadena Drive
- Grant Avenue/S. K Street
- Grant Avenue/S. J Street
- Grant Avenue/S. I Street
- Inland Center Drive/S. I Street
- Inland Center Drive/I-215 Northbound Ramps
- Colton Avenue/Mt. Vernon Avenue

Additionally, there are pedestrian "walk/don't walk" indicators at all of the signalized intersections.

There is a bicycle route along Mt. Vernon Avenue from Colton Avenue to Grant Avenue. However, there are no lane markings on the roadway along the bicycle route. There is also an off-street bicycle and pedestrian trail along Colton Avenue/Inland Center Drive from I Street to west of Mt. Vernon Avenue.

TRAFFIC DATA COLLECTION

Intersection traffic counts were collected in October 2008 from 7 AM to 9 AM and from 4 PM to 6 PM. The highest one-hour peak of traffic volumes during both the morning and evening hours were shown on Figure 15 and are documented in Appendix A. The existing lane configurations at the time the traffic data was collected are also shown on Figure 15.

Existing signal timings were obtained from the jurisdiction maintaining the signals. All peak hour factors used in the assessment were field measured.

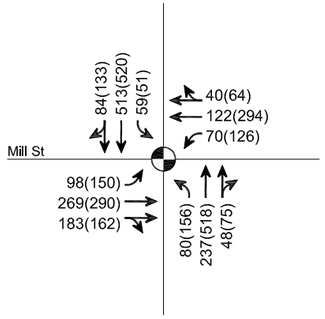
EXISTING INTERSECTION CONDITIONS

As shown in Table 11, most of the intersections currently operate at an acceptable Level of Service of D or better during peak periods. The following intersections currently operate at a deficient Level of Service during one or more peak period:

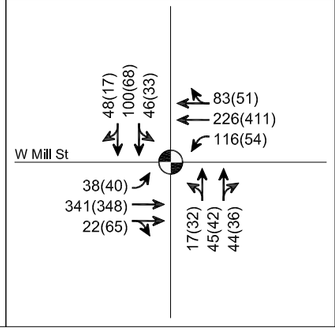
- Inland Center Drive/S. I Street (PM)

The LOS calculations are attached in Appendix B.

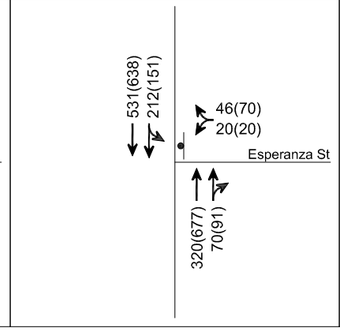
1. Mount Vernon Ave & Mill St



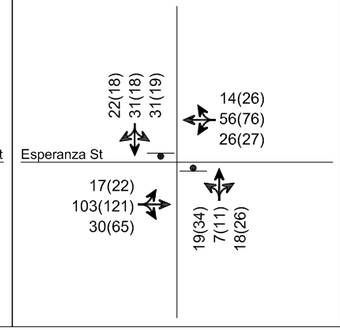
2. S K St & W Mill St



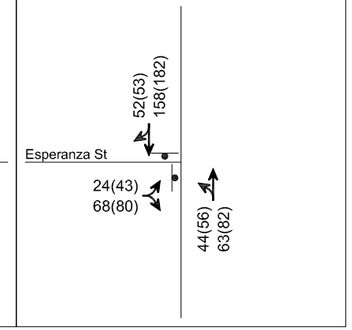
3. Mount Vernon Ave & Esperanza St



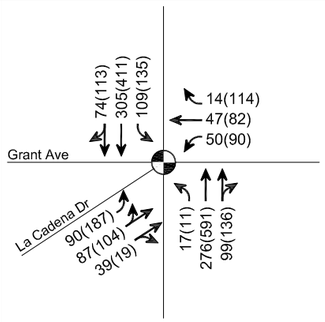
4. S Eureka Ave & Esperanza St



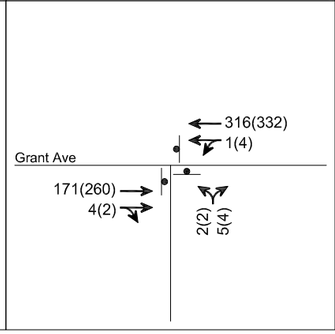
5. K St & Esperanza St



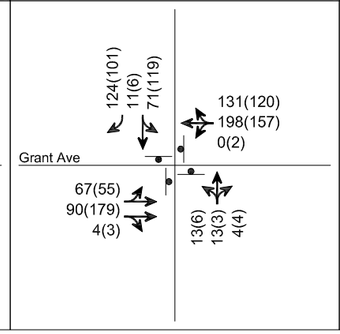
6. Mount Vernon Ave & La Cadena Dr/Grant Ave



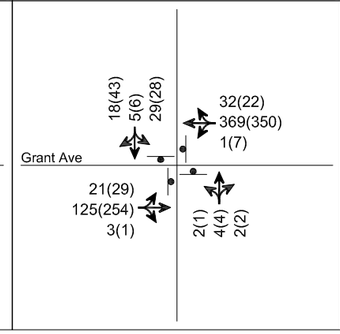
7. Fairview Ave & Grant Ave



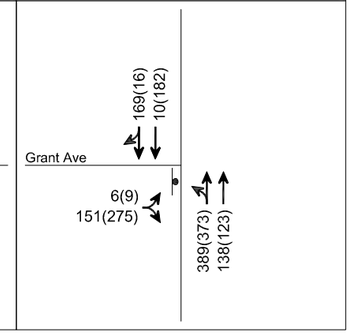
8. S K St & Grant Ave



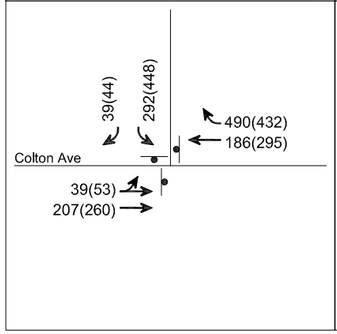
9. S J St & Grant Ave



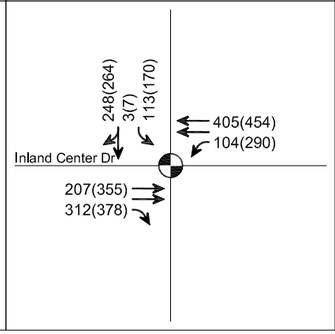
10. S I St & Grant Ave



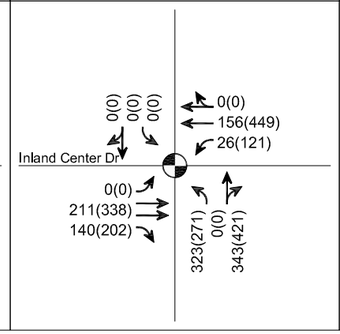
11. S I St & Inland Center Dr



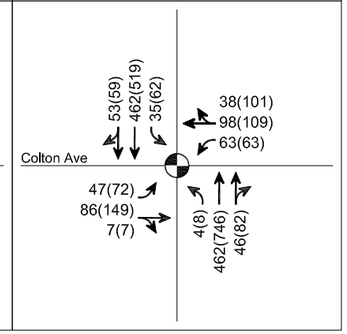
12. I-215 SB Ramps & Inland Center Dr



13. I-215 NB Ramps & Inland Center Dr



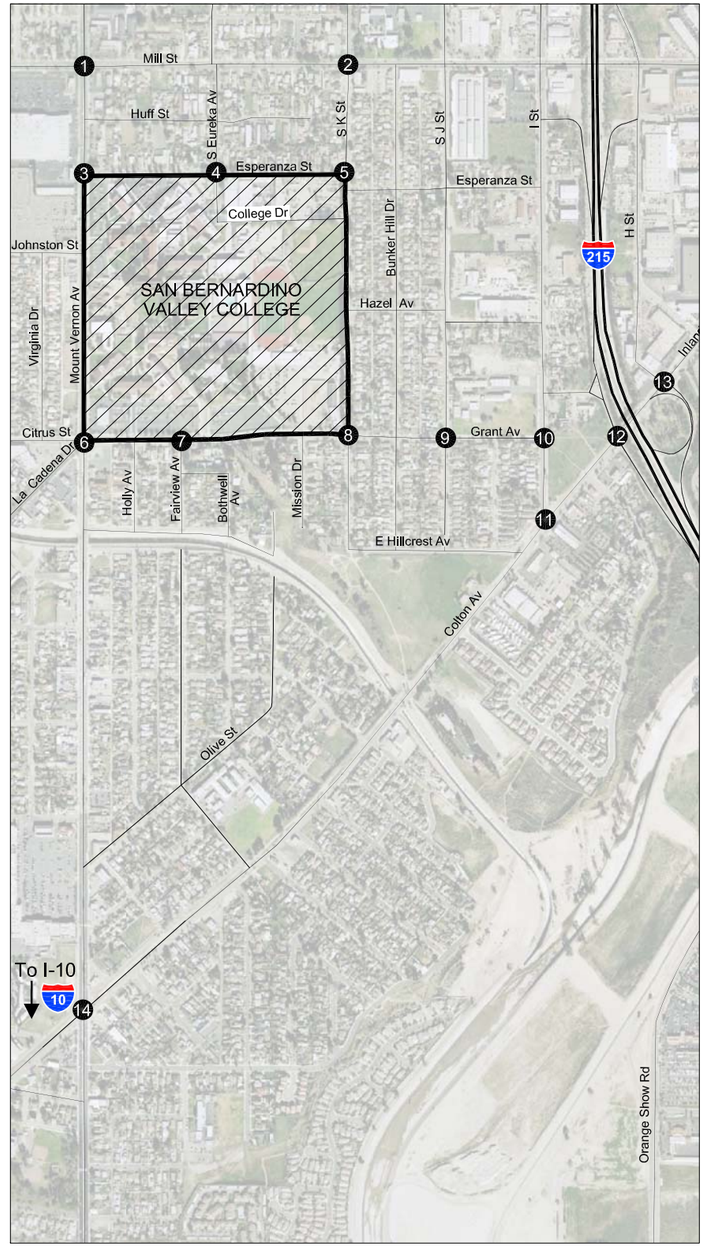
14. Mount Vernon Ave & Colton Ave



LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
- Traffic Signal
- Stop Sign
- Analyzed Intersection
- Project Site

Not to Scale



FEHR & PEERS
TRANSPORTATION CONSULTANTS

Aug 13, 2009 JS
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EXISTING PEAK HOUR TRAFFIC VOLUMES
FIGURE 15

TABLE 11
INTERSECTION LEVELS OF SERVICE – EXISTING CONDITIONS

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay	LOS
W. Mill Street/S. Mt. Vernon Avenue	Signalized	26.1	C	26.8	C
W. Mill Street/S. K Street	Signalized	19.4	B	16.5	B
Esperanza Street/S. Mt. Vernon Avenue	SSSC[2]	25.5	D	26.5	D
Esperanza Street/S. Eureka Avenue	SSSC	13.5	B	14.1	B
Esperanza Street/S. K Street	SSSC	9.4	A	10.1	B
Grant Avenue/S. Mt. Vernon Avenue/N. La Cadena Drive	Signalized	17.9	B	24.9	C
Grant Avenue/Fairview Avenue	AWSC	8.1	A	8.2	A
Grant Avenue/S. K Street	AWSC	14.9	B	10.6	B
Grant Avenue/S. J Street	SSSC	12.8	B	14.4	B
Grant Avenue/S. I Street	SSSC	11.1	B	13.6	B
Inland Center Drive/S. I Street	AWSC	22.8	C	**73.3**	**F**
Inland Center Drive/I-215 Southbound Ramps	Signalized	21.2	C	23.8	C
Inland Center Drive/I-215 Northbound Ramps	Signalized	41.8	D	25.4	C
Colton Avenue/Mt. Vernon Avenue	Signalized	36.8	D	33.4	C

Notes:
1- Delay for signalized intersections based on application of *2000 Highway Capacity Manual* Methodology. Delay was calculated using Synchro 6.0 software. **BOLD** type indicates unacceptable operations.

3. HORIZON 1 (2010) IMPACT ASSESSMENT

This section documents the project impacts during Horizon 1 of Master Plan development, targeted for 2010.

YEAR 2010 GROWTH

To identify growth along project roadways, we compared the SCAG TDF model buildout volumes in San Bernardino with the SCAG TDF model base year volumes. Based on this information, we projected a growth rate of approximately two percent per year, or 4% ambient growth between the base year and Horizon 1. This growth rate was applied to the redistributed existing volumes to account for completion of the I-215 improvements.

TRAFFIC VOLUMES

The Horizon 1 No Project and With Project Volumes for the study intersections are shown on Figures 16 and 17.

INTERSECTION OPERATIONS & PROJECT IMPACTS

Table 12 documents the LOS results for the Horizon 1 (2010) No Project scenario and Table 13 documents the LOS results for the Horizon 1 (2010) With Project scenario. The LOS results are attached in Appendix C.

Table 14 compares the V/C ratios for the No Project and With Project scenarios to identify significant impacts at signalized intersections. Table 15 documents whether unsignalized intersections meet significant impact criteria. As shown in these tables, all intersections are operating at LOS D or better in both scenarios.

Intersection Impacts

As identified in Chapter 1, the proposed project would result in a significant impact if:

1. The project, including project driveways, will disrupt existing traffic operations. Traffic operations were assessed using both quantitative (Level of Service (LOS)) and qualitative criteria. A disruption of traffic operations is defined as any of the following:

    g. The addition of project traffic causes a roadway segment's volume-to-capacity ratio to increase by 0.04 if the signalized intersection is operating at LOS C prior to the introduction of project trips.
    h. The addition of project traffic causes a roadway segment's volume-to-capacity ratio to increase by 0.02 if the signalized intersection is operating at LOS D prior to the introduction of project trips.
    i. The addition of project traffic causes a roadway segment's volume-to-capacity ratio to increase by 0.01 if the signalized intersection is operating at LOS E or F prior to the introduction of project trips.
    j. The project adds 10 or more trips at an unsignalized intersection already operating at LOS E or F, if the intersection meets signal warrants.
    k. The addition of 10 or more project trips at an unsignalized intersection causes the intersection to operate at LOS E or F, if the intersection meets signal warrants.
    l. A project interferes with, conflicts with or precludes other planned improvements such as roadway extensions/expansions, planned trail facilities, proposed creek restoration projects, etc.
    m. A project conflicts or creates inconsistencies with adopted traffic plans, guidelines, policies or standards.

n. The construction of a project creates a temporary but prolonged impact due to lane closures, need for temporary signals, emergency vehicles access, traffic hazards to bikes/pedestrians, damage to roadbed, truck traffic on roadways not designated as truck routes, etc.

2. For CMP intersections, a V/C ratio of 1.0 or greater is considered to be LOS F, regardless of intersection delay LOS. The significance criteria for intersection operations are summarized in Tables 9 and 10.

As shown in Tables 12-15, the proposed project is expected to result in a ***less-than-significant impact*** to area intersections under Horizon 1.

TABLE 12
INTERSECTION LEVELS OF SERVICE – HORIZON 1 (2010) NO PROJECT

Intersection	Control	AM Peak Hour			PM Peak Hour		
		Delay[1]	LOS	V/C[3]	Delay[1]	LOS	V/C[3]
Mill St./Mt. Vernon Ave.[2]	Signalized	25.6	C	0.51	29.9	C	0.66
Mill St./K St.	Signalized	21.5	C	0.35	18.8	B	0.30
Esperanza St./Mt. Vernon Ave.	SSSC	19.4	C		30.4	D	
Esperanza St./Eureka Ave.	SSSC	11.5	B		12.1	B	
Esperanza St./K St.	SSSC	9.6	A		10.2	B	
Grant Ave./Mt. Vernon Ave./ La Cadena Dr. [2]	Signalized	20.2	C	0.33	24.5	C	0.58
Grant Ave./Fairview Ave.	AWSC	7.8	A		8.1	A	
Grant Ave./K St.	AWSC	10.9	B		10.2	B	
Grant Ave./J St.	AWSC	10.1	B		10.3	B	
Grant Ave./I St.	SSSC	10.5	B		10.9	B	
Inland Center Dr./I St.	AWSC	16.5	C		24.0	C	
Inland Center Dr./I-215 Southbound Ramps	Signalized	20.2	C	0.28	23.9	C	0.43
Inland Center Dr./I-215 Northbound Ramps	Signalized	28.7	C	0.26	24.8	C	0.33
Colton Ave./Mt. Vernon Ave. [2]	Signalized	35.8	D	0.35	34.9	C	0.46

Notes:
1- Delay for intersections based on application of *2000 Highway Capacity Manual* Methodology. Delay was calculated using Synchro 6.0 software.
2- CMP intersection
3- V/C = Volume to Capacity ratio. Note – V/C is not calculated for unsignalized intersections.
Source: Fehr & Peers, 2009

TABLE 13
INTERSECTION LEVELS OF SERVICE – HORIZON 1 (2010) WITH PROJECT

Intersection	Control	AM Peak Hour			PM Peak Hour		
		Delay[1]	LOS	V/C[3]	Delay[1]	LOS	V/C[3]
Mill St./Mt. Vernon Ave.[2]	Signalized	25.5	C	0.51	29.9	C	0.66
Mill St./K St.	Signalized	21.1	C	0.34	18.6	B	0.30
Esperanza St./Mt. Vernon Ave.	SSSC	18.9	C		28.5	D	
Esperanza St./Eureka Ave.	SSSC	11.3	B		12.0	B	
Esperanza St./K St.	SSSC	9.5	A		10.2	B	
Grant Ave./Mt. Vernon Ave./ La Cadena Dr. [2]	Signalized	20.4	C	0.33	24.5	C	0.58
Grant Ave./Fairview Ave.	AWSC	7.7	A		8.1	A	
Grant Ave./K St.	AWSC	11.1	B		10.2	B	
Grant Ave./J St.	AWSC	10.2	B		10.5	B	
Grant Ave./I St.	SSSC	10.7	B		10.9	B	
Inland Center Dr./I St.	AWSC	16.8	C		24.0	C	
Inland Center Dr./I-215 Southbound Ramps	Signalized	20.3	C	0.28	23.9	C	0.43
Inland Center Dr./I-215 Northbound Ramps	Signalized	28.7	C	0.26	24.8	C	0.33
Colton Ave./Mt. Vernon Ave. [2]	Signalized	35.8	D	0.35	34.9	C	0.46

Notes:
1- Delay for intersections based on application of *2000 Highway Capacity Manual* Methodology. Delay was calculated using Synchro 6.0 software.
2- CMP intersection
3- V/C = Volume to Capacity ratio. Note – V/C is not calculated for unsignalized intersections.
Source: Fehr & Peers, 2009

TABLE 14
IMPACTS FOR SIGNALIZED INTERSECTIONS – HORIZON 1 (2010)

Intersection	LOS AM(PM)	Allowable ΔV/C AM(PM)	AM Peak Hour			PM Peak Hour		
			No Project	With Project	ΔV/C	No Project	With Project	ΔV/C
Mill St./Mt. Vernon Ave.	C(C)	0.04(0.04)	0.51	0.51	0.00	0.66	0.66	0.00
Mill St./K St.	C(B)	0.04(N/A)	0.35	0.34	-0.01	0.30	0.30	0.00
Grant Ave./Mt. Vernon Ave./La Cadena Dr.	C(C)	0.04(0.04)	0.33	0.33	0.00	0.58	0.58	0.00
Inland Center Dr./I-215 Southbound Ramps	C(C)	0.04(0.04)	0.28	0.28	0.00	0.43	0.43	0.00
Inland Center Dr./I-215 Northbound Ramps	C(C)	0.04(0.04)	0.26	0.26	0.00	0.33	0.33	0.00
Colton Ave./Mt. Vernon Ave.	C(C)	0.04(0.04)	0.35	0.35	0.00	0.46	0.46	0.00

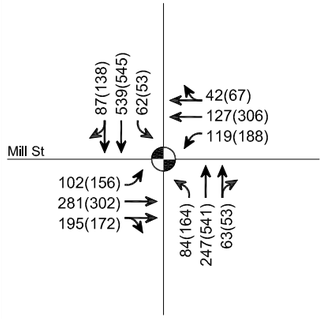
Notes:
1- Delay for signalized intersections based on application of *2000 Highway Capacity Manual* Methodology. Delay was calculated using Synchro 6.0 software.
Source: Fehr & Peers, 2009

TABLE 15
IMPACTS FOR UNSIGNALIZED INTERSECTIONS – HORIZON 1 (2010)

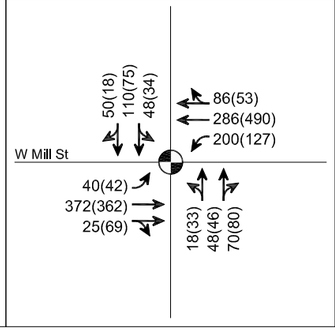
Intersection	Control	AM Peak Hour			PM Peak Hour		
		LOS E or F?	>10 Trips	Meets Signal Warrants	LOS E or F?	>10 Trips	Meets Signal Warrants
Esperanza St./Mt. Vernon Ave.	SSSC	No			No		
Esperanza St./Eureka Ave.	SSSC	No			No		
Esperanza St./K St.	SSSC	No			No		
Grant Ave./Fairview Ave.	AWSC	No			No		
Grant Ave./K St.	AWSC	No			No		
Grant Ave./J St.	AWSC	No			No		
Grant Ave./I St.	SSSC	No			No		
Inland Center Dr./I St.	AWSC	No			No		

Source: Fehr & Peers, 2009

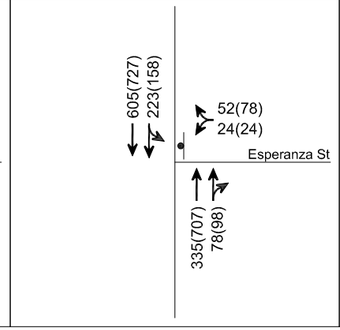
1. Mount Vernon Ave & Mill St



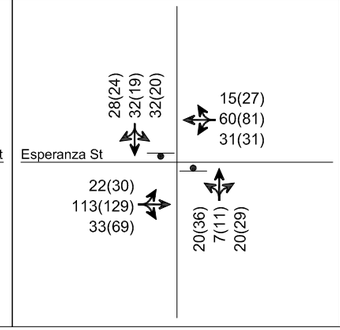
2. S K St & W Mill St



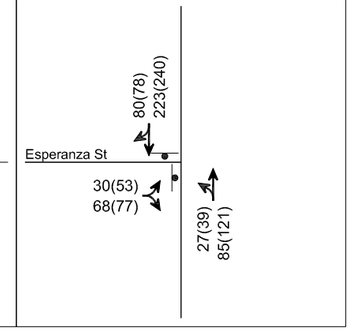
3. Mount Vernon Ave & Esperanza St



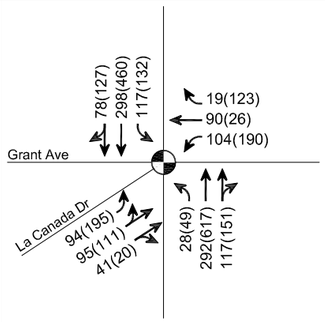
4. S Eureka Ave & Esperanza St



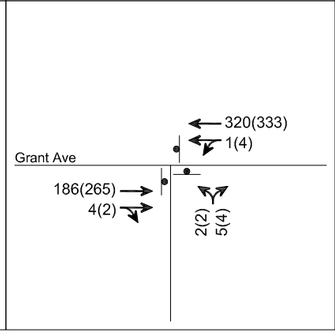
5. K St & Esperanza St



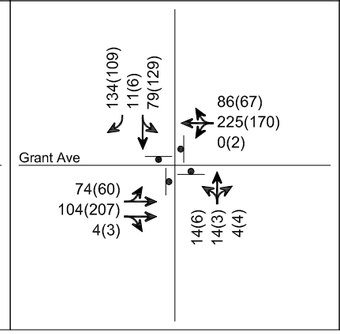
6. Mount Vernon Ave & La Canada Dr/Grant Ave



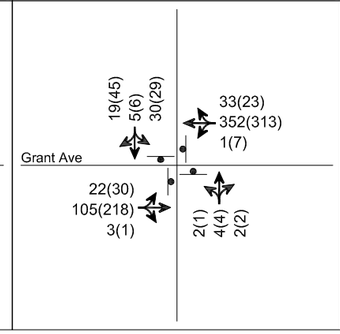
7. Fairview Ave & Grant Ave



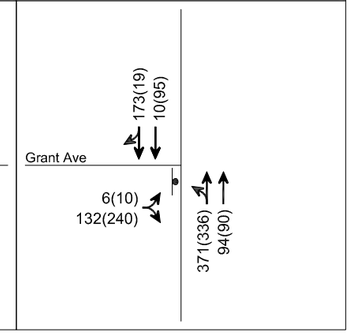
8. S K St & Grant Ave



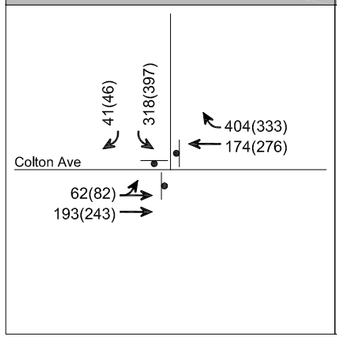
9. S J St & Grant Ave



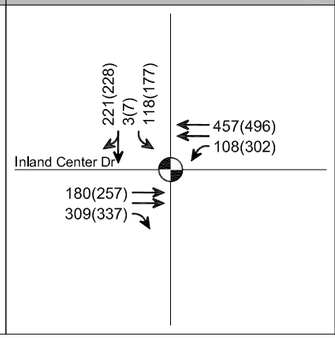
10. S I St & Grant Ave



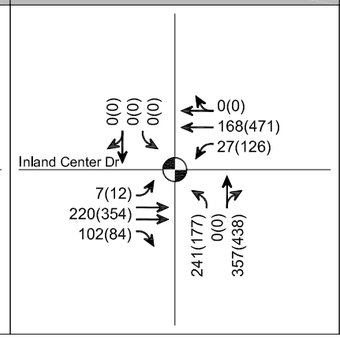
11. S I St & Inland Center Dr



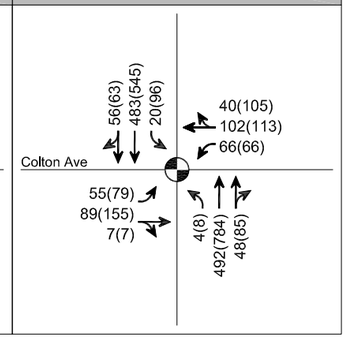
12. I-215 SB Ramps & Inland Center Dr



13. I-215 NB Ramps & Inland Center Dr



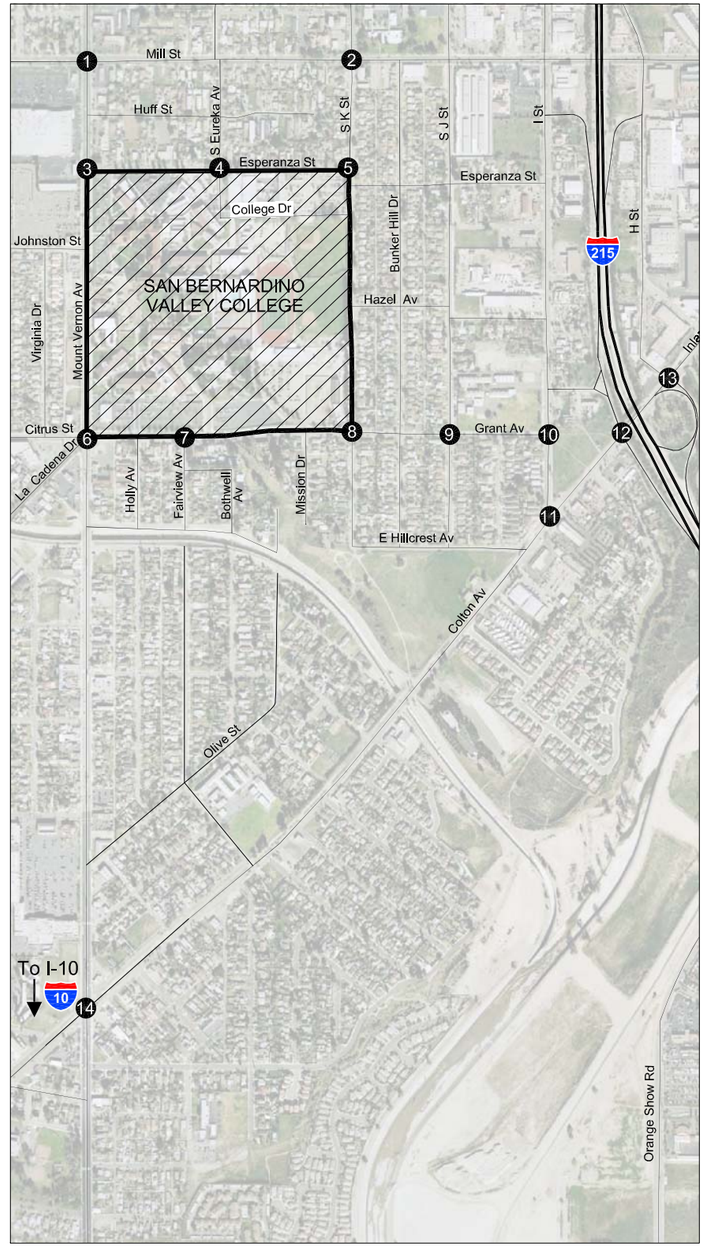
14. Mount Vernon Ave & Colton Ave



LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
- Traffic Signal
- Stop Sign
- Analyzed Intersection
- Project Site

Not to Scale



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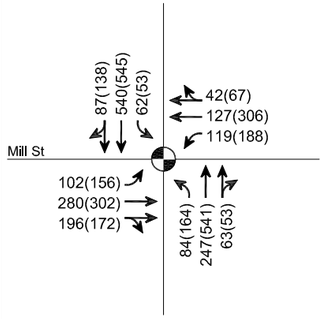
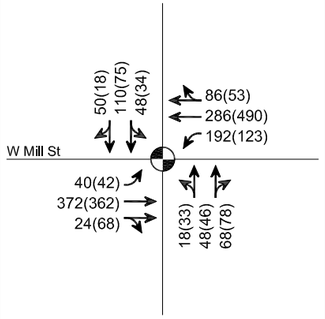
HORIZON 1 (2010) NO PROJECT PEAK HOUR TRAFFIC VOLUMES

FIGURE 16

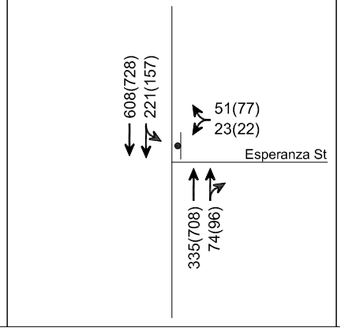
1. Mount Vernon Ave & Mill St



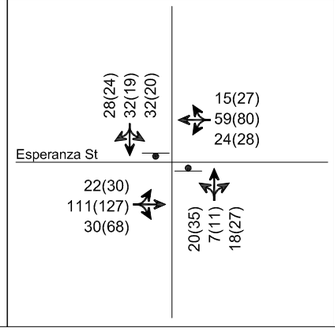
2. S K St & W Mill St



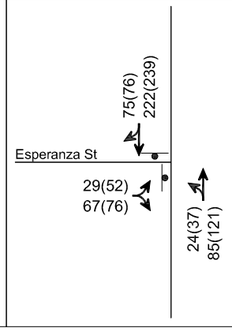
3. Mount Vernon Ave & Esperanza St



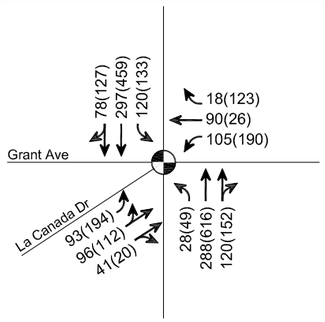
4. S Eureka Ave & Esperanza St



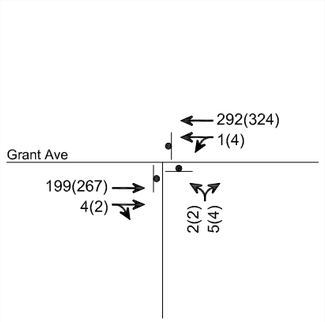
5. K St & Esperanza St



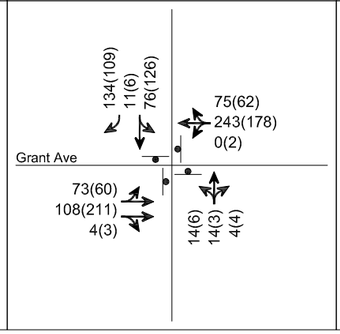
6. Mount Vernon Ave & La Canada Dr/Grant Ave



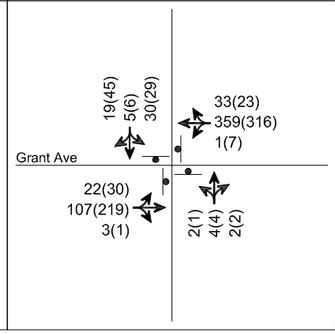
7. Fairview Ave & Grant Ave



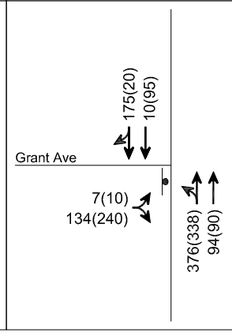
8. S K St & Grant Ave



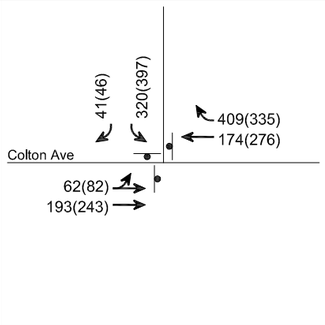
9. S J St & Grant Ave



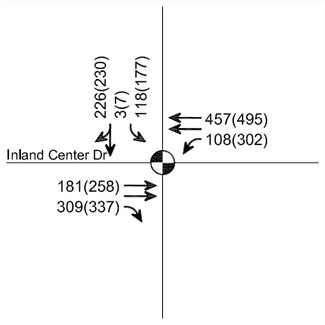
10. S I St & Grant Ave



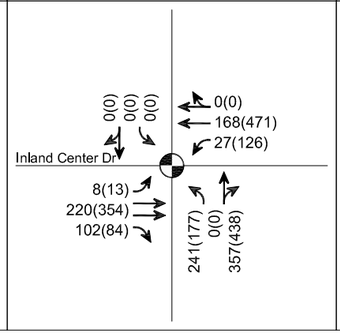
11. S I St & Inland Center Dr



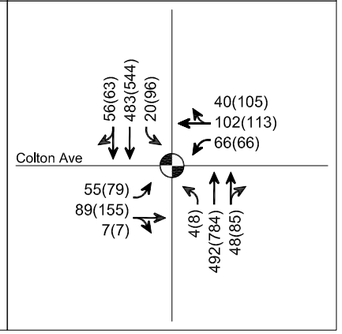
12. I-215 SB Ramps & Inland Center Dr



13. I-215 NB Ramps & Inland Center Dr



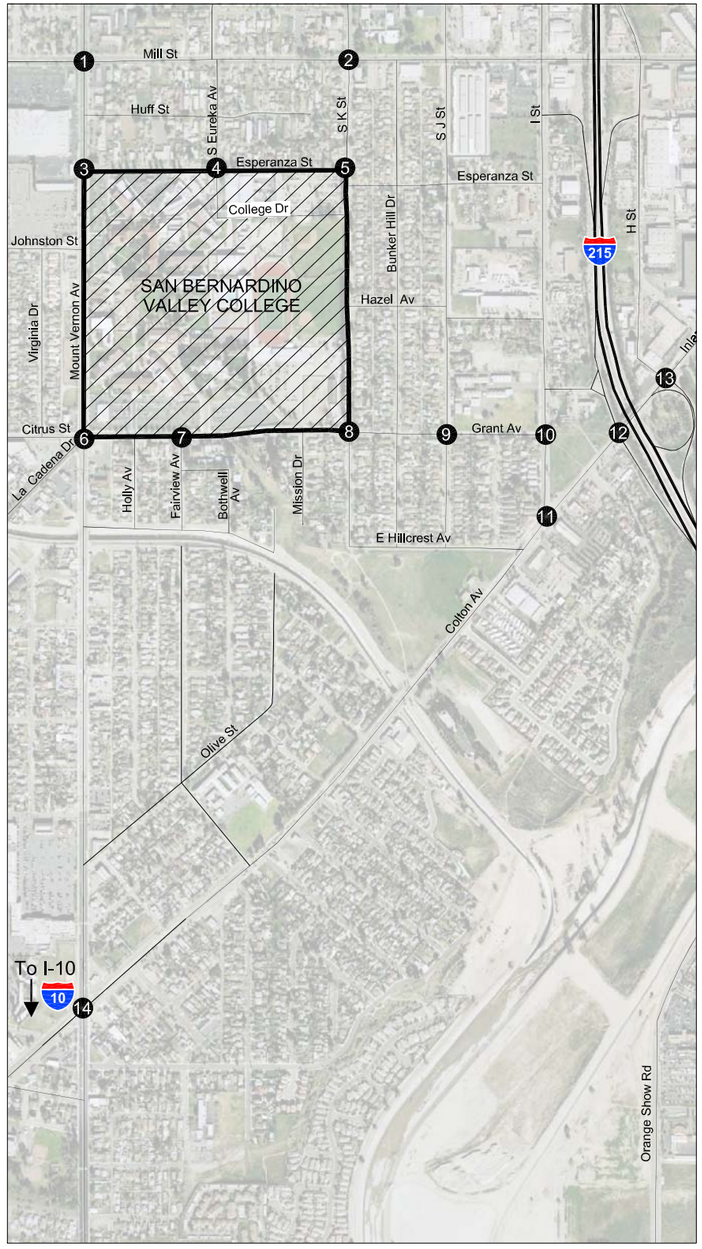
14. Mount Vernon Ave & Colton Ave



LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
- Traffic Signal
- Stop Sign
- Analyzed Intersection
- Project Site

Not to Scale



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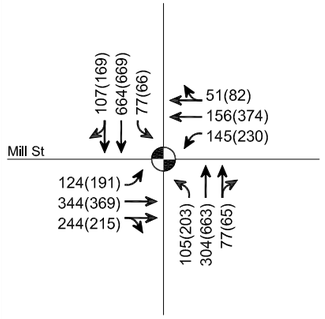
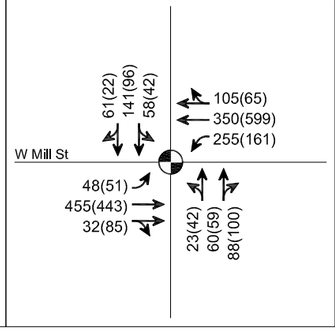
HORIZON 1 (2010) WITH PROJECT PEAK HOUR TRAFFIC VOLUMES

FIGURE 17

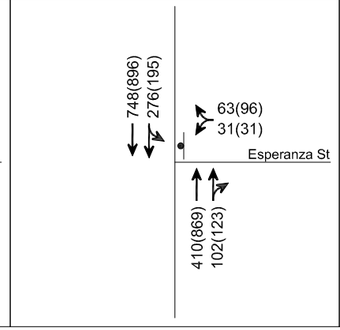
1. Mount Vernon Ave & Mill St



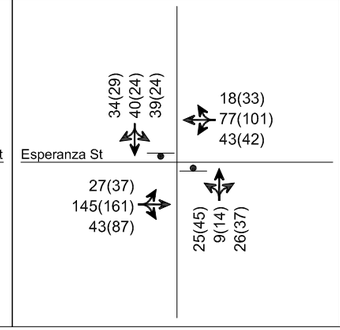
2. S K St & W Mill St



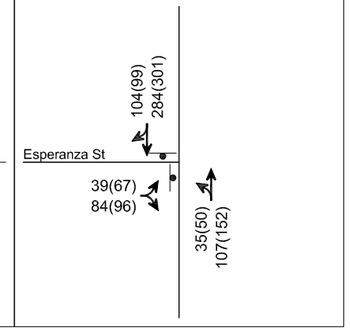
3. Mount Vernon Ave & Esperanza St



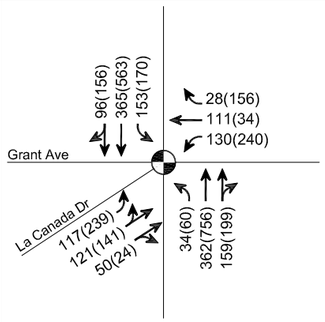
4. S Eureka Ave & Esperanza St



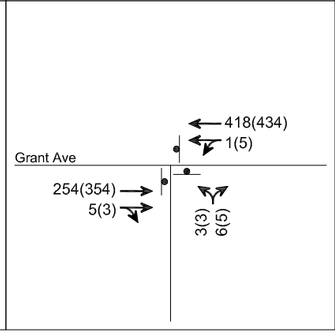
5. K St & Esperanza St



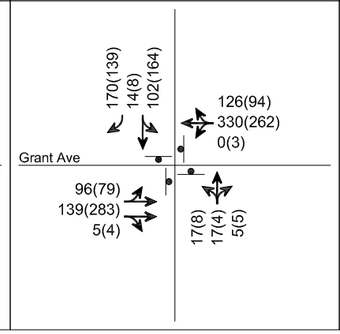
6. Mount Vernon Ave & La Canada Dr/Grant Ave



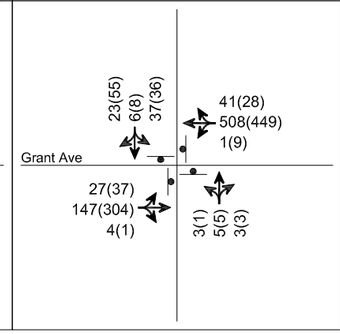
7. Fairview Ave & Grant Ave



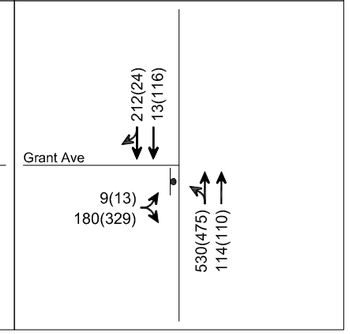
8. S K St & Grant Ave



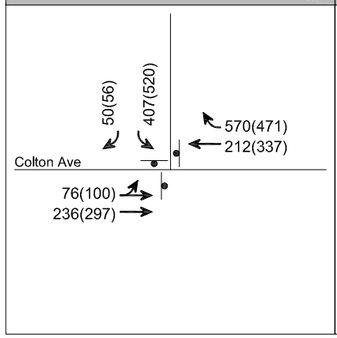
9. S J St & Grant Ave



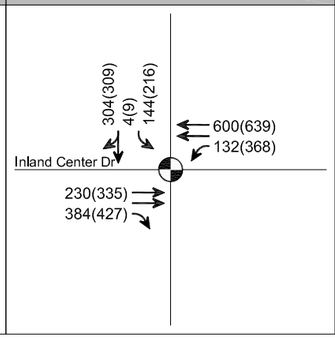
10. S I St & Grant Ave



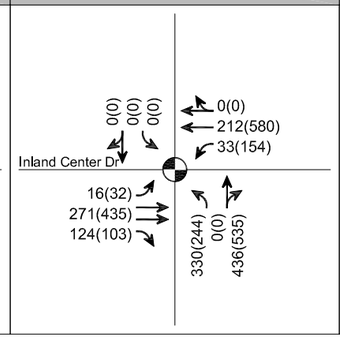
11. S I St & Inland Center Dr



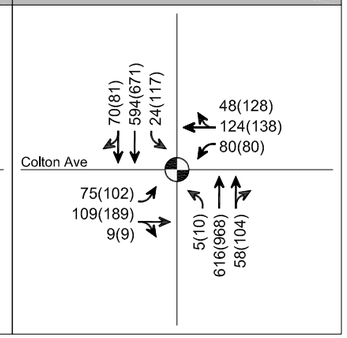
12. I-215 SB Ramps & Inland Center Dr



13. I-215 NB Ramps & Inland Center Dr



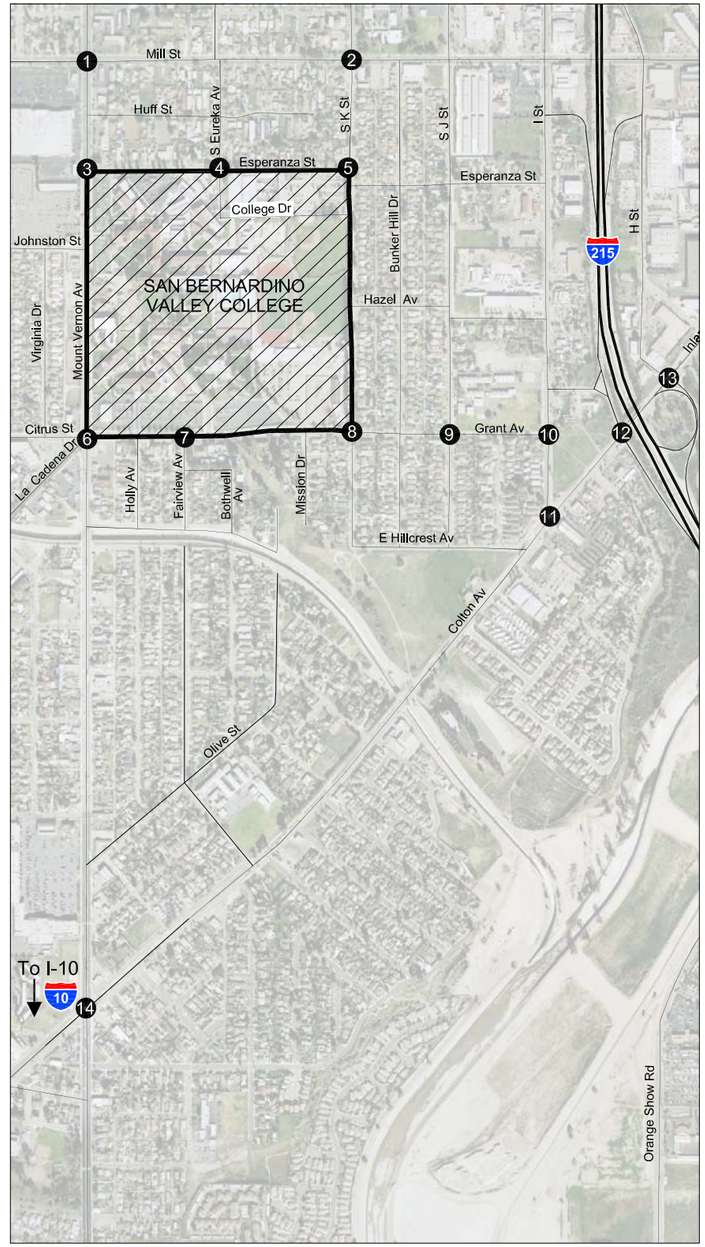
14. Mount Vernon Ave & Colton Ave



LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
- Traffic Signal
- Stop Sign
- Analyzed Intersection
- Project Site

Not to Scale



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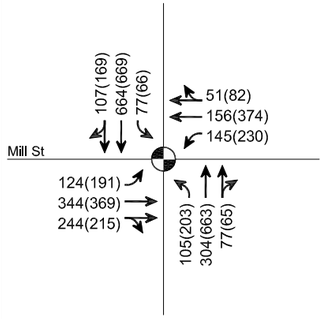
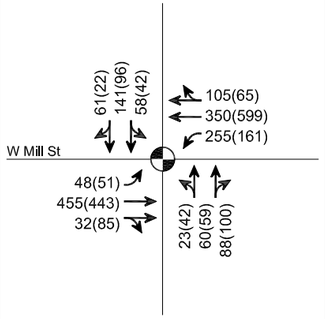
HORIZON 2 (2020) NO PROJECT PEAK HOUR TRAFFIC VOLUMES

FIGURE 18

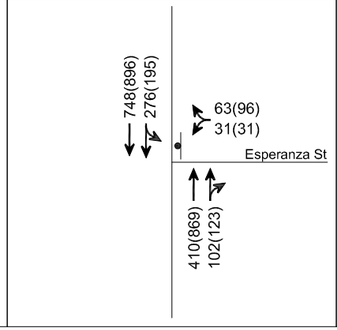
1. Mount Vernon Ave & Mill St



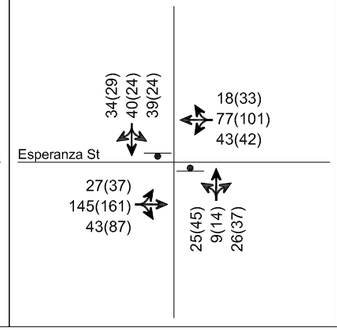
2. S K St & W Mill St



3. Mount Vernon Ave & Esperanza St



4. S Eureka Ave & Esperanza St



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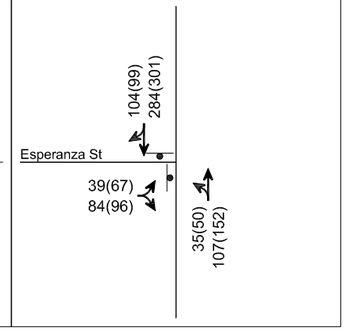
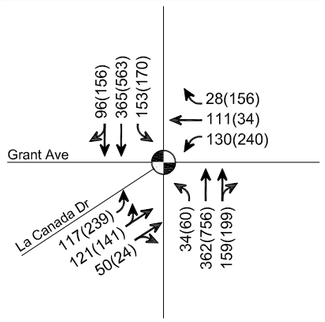
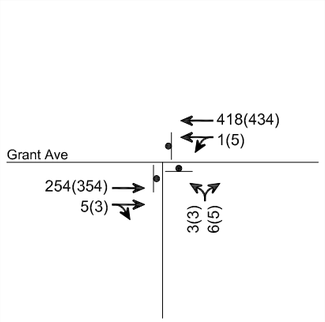


6. Mount Vernon Ave & La Canada Dr/Grant Ave



7. Fairview Ave & Grant Ave



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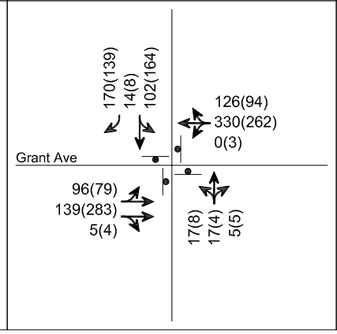

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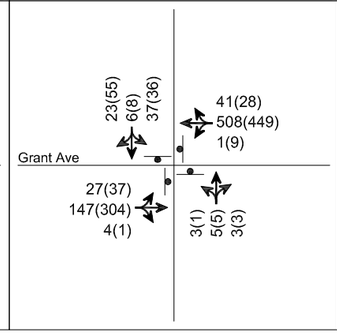

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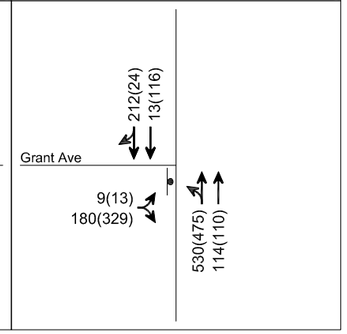
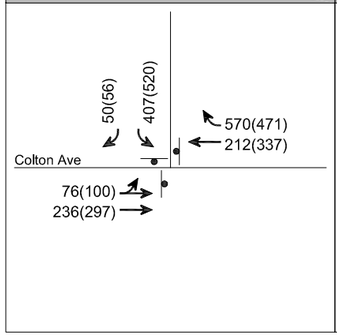
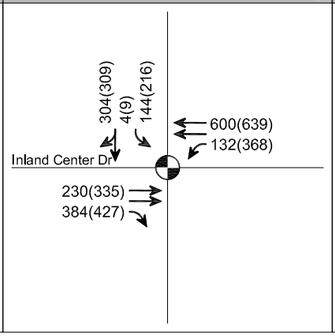


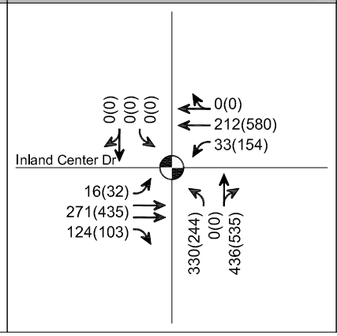
11. S I St & Inland Center Dr



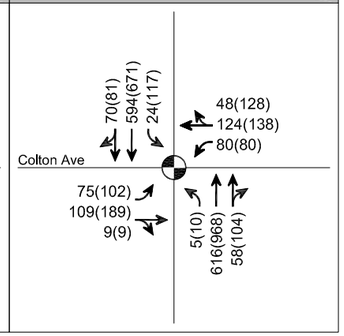
12. I-215 SB Ramps & Inland Center Dr



13. I-215 NB Ramps & Inland Center Dr



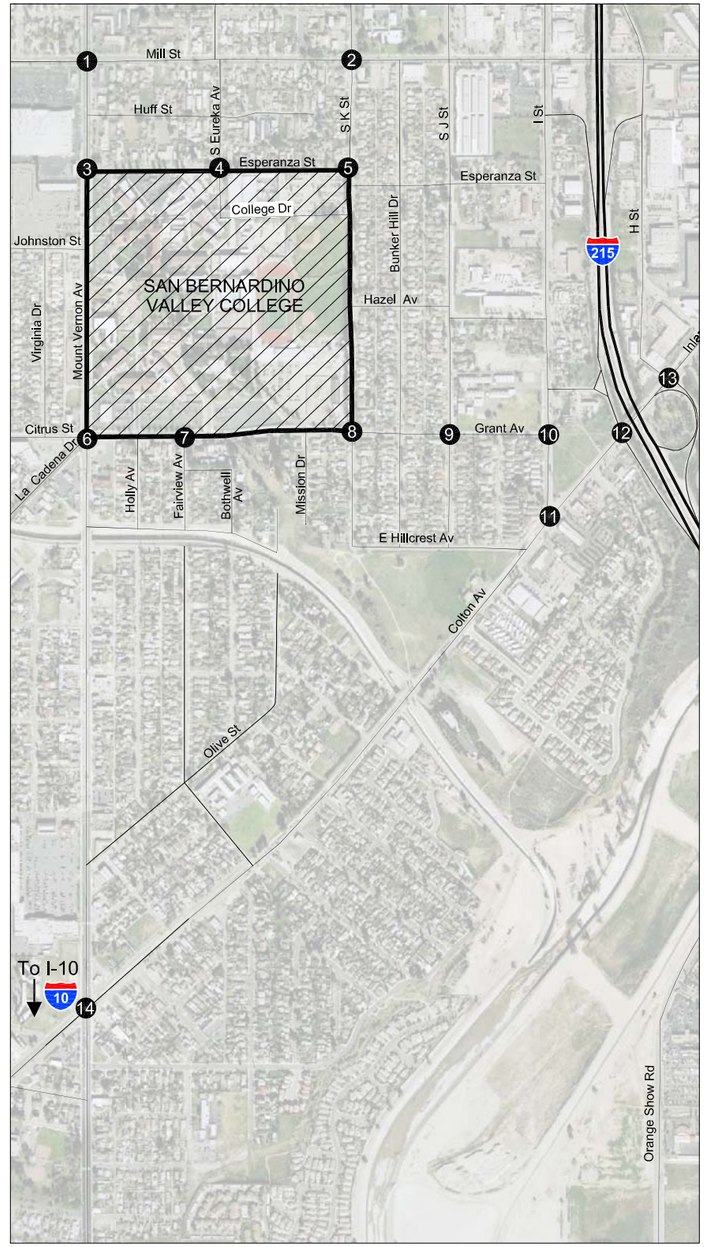
14. Mount Vernon Ave & Colton Ave



LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
- Traffic Signal
- Stop Sign
- Analyzed Intersection
- Project Site

Not to Scale



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HORIZON 2 (2020) WITH PROJECT PEAK HOUR TRAFFIC VOLUMES

FIGURE 19

TABLE 16
INTERSECTION LEVELS OF SERVICE – HORIZON 2 (2020) NO PROJECT

Intersection	Control	AM Peak Hour			PM Peak Hour		
		Delay[1]	LOS	V/C[3]	Delay	LOS	V/C[3]
Mill St./Mt. Vernon Ave.[2]	Signalized	27.7	C	0.65	38.9	D	0.82
Mill St./K St.	Signalized	24.0	C	0.44	19.8	B	0.36
Esperanza St./Mt. Vernon Ave.	SSSC	**37.2**	**E**		**219.6**	**F**	
Esperanza St./Eureka Ave.	SSSC	13.0	B		14.4	B	
Esperanza St./K St.	SSSC	11.3	B		11.6	B	
Grant Ave./Mt. Vernon Ave./ La Cadena Dr. [2]	Signalized	22.0	C	0.43	30.0	C	0.75
Grant Ave./Fairview Ave.	AWSC	8.6	A		9.2	A	
Grant Ave./K St.	AWSC	17.6	C		14.6	B	
Grant Ave./J St.	AWSC	14.4	B		15.1	C	
Grant Ave./I St.	SSSC	13.3	B		14.6	B	
Inland Center Dr./I St.	AWSC	**49.6**	**E**		**67.4**	**F**	
Inland Center Dr./I-215 Southbound Ramps	Signalized	21.2	C	0.34	24.8	C	0.51
Inland Center Dr./I-215 Northbound Ramps	Signalized	32.5	C	0.34	25.7	C	0.44
Colton Ave./Mt. Vernon Ave. [2]	Signalized	36.9	D	0.42	38.8	D	0.57

Notes:
1- Delay for intersections based on application of *2000 Highway Capacity Manual* Methodology. Delay was calculated using Synchro 6.0 software.
2- CMP intersection
3- V/C = Volume to Capacity ratio. Note – V/C is not calculated for unsignalized intersections.
BOLD indicates unacceptable operations.
Source: Fehr & Peers, 2009

a. The addition of project traffic causes a roadway segment's volume-to-capacity ratio to increase by 0.04 if the signalized intersection is operating at LOS C prior to the introduction of project trips.

b. The addition of project traffic causes a roadway segment's volume-to-capacity ratio to increase by 0.02 if the signalized intersection is operating at LOS D prior to the introduction of project trips.

c. The addition of project traffic causes a roadway segment's volume-to-capacity ratio to increase by 0.01 if the signalized intersection is operating at LOS E or F prior to the introduction of project trips.

d. The project adds 10 or more trips at an unsignalized intersection already operating at LOS E or F, if the intersection meets signal warrants.

e. The addition of 10 or more project trips at an unsignalized intersection causes the intersection to operate at LOS E or F, if the intersection meets signal warrants.

f. A project interferes with, conflicts with or precludes other planned improvements such as roadway extensions/expansions, planned trail facilities, proposed creek restoration projects, etc.

g. A project conflicts or creates inconsistencies with adopted traffic plans, guidelines, policies or standards.

TABLE 17
INTERSECTION LEVELS OF SERVICE – HORIZON 2 (2020) WITH PROJECT

Intersection	Control	AM Peak Hour			PM Peak Hour		
		Delay[1]	LOS	V/C[3]	Delay	LOS	V/C[3]
Mill St./Mt. Vernon Ave.[2]	Signalized	27.7	C	0.65	38.9	D	0.82
Mill St./K St.	Signalized	22.8	C	0.43	19.5	B	0.35
Esperanza St./Mt. Vernon Ave.	SSSC	31.2	D		**95.9**	**F**	
Esperanza St./Eureka Ave.	SSSC	12.0	B		13.1	B	
Esperanza St./K St.	SSSC	10.8	B		11.9	B	
Grant Ave./Mt. Vernon Ave./ La Cadena Dr. [2]	Signalized	22.7	C	0.44	30.8	C	0.76
Grant Ave./Fairview Ave.	AWSC	8.4	A		9.2	A	
Grant Ave./K St.	AWSC	20.0	C		14.4	B	
Grant Ave./J St.	AWSC	15.5	C		14.9	B	
Grant Ave./I St.	SSSC	14.2	B		14.9	B	
Inland Center Dr./I St.	AWSC	**53.8**	**F**		**67.4**	**F**	
Inland Center Dr./I-215 Southbound Ramps	Signalized	21.6	C	0.34	24.9	C	0.51
Inland Center Dr./I-215 Northbound Ramps	Signalized	32.4	C	0.34	25.7	C	0.45
Colton Ave./Mt. Vernon Ave. [2]	Signalized	36.9	D	0.42	38.8	D	0.57

Notes:
1- Delay for intersections based on application of *2000 Highway Capacity Manual* Methodology. Delay was calculated using Synchro 6.0 software.
2- CMP intersection
3- V/C = Volume to Capacity ratio. Note – V/C is not calculated for unsignalized intersections.
BOLD indicates unacceptable operations.
Source: Fehr & Peers, 2009

TABLE 18
IMPACTS FOR SIGNALIZED INTERSECTIONS – HORIZON 2 (2020)

Intersection	LOS AM(PM)	Allowable ΔV/C AM(PM)	AM Peak Hour			PM Peak Hour		
			No Project	With Project	ΔV/C	No Project	With Project	ΔV/C
Mill St./Mt. Vernon Ave.	C(D)	0.04(0.02)	0.65	0.65	0.00	0.82	0.82	0.00
Mill St./K St.	C(B)	0.04(N/A)	0.44	0.43	-0.01	0.36	0.35	-0.01
Grant Ave./Mt. Vernon Ave./La Cadena Dr.	C(C)	0.04(0.04)	0.43	0.44	0.01	0.75	0.76	0.01
Inland Center Dr./I-215 Southbound Ramps	C(C)	0.04(0.04)	0.34	0.34	0.00	0.51	0.51	0.00
Inland Center Dr./I-215 Northbound Ramps	C(C)	0.04(0.04)	0.34	0.34	0.00	0.44	0.45	0.01
Colton Ave./Mt. Vernon Ave.	D(D)	0.02(0.02)	0.42	0.42	0.00	0.57	0.57	0.00

Source: Fehr & Peers, 2009

TABLE 19
IMPACTS FOR UNSIGNALIZED INTERSECTIONS – HORIZON 2 (2020)

Intersection	Control	AM Peak Hour			PM Peak Hour		
		LOS E or F?	>10 Trips	Meets Signal Warrants	LOS E or F?	>10 Trips	Meets Signal Warrants
Esperanza St./Mt. Vernon Ave.	SSSC	No			**Yes**	No	
Esperanza St./Eureka Ave.	SSSC	No			No		
Esperanza St./K St.	SSSC	No			No		
Grant Ave./Fairview Ave.	AWSC	No			No		
Grant Ave./K St.	AWSC	No			No		
Grant Ave./J St.	AWSC	No			No		
Grant Ave./I St.	SSSC	No			No		
Inland Center Dr./I St.	AWSC	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Source: Fehr & Peers, 2009

h. The construction of a project creates a temporary but prolonged impact due to lane closures, need for temporary signals, emergency vehicles access, traffic hazards to bikes/pedestrians, damage to roadbed, truck traffic on roadways not designated as truck routes, etc.

2. For CMP intersections, a V/C ratio of 1.0 or greater is considered to be LOS F, regardless of intersection delay LOS. The significance criteria for intersection operations are summarized in Tables 9 and 10.

As shown in Table 18, there are no significant impacts at signalized intersections. At unsignalized intersections, documented in Table 19, the following significant impact exists:

Impact 1 **Increases to Delay at Unsignalized Intersections in Horizon 2**

A significant impact at an unsignalized intersection occurs when the intersection is operating below LOS D, meets signal warrants, and the project adds more than 10 trips to the intersection. A **significant impact** occurs at the following intersection in Horizon 2:

- Inland Center Drive/I Street

Mitigation 1

The installation of a traffic signal[1] at the unsignalized intersection will improve operations to an acceptable level of service. Please note that, given the close spacing of this intersection with the interchange improvements at the Inland Center Drive interchange, a signal interconnect system will be required to ensure that the corridor is coordinated. Also, since the impact occurs in Year 2020 and is a result of both project-related traffic and cumulative growth, the college will be responsible for a fair-share contribution toward the improvement.

Correspondence with City of San Bernardino staff has indicated that this intersection will be signalized in the future as part of the on-going improvements at the nearby interchange. Since the signal is already planned for construction, the impact would be reduced to a less than significant level after mitigation.

Significance After Mitigation *Less than Significant.*

[1] This analysis is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. It estimates future development-generated traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices* and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured, rather than forecast, traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The responsible state or local agency should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

4. HORIZON 3 (2030) PROJECT IMPACTS

This section documents the project impacts during Horizon 3 of Master Plan development, targeted for 2020.

YEAR 2030 GROWTH

To identify growth along project roadways, we compared the SCAG TDF model buildout volumes in San Bernardino with the SCAG TDF model base year volumes. Based on this information, we projected a growth rate of approximately two percent per year, or 55% ambient growth between the base year and Horizon 3.

TRAFFIC VOLUMES

The Horizon 3 No Project and With Project Volumes for the study intersections are shown on Figures 20 and 21.

ROADWAY IMPROVEMENTS

There are no planned or programmed construction projects related to roadways in the study area for year 2030.

INTERSECTION OPERATIONS & PROJECT IMPACTS

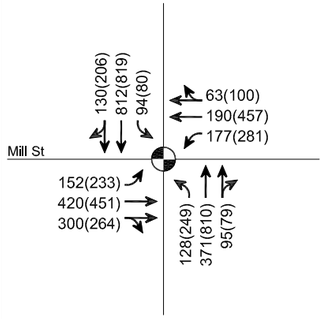
Table 20 documents the LOS results for the Horizon 3 (2030) No Project scenario and Table 21 documents the LOS results for the Horizon 3 (2030) With Project scenario. LOS results are provided in Appendix E.

TABLE 20
INTERSECTION LEVELS OF SERVICE – HORIZON 3 (2030) NO PROJECT

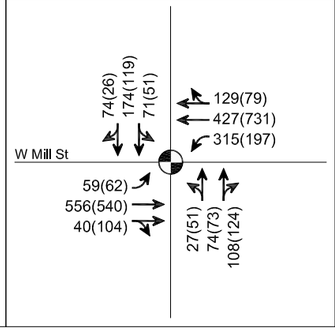
Intersection	Control	AM Peak Hour			PM Peak Hour		
		Delay[1]	LOS	V/C[3]	Delay	LOS	V/C[3]
Mill St./Mt. Vernon Ave.[2]	Signalized	34.4	C	0.84	**68.9**	**E**	**1.02**
Mill St./K St.	Signalized	32.2	C	0.57	22.1	C	0.46
Esperanza St./Mt. Vernon Ave.	SSSC	**313.8**	**F**		**OFL**	**F**	
Esperanza St./Eureka Ave.	SSSC	15.9	C		18.3	C	
Esperanza St./K St.	SSSC	15.3	C		15.6	C	
Grant Ave./Mt. Vernon Ave./ La Cadena Dr. [2]	Signalized	28.1	C	0.58	**51.4**	**D**	**1.02**
Grant Ave./Fairview Ave.	AWSC	9.8	A		10.6	B	
Grant Ave./K St.	AWSC	**49.7**	**E**		25.6	D	
Grant Ave./J St.	AWSC	31.9	D		29.4	D	
Grant Ave./I St.	SSSC	24.1	C		31.5	D	
Inland Center Dr./I St.	AWSC	**125.9**	**F**		**137.8**	**F**	
Inland Center Dr./I-215 Southbound Ramps	Signalized	24.6	C	0.46	27.9	C	0.59
Inland Center Dr./I-215 Northbound Ramps	Signalized	48.4	D	0.44	30.2	C	0.57
Colton Ave./Mt. Vernon Ave. [2]	Signalized	38.8	D	0.50	**55.3**	**E**	**0.69**

Notes:
1- Delay for intersections based on application of *2000 Highway Capacity Manual* Methodology. Delay was calculated using Synchro 6.0 software.
2- CMP intersection
3- V/C = Volume to Capacity ratio. Note – V/C is not calculated for unsignalized intersections.
4- OFL = overflow; the delay at the worst approach is very long, to the point that the analysis methodology or software is unable to calculate a specific delay
BOLD indicates unacceptable operations.
Source: Fehr & Peers, 2009

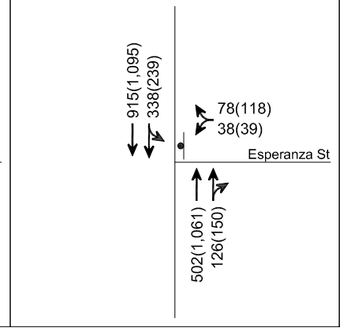
1. Mount Vernon Ave & Mill St



2. S K St & W Mill St



3. Mount Vernon Ave & Esperanza St



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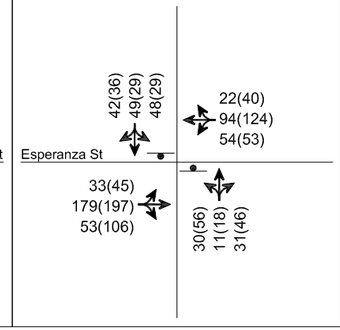
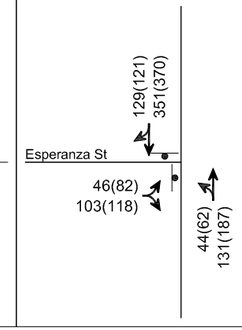
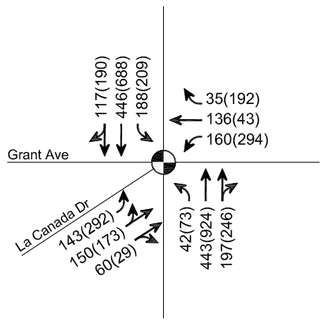


5. K St & Esperanza St



6. Mount Vernon Ave & La Canada Dr/Grant Ave



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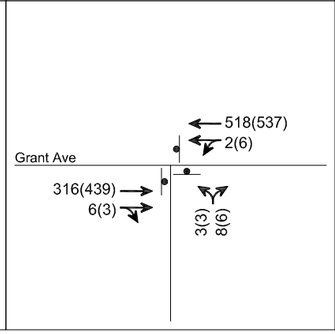

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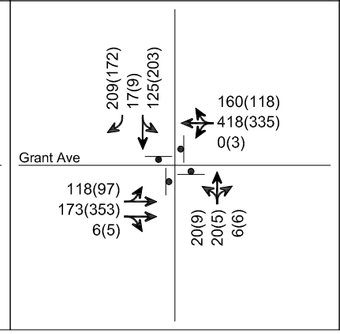

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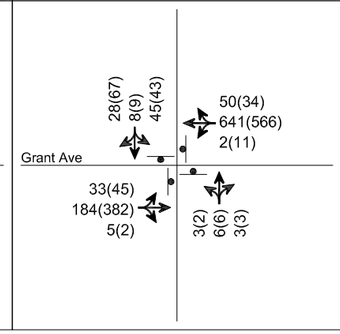

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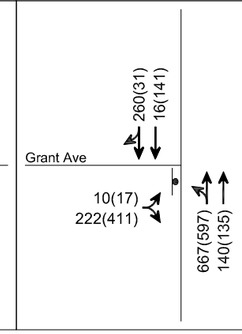

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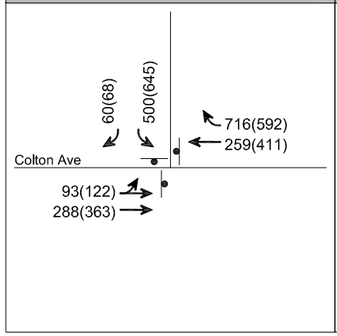

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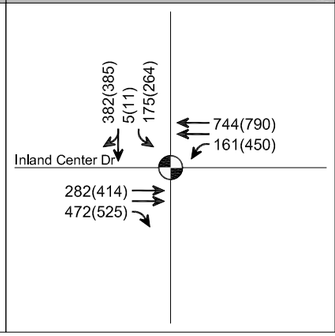
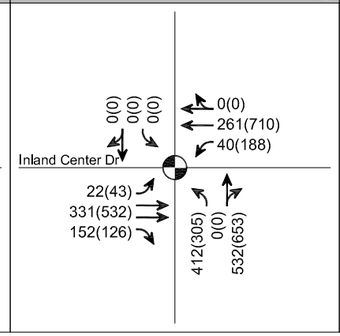
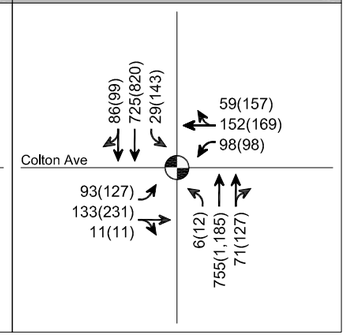


13. I-215 NB Ramps & Inland Center Dr



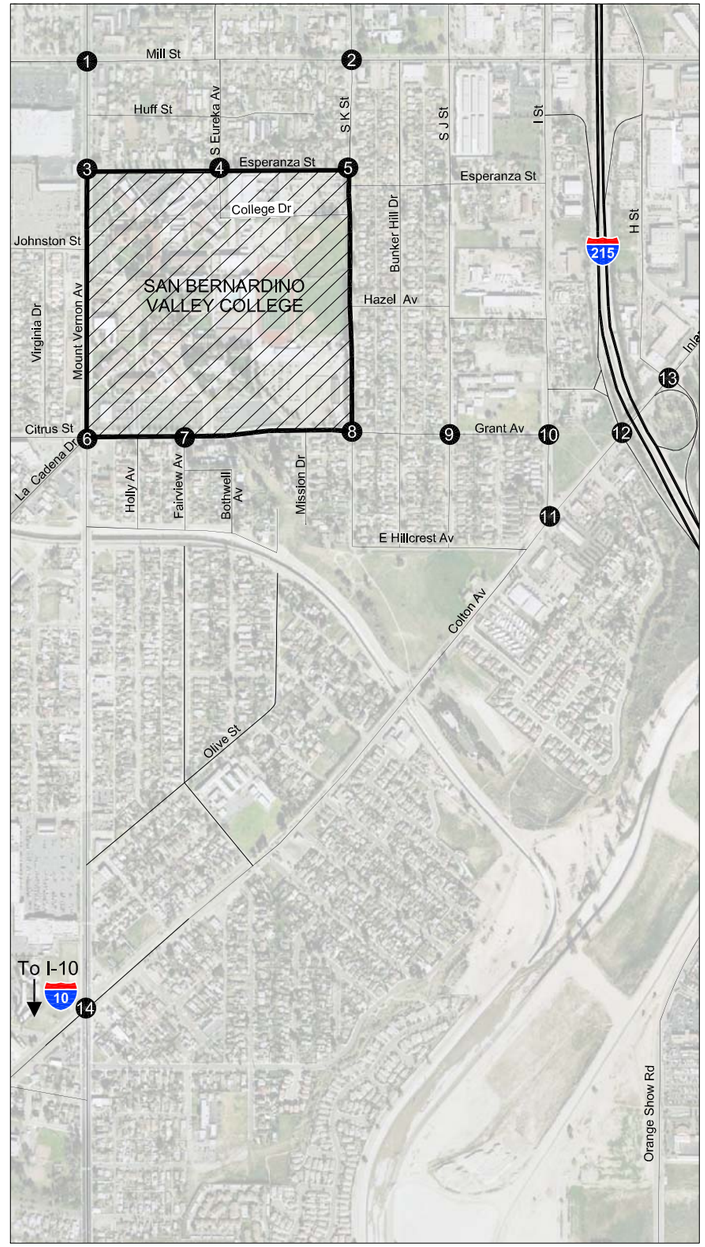
14. Mount Vernon Ave & Colton Ave



LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
- Traffic Signal
- Stop Sign
- Analyzed Intersection
- Project Site

Not to Scale



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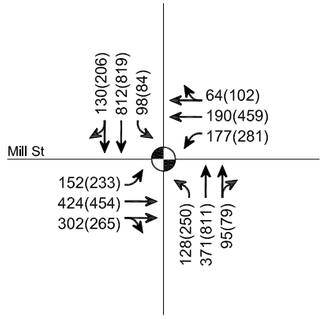
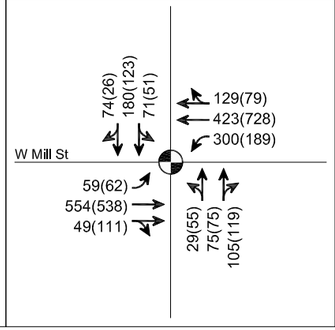
HORIZON 3 (2030) NO PROJECT PEAK HOUR TRAFFIC VOLUMES

FIGURE 20

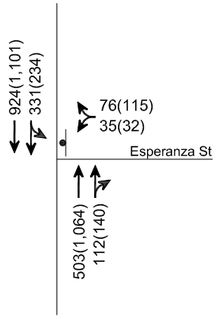
1. Mount Vernon Ave & Mill St



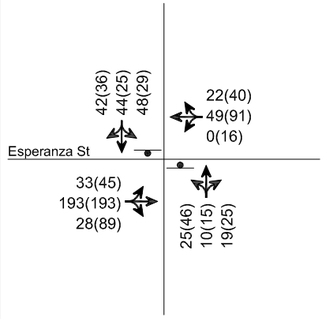
2. S K St & W Mill St



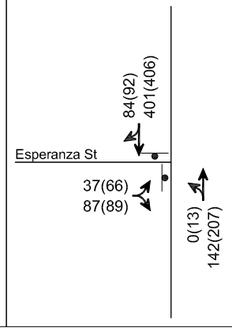
3. Mount Vernon Ave & Esperanza St



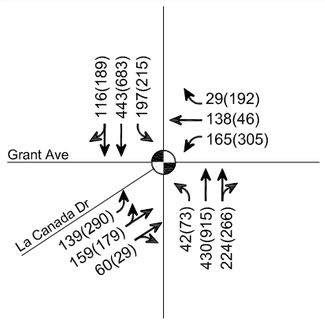
4. S Eureka Ave & Esperanza St



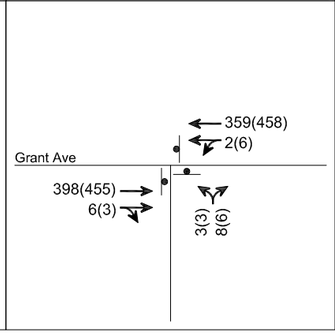
5. K St & Esperanza St



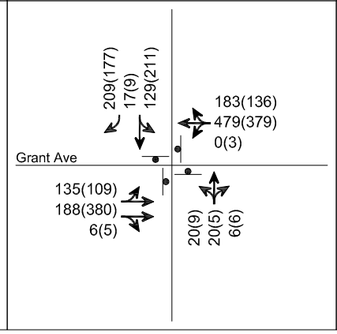
6. Mount Vernon Ave & La Canada Dr/Grant Ave



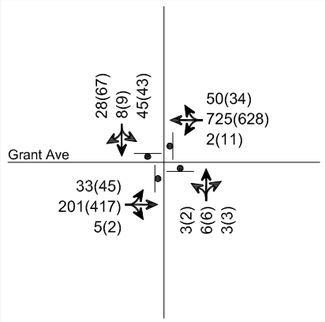
7. Fairview Ave & Grant Ave



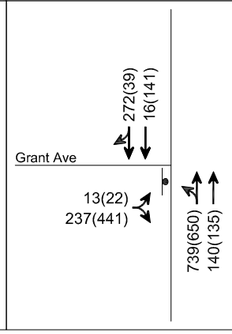
8. S K St & Grant Ave



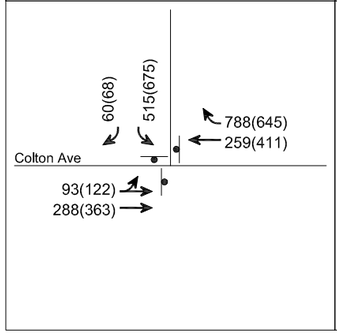
9. S J St & Grant Ave



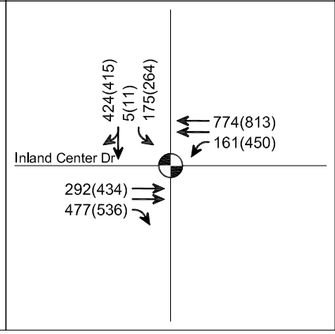
10. S I St & Grant Ave



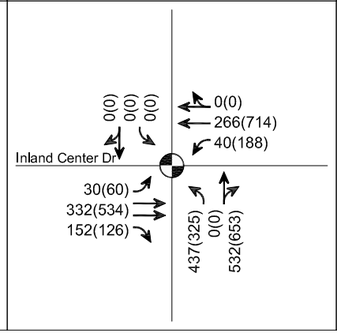
11. S I St & Inland Center Dr



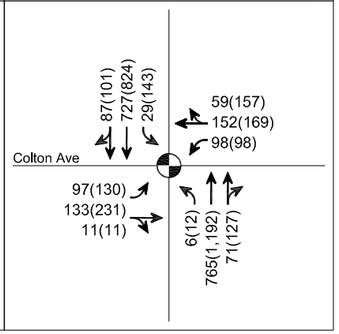
12. I-215 SB Ramps & Inland Center Dr



13. I-215 NB Ramps & Inland Center Dr



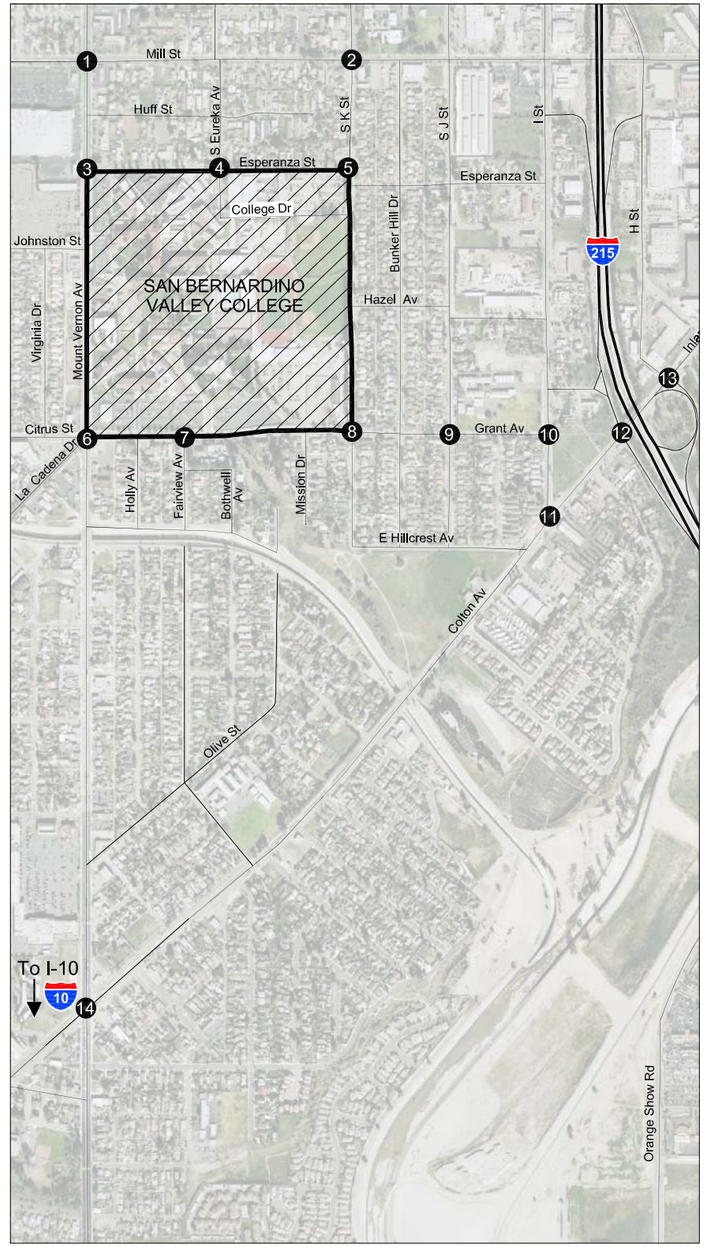
14. Mount Vernon Ave & Colton Ave



LEGEND

- X(X) AM(PM) Peak Hour Traffic Volumes
- Turn Lane
- Traffic Signal
- Stop Sign
- Analyzed Intersection
- Project Site

Not to Scale



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HORIZON 3 (2030) WITH PROJECT PEAK HOUR TRAFFIC VOLUMES

FIGURE 21

TABLE 21
INTERSECTION LEVELS OF SERVICE – HORIZON 3 (2030) WITH PROJECT

Intersection	Control	AM Peak Hour			PM Peak Hour		
		Delay[1]	LOS	V/C[3]	Delay	LOS	V/C[3]
Mill St./Mt. Vernon Ave.[2]	Signalized	32.7	C	0.81	**69.5**	**E**	**1.02**
Mill St./K St.	Signalized	28.2	C	0.55	21.6	C	0.45
Esperanza St./Mt. Vernon Ave.	SSSC	**164.6**	**F**		**997.0**	**F**	
Esperanza St./Eureka Ave.	SSSC	12.2	B		14.4	B	
Esperanza St./K St.	SSSC	14.2	B		16.4	C	
Grant Ave./Mt. Vernon Ave./ La Cadena Dr. [2]	Signalized	28.5	C	0.57	**51.2**	**D**	**1.01**
Grant Ave./Fairview Ave.	AWSC	8.9	A		9.8	A	
Grant Ave./K St.	AWSC	**73.2**	**F**		34.1	D	
Grant Ave./J St.	AWSC	**46.1**	**E**		**38.2**	**E**	
Grant Ave./I St.	SSSC	**45.8**	**E**		**62.3**	**F**	
Inland Center Dr./I St.	AWSC	**143.3**	**F**		**156.2**	**F**	
Inland Center Dr./I-215 Southbound Ramps	Signalized	25.4	C	0.48	28.9	C	0.63
Inland Center Dr./I-215 Northbound Ramps	Signalized	52.1	C	0.45	30.2	C	0.59
Colton Ave./Mt. Vernon Ave. [2]	Signalized	38.7	D	0.50	**56.1**	**E**	**0.70**

Notes:
1- Delay for intersections based on application of *2000 Highway Capacity Manual* Methodology. Delay was calculated using Synchro 6.0 software.
2- CMP intersection
3- V/C = Volume to Capacity ratio. Note – V/C is not calculated for unsignalized intersections.
BOLD indicates unacceptable operations.
Source: Fehr & Peers, 2009

TABLE 22
IMPACTS FOR SIGNALIZED INTERSECTIONS – HORIZON 3 (2030)

Intersection	LOS AM(PM)	Allowable ΔV/C AM(PM)	AM Peak Hour			PM Peak Hour		
			No Project	With Project	ΔV/C	No Project	With Project	ΔV/C
Mill St./Mt. Vernon Ave.	C(F)	0.04(0.01)	0.84	0.81	-0.03	1.02	1.02	0.00
Mill St./K St.	C(C)	0.04(0.04)	0.57	0.55	-0.02	0.46	0.45	-0.01
Grant Ave./Mt. Vernon Ave./La Cadena Dr.	C(F)	0.04(0.01)	0.58	0.57	-0.01	1.02	1.01	-0.01
Inland Center Dr./I-215 Southbound Ramps	C(C)	0.04(0.04)	0.46	0.48	0.02	0.59	0.63	0.04
Inland Center Dr./I-215 Northbound Ramps	C(C)	0.04(0.04)	0.44	0.45	0.01	0.57	0.59	0.02
Colton Ave./Mt. Vernon Ave.	D(E)	0.02(0.01)	0.50	0.50	0.00	0.69	0.70	0.01

Notes:
1- Delay for signalized intersections based on application of *2000 Highway Capacity Manual* Methodology. Delay was calculated using Synchro 6.0 software.

Tables 22 compare the V/C ratios for the No Project and With Project scenarios to identify significant impacts at signalized intersections. Table 23 documents whether unsignalized intersections meet significant impact criteria.

TABLE 23
IMPACTS FOR UNSIGNALIZED INTERSECTIONS

Intersection	Control	AM Peak Hour			PM Peak Hour		
		LOS E or F?	>10 Trips	Meets Signal Warrants	LOS E or F?	>10 Trips	Meets Signal Warrants
Esperanza St./Mt. Vernon Ave.	SSSC[2]	**Yes**	No	No	**Yes**	No	No
Esperanza St./Eureka Ave.	SSSC	No			No		
Esperanza St./K St.	SSSC	No			No		
Grant Ave./Fairview Ave.	AWSC	No			No		
Grant Ave./K St.	AWSC	**Yes**	**Yes**	**Yes**	No		
Grant Ave./J St.	AWSC	**Yes**	**Yes**	No	**Yes**	**Yes**	No
Grant Ave./I St.	SSSC	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Inland Center Dr./I St.	AWSC	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:
1- Delay for signalized intersections based on application of *2000 Highway Capacity Manual* Methodology. Delay was calculated using Synchro 6.0 software.

Intersection Impacts

As identified in Chapter 1, the proposed project would result in a significant impact if:

1. The project, including project driveways, will disrupt existing traffic operations. Traffic operations were assessed using both quantitative (Level of Service (LOS)) and qualitative criteria. A disruption of traffic operations is defined as any of the following:

    a. The addition of project traffic causes a roadway segment's volume-to-capacity ratio to increase by 0.04 if the signalized intersection is operating at LOS C prior to the introduction of project trips.

    b. The addition of project traffic causes a roadway segment's volume-to-capacity ratio to increase by 0.02 if the signalized intersection is operating at LOS D prior to the introduction of project trips.

    c. The addition of project traffic causes a roadway segment's volume-to-capacity ratio to increase by 0.01 if the signalized intersection is operating at LOS E or F prior to the introduction of project trips.

    d. The project adds 10 or more trips at an unsignalized intersection already operating at LOS E or F, if the intersection meets signal warrants.

    e. The addition of 10 or more project trips at an unsignalized intersection causes the intersection to operate at LOS E or F, if the intersection meets signal warrants.

    f. A project interferes with, conflicts with or precludes other planned improvements such as roadway extensions/expansions, planned trail facilities, proposed creek restoration projects, etc.

g. A project conflicts or creates inconsistencies with adopted traffic plans, guidelines, policies or standards.

h. The construction of a project creates a temporary but prolonged impact due to lane closures, need for temporary signals, emergency vehicles access, traffic hazards to bikes/pedestrians, damage to roadbed, truck traffic on roadways not designated as truck routes, etc.

2. For CMP intersections, a V/C ratio of 1.0 or greater is considered to be LOS F, regardless of intersection delay LOS. The significance criteria for intersection operations are summarized in Tables 9 and 10.

In the No Project scenario, the following intersections operate at an unacceptable LOS during one or more peak hours:

- Mill St./Mt. Vernon Ave. (PM)
- Esperanza St./Mt. Vernon Ave. (AM and PM)
- Grant Ave./Mt. Vernon Ave./La Cadena Dr. (PM)
- Grant Ave./K St. (AM)
- Inland Center Drive/ I St. (AM and PM)
- Colton Ave./Mt. Vernon Ave. (PM)

In the With Project scenario, the following intersections operate at an unacceptable LOS during one or more peak hours:

- Mill St./Mt. Vernon Ave. (PM)
- Esperanza St./Mt. Vernon Ave. (AM and PM)
- Grant Ave./Mt. Vernon Ave./La Cadena Dr. (PM)
- Grant Ave./K St. (AM)
- Grant Ave./J St. (AM and PM)
- Grant Ave./I St. (AM and PM)
- Inland Center Drive/ I St. (AM and PM)
- Colton Ave./Mt. Vernon Ave. (PM)

As shown in Table 22, there are no significant impacts at signalized intersections with the addition of project trips. However, there are significant impacts at the following unsignalized intersections:

- Grant Ave./K St. (AM)
- Grant Ave./I St. (AM and PM)
- Inland Center Drive/ I St. (AM and PM)

Impact 2 **Increases to Delay at Unsignalized Intersections in Horizon 3**

A significant impact at an unsignalized intersection occurs when the intersection is operating below LOS D, meets signal warrants, and the project adds more than 10 trips to the intersection. A **significant impact** occurs at the following intersections in Horizon 3:

- Grant Street/K Street (AM)
- Grant Street/I Street (AM and PM)
- Inland Center Drive/I Street (AM and PM)

Mitigation 2

The installation of a traffic signal[2] at these unsignalized intersections will improve operations to an acceptable level of service. Since this occurs in a future scenario and is associated with both project traffic and cumulative growth assumptions, the project sponsor shall be required to make a fair-share contribution toward these improvements. As described previously, the Inland Center Drive/I Street signal will need to be coordinated with the nearby interchange, and an inter-connect system will be required.

As described previously, the Inland Center Drive/I Street intersection is already planned to be signalized. Therefore, implementation of the mitigation measure would reduce the impact at that intersection to a less than significant level.

However, the college does not have control over the other two intersections (they are under the control of the City of San Bernardino) and therefore cannot guarantee that the signal will be constructed. Additionally, even with a fair-share contribution toward the improvement, the college cannot guarantee that the controlling agency will implement the improvement. Given this uncertainty, until the controlling agency guarantees that the signals will be installed, the impact is considered significant and unavoidable. If the agency will guarantee the improvement, the impact could be reduced to a less-than-significant level.

Significance After Mitigation

Inland Center Drive/I Street – *Less than Significant*

Grant Street/K Street and Grant Street/I Street – *Significant and Unavoidable*

[2] This analysis is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. It estimates future development-generated traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration Manual on Uniform Traffic Control Devices and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured, rather than forecast, traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The responsible state or local agency should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

5. TRANSIT SYSTEM - PROJECT IMPACTS

This chapter discusses impacts related to the transit system. Potential impacts could include disruptions to existing transit service, interference with planned transit facilities, conflicts with adopted transit system plans, guidelines, policies, or standards, and creation of demand for public transit above the available capacity.

DISRUPTIONS TO EXISTING TRANSIT SERVICE

Significance Criteria

The following significance criteria were applied to determine if the project is responsible for a disruption of existing transit services or facilities:

> A significant impact occurs if a project or project-related mitigation disrupts existing transit services or facilities. This includes disruptions caused by proposed project driveways on transit streets and impacts to transit stops/shelters; and impacts to transit operations from traffic improvements proposed or resulting from a project.

Project Impact

Currently there are transit lines with stops along Mt. Vernon Avenue and Mill Street. SBVC currently has an access point along Mt. Vernon Avenue. The access point will remain with the project development; however, the parking lot connected to the driveway will be reduced. As a result, fewer vehicles will be utilizing this driveway. Development of the project site will not disrupt existing transit services or facilities on either Mt. Vernon Avenue or Mill Street. Additionally, there are no significant impacts along either of these roadways. Therefore, the project will not impact or affect existing transit service; the impact is less than significant.

INTERFERENCE WITH PLANNED TRANSIT SERVICES

Significance Criteria

The following significance criteria were applied:

> A significant impact occurs if a project interferes with planned transit services or facilities.

Project Impact

Based on our review of existing documents, we could find no planned transit facilities that are planned for the project site in the future; therefore the impact is less than significant.

PROJECT CONFLICTS OR CREATES INCONSISTENCIES WITH ADOPTED TRANSIT SYSTEM PLANS, GUIDELINES, POLICIES, OR STANDARDS

Significance Criteria

The following significance criteria regarding consistency with adopted transit plans, guidelines, policies, or standards were applied:

A significant impact occurs if a project conflicts or creates inconsistencies with adopted transit system plans, guidelines, policies, or standards.

Project Impact

The City of San Bernardino General Plan has several statements regarding transit in the circulation element. Some examples include:

- Policy 6.6.1 – Support the efforts of regional, state, and federal agencies to provide additional local and express bus service in the City.
- Policy 6.6.2 – Create a partnership with Omnitrans to identify public transportation infrastructure needs that improve mobility.
- Policy 6.6.3 – In cooperation with Omnitrans, require new development to provide transit facilities, such as bus shelters and turnouts, as necessary and warranted by the scale of the development.
- Policy 6.6.4 – Ensure accessibility to public transportation for seniors and persons with disabilities.
- Policy 6.6.5 – In cooperation with Omnitrans, explore methods to improve the use, speed, and efficiency for transit services. These methods might include dedicated or priority lanes/signals, reduced parking standards for selected core areas, and incorporating Intelligent Transportation System architecture.
- Policy 6.6.6 – Support and encourage the provision of a range of paratransit opportunities to complement bus and rail service for specialized transit needs.
- Policy 6.6.7 – Encourage measures that will reduce the number of vehicle-miles traveled during peak periods, including the following examples of these types of measures:
    - Incentives for car-pooling and vanpooling
    - Incentives for car-pools and vanpools
    - An adequate, safe, and interconnected system of pedestrian and bicycle paths
    - Conveniently located bus stops with shelters that are connected to pedestrian/bicycle paths
- Policy 6.6.8 – Promote the use of car-pools and vanpools by providing safe, convenient park-and-ride facilities.
- Policy 6.6.9 – Work with Omnitrans to create transit corridors, such as the one currently being explored on E Street linking CSUSB to Hospitality Lane, to increase transit ridership, reduce traffic congestion, and improve air quality.
- Policy 6.6.10 – Consider the provision of incentives, such as reduced parking standards and density/intensity bonuses, to those projects near transit stops that include transit-friendly uses such as child care, convenience retail, and housing.

Based on our review of the proposed project, we can conclude that the project does not conflict with these policies or other policies related to transit. The impact is therefore less than significant and no mitigation is required.

DEMAND FOR PUBLIC TRANSIT SERVICES ABOVE CAPACITY

Significance Criteria

The following significance criteria were applied:

A significant impact occurs if the project creates demand for public transit service above the capacity which is provided, or planned.

Project Impact

According to the *2000 United States Decennial Census*, less than 2% of trips in the City of San Bernardino are by transit. Based on the assumption that this percentage of persons using transit remains the same for both analysis years, we concluded that the incremental transit trips associated with the project would only increase in Horizon 3, by 2 transit riders. Given the existing transit service passing by the site, we would conclude that the incremental transit trips produced by the project would not generate a demand beyond the capacity already provided.

6. BICYCLE NETWORK - PROJECT IMPACTS

This chapter reviews project related impacts on the bicycle network in the study area. Potential impacts include disruptions on existing facilities, interference with planned facilities, and conflicts with adopted plans, guidelines, policies, or standards relating to bicycles.

DISRUPTIONS TO EXISTING FACILITIES

Significance Criteria

The following significance criteria were applied:

> A significant impact occurs if a project disrupts existing bicycle facilities.

Project Impact

There is a Class I bicycle trail along Inland Center Drive/Colton Avenue proximate to the project site. Because this facility is off-street, it will not be impacted by any increase in project traffic along this roadway. Additionally, there is a Class III bicycle route along Mt. Vernon Avenue. Because the driveway along Mt. Vernon Avenue proximate to the project site will be less utilized than it currently is, the bicycle route will not be impacted with the development of the project. Therefore, the impact is less than significant.

PROJECT INTERFERES WITH PLANNED BICYCLE FACILITIES

Significance Criteria

The following significance criteria were applied to determine if the project conflicts with planned facilities:

> A significant impact occurs if a project interferes with planned bicycle facilities. This includes failure to dedicate right-of-way for planned on- and off-street bicycle facilities included in an adopted Bicycle Master Plan or to contribute towards construction of planned bicycle facilities along the project frontage.

Project Impact

Based on our review of available documents, there appear to be no planned bicycle facilities along the project frontage; therefore the impact is less than significant.

PROJECT CONFLICTS WITH ADOPTED BICYCLE SYSTEM PLANS, GUIDELINES, POLICIES, OR STANDARDS

Significance Criteria

> A significant impact occurs if the project conflicts or creates inconsistencies with adopted bicycle system, plans, guidelines, policies, or standards.

Project Impact

Our review of the City of San Bernardino indicated two policy statements related to bicycles including:

- Policy 6.1.1 – Maintain and rehabilitate all components of the circulation system, including roadways, sidewalks, bicycle facilities, and pedestrian facilities.
- Policy 6.6.7 – Encourage measures that will reduce the number of vehicle-miles traveled during peak periods, including the following examples of these types of measures:
    - Incentives for car-pooling and vanpooling
    - Preferential parking for car-pools and vanpools
    - An adequate, safe, and interconnected system of pedestrian and bicycle paths

While the project is not proposing any new bicycle facilities, it is also does not interfere with any planned or proposed facilities. Additionally, the project does not conflict with the above policy statements. We therefore concluded that the impact was less than significant and no mitigation was required.

7. PEDESTRIAN NETWORK - PROJECT IMPACTS

This chapter reviews project related impacts on the pedestrian network in the study area. Potential impacts include disruptions on existing facilities, interference with planned facilities, and conflicts with adopted plans, guidelines, policies, or standards relating to pedestrians.

DISRUPTIONS TO EXISTING FACILITIES

Significance Criteria

The following significance criteria were applied:

> A significant impact occurs if a project disrupts existing pedestrian facilities. This can include adding new vehicular, pedestrian, or bicycle traffic at locations experiencing pedestrian safety concerns such as an adjacent crosswalk or school, particularly if the added traffic reduces the number of pedestrian acceptable gaps at an unsignalized crossing or causes queues to spillback through pedestrian crossings.

Project Impact

There are currently existing sidewalks along Mill Street, Esperanza Street, Mt. Vernon Avenue, Grant Avenue, K Street, I Street, and Colton Avenue/Inland Center Drive. Additionally, most intersections have one or more crosswalks, and all signalized intersections have pedestrian phases. With the addition of project traffic, existing pedestrian facilities will remain intact. Therefore, the project impact is less than significant and no mitigation is required.

PROJECT INTERFERES WITH PLANNED PEDESTRIAN FACILITIES

Significance Criteria

The following significance criteria were applied to determine if the project conflicts with planned facilities:

> A significant impact occurs if a project interferes with pedestrian facilities. In existing or planned urbanized areas, main streets or pedestrian districts, this can include impacts to the quality of the walking environment.

Project Impact

> There are no further planned pedestrian facilities along the project frontage; therefore the impact is less than significant.

PROJECT CONFLICTS WITH ADOPTED PEDESTRIAN SYSTEM PLANS, GUIDELINES, POLICIES, OR STANDARDS

Significance Criteria

> A significant impact occurs if a project conflicts or creates inconsistencies with adopted pedestrian system plans, guidelines, policies, or standards.

Project Impact

Our review of the City of San Bernardino General Plan indicated that there are several policy statements relating to pedestrians including:

- Policy 6.1.1 – Maintain and rehabilitate all components of the circulation system, including roadways, sidewalks, bicycle facilities, and pedestrian facilities.
- Policy 6.6.7 – Encourage measures that will reduce the number of vehicle-miles traveled during peak periods, including the following examples of these types of measures:
    - Incentives for car-pooling and vanpooling
    - Preferential parking for car-pools and vanpools
    - An adequate, safe, and interconnected system of pedestrian and bicycle paths

The project site plan is maintaining the existing sidewalks along Grant Avenue, K Street, Esperanza Street, and Mt. Vernon Street, and will be adding additional pedestrian paths throughout the development site. We would therefore consider the project to result in a less than significant and no mitigation is required.

8. PROJECT SITE PLAN REVIEW

This chapter reviews the project site plan for full master plan buildout (Horizon 3) and considers on-site circulation and access, on-site parking for vehicles and bicycles, pedestrian connections within the site and to adjacent locations, delivery vehicle access, and access management standards.

PROJECT OVERVIEW

There are three phases of Master Plan development. In each horizon, the project would take its primary vehicular access along K Street, Esperanza Street, Mt. Vernon Avenue, and Grant Avenue, similar to its existing access. Each driveway leads to a parking area.

PROJECT ON-SITE CIRCULATION AND ACCESS

Significance Criteria

A significant impact occurs if the project designs for on-site circulation, access, and parking areas fail to meet industry standard design guidelines.

Project Impact

This review of on-site circulation and access considers the following items:

1. Are all areas of the site accessible from each other?
2. Do the project driveways operate at an acceptable level of service (LOS), which ensures easy access to the project site?
3. Is there adequate access for emergency vehicles?

Intra-Site Accessibility

We determined that the intra-site accessibility is more than adequate with adequate project driveways that access the various parking lots provided by the project for the various users.

Project Driveway Operation

We determined that the two primary project driveways would operate at an acceptable LOS for the following reasons:

1. There are two points of ingress/egress for each parking structure, providing more than one access point between the parking facilities and adjacent streets.
2. In Horizon 3, there are plans to construct a traffic circle at the driveway for the southern parking structure. This will further improve operations.

Emergency Vehicle Access

To determine the adequacy of emergency vehicle access, we consider both the external and internal accessibility of the site.

FEHR & PEERS
TRANSPORTATION CONSULTANTS

Jun 11, 2009 JS
N:\Jobs\Active\IE Jobs\IE08-0008\ValleyCollege_Basemap.dwg

HORIZON 3 (2030) SITE PLAN

FIGURE 22

The external accessibility is defined as the ease by which emergency vehicles can travel to the site on the external roadway system. We determined that there are multiple routes which can be used to travel to/from the site. The main route emergency vehicles would likely take is Mt. Vernon Avenue, which can be used to access the site from both the north and south. Once they arrive on the site, they can take access along Grant Avenue, K Street, Esperanza Street or Mt. Vernon Avenue. With full Master Plan buildout, all campus buildings will be proximate to a project driveway.

The internal accessibility reflects the ability of an emergency vehicle to travel through the site to reach the various buildings through the internal roadway network. Since the project site does not cover a particularly large area, there is not an extensive network of internal roadways within the site. Thus, emergency vehicles should be able to stop along the adjacent roadways to serve the project site's emergency needs.

ON-SITE PARKING FOR VEHICLES

Significance Criteria

A significant impact occurs if the project fails to provide a sufficient quantity of on-site parking for vehicles.

Project Impact

We collected parking counts for San Bernardino Valley College in September 2008, and parking utilization counts in October 2008. Using existing parking enrollment data, we calculated a parking demand rate of 0.16 spaces/student, and a recommended parking supply rate of 0.18 spaces/student. Based on anticipated student enrollment in each Horizon Year, we recommended the following parking supply:

- 2,433 spaces in Horizon 1
- 2,744 spaces in Horizon 2
- 3,110 spaces in Horizon 3

The project plans to construct a 1,250 space parking structure in Horizon 1, and a 1,100 space parking structure in Horizon 3. With the inclusion of these structures, there are more than sufficient spaces on-site to accommodate the identified parking demand without continued use of either the Swap Meet parking area or the on-street parking spaces (which are both currently utilized) in Horizon 1.

Under Horizons 2 and 3, the parking assessment indicates it is necessary to use a portion of on-street parking or the Swap Meet site to accommodate projected parking demand. However, the demand for off-campus spaces would be less than with current conditions. Therefore, the Proposed Project is not expected to exacerbate a parking demand beyond what is occurring under existing conditions. The parking impact is considered to be less than significant and no mitigation is required.

ON-SITE AND OFF-SITE PEDESTRIAN CONNECTIONS

Significance Criteria

A significant impact occurs if project fails to provide accessible and safe pedestrian connections between buildings and to adjacent streets and transit facilities.

Project Impact

The project site plan does provide a pedestrian walkway through the campus, connecting all new parking areas to classroom locations. Additionally, the site plan shows pedestrian facilities around the campus to facilitate pedestrian circulation from the parking areas to on-site buildings. Given the robustness of the pedestrian facilities through the campus, we determined that the impact was less than significant and no mitigation is required.

DELIVERY VEHICLE ACCESS AND CIRCULATION

Significance Criteria

A significant impact occurs if a project fails to provide adequate accessibility for service and delivery trucks on-site including access to truck loading areas.

Project Impact

The proposed project does not substantially modify delivery vehicle access and circulation to the project site as most of the existing circulation facilities remain in tact. Therefore, the project will result in a less-than-significant impact.

ACCESS MANAGEMENT STANDARDS

Significance Criteria

A significant impact occurs if a project violates access management standards (e.g. driveway spacing, signal spacing, sight distance, etc.) in a way that causes an adverse effect on the environment or reduction in public safety.

Project Impact

Driveway Spacing

The project proposes three main driveways, and four secondary driveways. The site plan shows the spacing to be at least 300 feet between each project driveway. We therefore consider the impact to be less than significant.

Sight Distance

To review the adequacy of sight distance, we consider potential visual obstructions at the project driveways which are located along Grant Avenue, Esperanza Street, Mt. Vernon Avenue and K Street. Potential visual obstructions include:

- Landscaping
- Walls

- Entry monuments
- Signage

Of particular importance are those items which are visually obstructive for a driver. The typical viewing area for a driver extends from about 4 feet above the ground to 8 feet above the ground, which represents the range of likely views for drivers. Items are not prohibited within this viewing area; instead they must only provide a clear viewing area. For example, a bush which was 2-3 feet tall would not obscure the viewing area. Likewise, a tree whose canopy did not extend below the 8 feet mark would be adequate as well.

According to the project site plan, there are trees to be planed along K street and the southeast corner of Grant Avenue and K Street. However, the plantings are set back slightly from the project driveway to maintain sight distance. Additionally, we field-verified the driveway locations for sight distance and found adequate sight distance at each project driveway. We therefore consider the impact to be less than significant.

APPENDIX A- EXISTING TRAFFIC COUNTS

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of Colton
N/S: Mt Vernon Avenue/La Cadena Dr
E/W: Grant Av/Citrus St
Weather: Sunny

File Name : CNMVLCAM
Site Code : 08035929
Start Date : 10/8/2008

Groups Printed- Total Volume

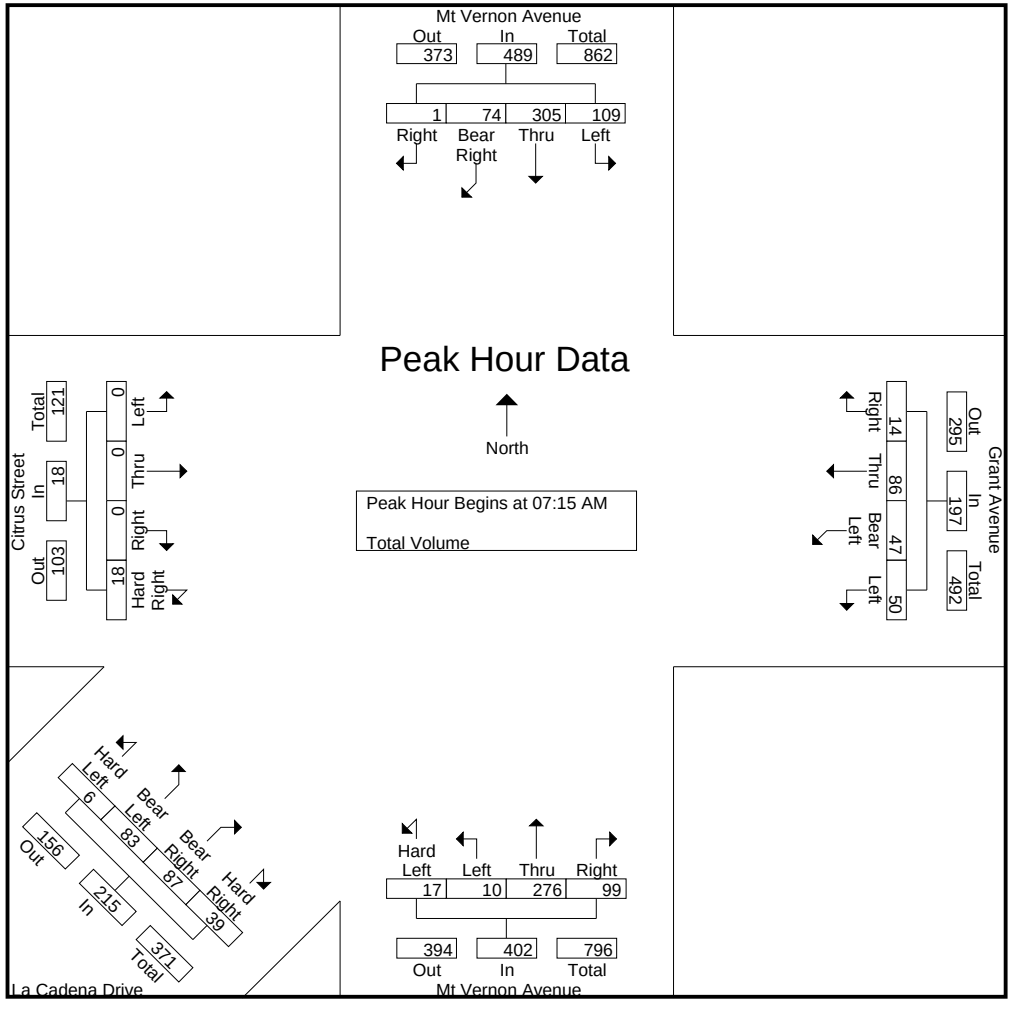
	Mt Vernon Avenue Southbound					Grant Avenue Westbound					Mt Vernon Avenue Northbound					La Cadena Drive Northeastbound					Citrus Street Eastbound					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
07:00 AM	10	36	13	0	59	9	12	16	2	39	8	2	37	12	59	0	10	8	11	29	0	0	0	4	4	190
07:15 AM	8	66	24	0	98	11	8	13	4	36	5	3	57	18	83	2	21	16	8	47	0	0	0	3	3	267
07:30 AM	25	83	10	0	118	8	10	21	1	40	4	4	72	20	100	1	20	24	3	48	0	0	0	3	3	309
07:45 AM	54	92	20	1	167	16	17	27	5	65	3	0	83	30	116	2	21	30	10	63	0	0	0	3	3	414
Total	97	277	67	1	442	44	47	77	12	180	20	9	249	80	358	5	72	78	32	187	0	0	0	13	13	1180
08:00 AM	22	64	20	0	106	15	12	25	4	56	5	3	64	31	103	1	21	17	18	57	0	0	0	9	9	331
08:15 AM	14	61	12	1	88	14	14	13	3	44	3	2	53	19	77	2	13	14	4	33	0	0	0	4	4	246
08:30 AM	19	60	14	0	93	16	11	25	3	55	1	4	68	13	86	1	16	22	5	44	0	0	0	3	3	281
08:45 AM	31	71	19	0	121	14	20	35	5	74	6	2	54	17	79	0	27	8	4	39	0	0	0	5	5	318
Total	86	256	65	1	408	59	57	98	15	229	15	11	239	80	345	4	77	61	31	173	0	0	0	21	21	1176
Grand Total	183	533	132	2	850	103	104	175	27	409	35	20	488	160	703	9	149	139	63	360	0	0	0	34	34	2356
Apprch %	21.5	62.7	15.5	0.2		25.2	25.4	42.8	6.6		5	2.8	69.4	22.8		2.5	41.4	38.6	17.5		0	0	0	100		
Total %	7.8	22.6	5.6	0.1	36.1	4.4	4.4	7.4	1.1	17.4	1.5	0.8	20.7	6.8	29.8	0.4	6.3	5.9	2.7	15.3	0	0	0	1.4	1.4	

	Mt Vernon Avenue Southbound					Grant Avenue Westbound					Mt Vernon Avenue Northbound					La Cadena Drive Northeastbound					Citrus Street Eastbound					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:15 AM																										
07:15 AM	8	66	**24**	0	98	11	8	13	4	36	**5**	3	57	18	83	**2**	**21**	16	8	47	0	0	0	3	3	267
07:30 AM	25	83	10	0	118	8	10	21	1	40	4	**4**	72	20	100	1	20	24	3	48	0	0	0	3	3	309
07:45 AM	**54**	**92**	20	**1**	**167**	**16**	**17**	**27**	**5**	**65**	3	0	**83**	30	**116**	2	21	**30**	10	**63**	0	0	0	3	3	**414**
08:00 AM	22	64	20	0	106	15	12	25	4	56	5	3	64	**31**	103	1	21	17	**18**	57	0	0	0	**9**	**9**	331
Total Volume	109	305	74	1	489	50	47	86	14	197	17	10	276	99	402	6	83	87	39	215	0	0	0	18	18	1321
% App. Total	22.3	62.4	15.1	0.2		25.4	23.9	43.7	7.1		4.2	2.5	68.7	24.6		2.8	38.6	40.5	18.1		0	0	0	100		
PHF	.505	.829	.771	.250	.732	.781	.691	.796	.700	.758	.850	.625	.831	.798	.866	.750	.988	.725	.542	.853	.000	.000	.000	.500	.500	.798

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of Colton
N/S: Mt Vernon Avenue/La Cadena Dr
E/W: Grant Av/Citrus St
Weather: Sunny

File Name : CNMVLCAM
Site Code : 08035929
Start Date : 10/8/2008
Page No : 2



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N/S: Mt Vernon Avenue/La Cadena Dr
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File Name : CNMVLCAM
Site Code : 08035929
Start Date : 10/8/2008

	Mt Vernon Avenue Southbound					Grant Avenue Westbound					Mt Vernon Avenue Northbound					La Cadena Drive Northeastbound					Citrus Street Eastbound					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Each Approach Begins at:																										
	07:15 AM					08:00 AM					07:15 AM					07:15 AM					08:00 AM					
+0 mins.	8	66	**24**	0	98	15	12	25	4	56	**5**	3	57	18	83	**2**	**21**	16	8	47	0	0	0	**9**	**9**	
+15 mins.	25	83	10	0	118	14	14	13	3	44	4	**4**	72	20	100	1	20	24	3	48	0	0	0	4	4	
+30 mins.	**54**	**92**	20	**1**	**167**	**16**	11	25	3	55	3	0	**83**	30	**116**	2	21	**30**	10	**63**	0	0	0	3	3	
+45 mins.	22	64	20	0	106	14	**20**	**35**	**5**	**74**	5	3	64	**31**	103	1	21	17	**18**	57	0	0	0	5	5	
Total Volume	109	305	74	1	489	59	57	98	15	229	17	10	276	99	402	6	83	87	39	215	0	0	0	21	21	
% App. Total	22.3	62.4	15.1	0.2		25.8	24.9	42.8	6.6		4.2	2.5	68.7	24.6		2.8	38.6	40.5	18.1		0	0	0	100		
PHF	.505	.829	.771	.250	.732	.922	.713	.700	.750	.774	.850	.625	.831	.798	.866	.750	.988	.725	.542	.853	.000	.000	.000	.583	.583	

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of Colton
N/S: Mt Vernon Avenue/La Cadena Drive
E/W: Grant Avenue/Citrus Street
Weather: Sunny

File Name : CNMVLCPM
Site Code : 08035929
Start Date : 10/8/2008

Groups Printed- Total Volume

	Mt Vernon Avenue Southbound					Grant Avenue Westbound					Mt Vernon Avenue Northbound					La Cadena Drive Northeastbound					Citrus Street Eastbound					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
04:00 PM	23	97	39	1	160	21	22	3	34	80	5	8	129	9	151	0	41	14	11	66	0	0	0	9	9	466
04:15 PM	18	93	19	0	130	19	22	3	23	67	5	10	117	19	151	2	41	13	7	63	0	0	0	4	4	415
04:30 PM	12	116	35	1	164	20	17	4	23	64	6	6	148	12	172	0	32	15	7	54	0	0	0	4	4	458
04:45 PM	16	98	24	0	138	14	20	6	23	63	9	5	126	18	158	3	47	17	1	68	0	0	0	6	6	433
Total	69	404	117	2	592	74	81	16	103	274	25	29	520	58	632	5	161	59	26	251	0	0	0	23	23	1772
05:00 PM	19	94	36	2	151	23	20	2	29	74	4	8	148	17	177	2	46	17	6	71	0	0	0	10	10	483
05:15 PM	23	108	27	4	162	12	16	6	21	55	3	7	148	34	192	3	43	19	7	72	0	0	0	11	11	492
05:30 PM	40	104	26	2	172	26	24	7	29	86	2	13	147	29	191	4	43	30	3	80	0	0	0	8	8	537
05:45 PM	53	105	24	1	183	29	22	8	35	94	2	8	148	56	214	1	45	38	3	87	0	0	0	10	10	588
Total	135	411	113	9	668	90	82	23	114	309	11	36	591	136	774	10	177	104	19	310	0	0	0	39	39	2100
Grand Total	204	815	230	11	1260	164	163	39	217	583	36	65	1111	194	1406	15	338	163	45	561	0	0	0	62	62	3872
Apprch %	16.2	64.7	18.3	0.9		28.1	28	6.7	37.2		2.6	4.6	79	13.8		2.7	60.2	29.1	8		0	0	0	100		
Total %	5.3	21	5.9	0.3	32.5	4.2	4.2	1	5.6	15.1	0.9	1.7	28.7	5	36.3	0.4	8.7	4.2	1.2	14.5	0	0	0	1.6	1.6	

	Mt Vernon Avenue Southbound					Grant Avenue Westbound					Mt Vernon Avenue Northbound					La Cadena Drive Northeastbound					Citrus Street Eastbound					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 05:00 PM																										
05:00 PM	19	94	**36**	2	151	23	20	2	29	74	**4**	8	**148**	17	177	2	**46**	17	6	71	0	0	0	10	10	483
05:15 PM	23	**108**	27	**4**	162	12	16	6	21	55	3	7	148	34	192	3	43	19	**7**	72	0	0	0	**11**	**11**	492
05:30 PM	40	104	26	2	172	26	**24**	7	29	86	2	**13**	147	29	191	**4**	43	30	3	80	0	0	0	8	8	537
05:45 PM	**53**	105	24	1	**183**	**29**	22	**8**	**35**	**94**	2	8	148	**56**	**214**	1	45	**38**	3	**87**	0	0	0	10	10	**588**
Total Volume	135	411	113	9	668	90	82	23	114	309	11	36	591	136	774	10	177	104	19	310	0	0	0	39	39	2100
% App. Total	20.2	61.5	16.9	1.3		29.1	26.5	7.4	36.9		1.4	4.7	76.4	17.6		3.2	57.1	33.5	6.1		0	0	0	100		
PHF	.637	.951	.785	.563	.913	.776	.854	.719	.814	.822	.688	.692	.998	.607	.904	.625	.962	.684	.679	.891	.000	.000	.000	.886	.886	.893

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of Colton
N/S: Mt Vernon Avenue/La Cadena Drive
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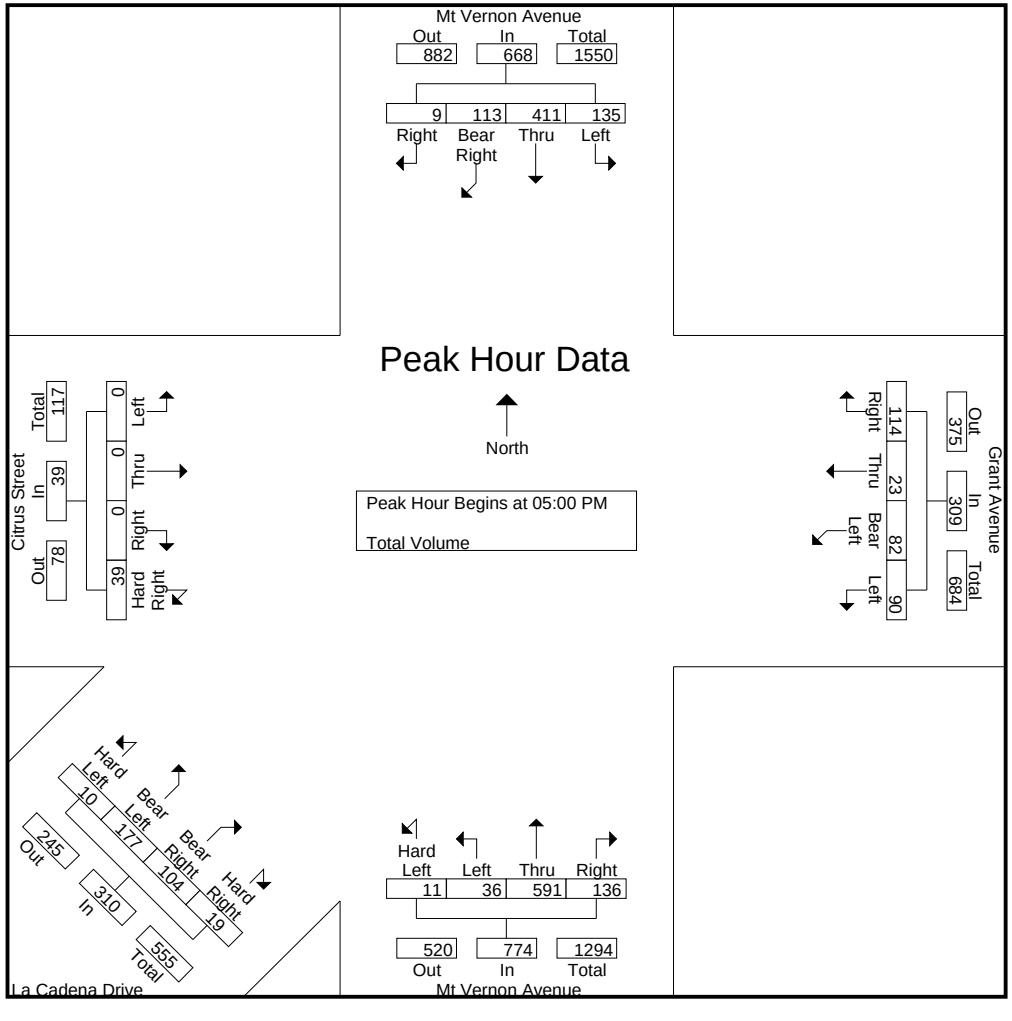
Weather: Sunny

File Name : CNMVLCPM
Site Code : 08035929
Start Date : 10/8/2008
Page No : 2



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Moreno Valley, CA 92557
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City of Colton
N/S: Mt Vernon Avenue/La Cadena Drive
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File Name : CNMVLCPM
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	Mt Vernon Avenue Southbound					Grant Avenue Westbound					Mt Vernon Avenue Northbound					La Cadena Drive Northeastbound					Citrus Street Eastbound					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Each Approach Begins at:																										
	05:00 PM					05:00 PM					05:00 PM					05:00 PM					05:00 PM					
+0 mins.	19	94	**36**	2	151	23	20	2	29	74	**4**	8	**148**	17	177	2	**46**	17	6	71	0	0	0	10	10	
+15 mins.	23	**108**	27	**4**	162	12	16	6	21	55	3	7	148	34	192	3	43	19	**7**	72	0	0	0	**11**	**11**	
+30 mins.	40	104	26	2	172	26	**24**	7	29	86	2	**13**	147	29	191	**4**	43	30	3	80	0	0	0	8	8	
+45 mins.	**53**	105	24	1	**183**	**29**	22	**8**	**35**	**94**	2	8	148	**56**	**214**	1	45	**38**	3	**87**	0	0	0	10	10	
Total Volume	135	411	113	9	668	90	82	23	114	309	11	36	591	136	774	10	177	104	19	310	0	0	0	39	39	
% App. Total	20.2	61.5	16.9	1.3		29.1	26.5	7.4	36.9		1.4	4.7	76.4	17.6		3.2	57.1	33.5	6.1		0	0	0	100		
PHF	.637	.951	.785	.563	.913	.776	.854	.719	.814	.822	.688	.692	.998	.607	.904	.625	.962	.684	.679	.891	.000	.000	.000	.886	.886	

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I-215 Northbound On/Off Ramps
E/W: Inland Center Drive
Weather: Sunny

File Name : SB215NICAM
Site Code : 08035982
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

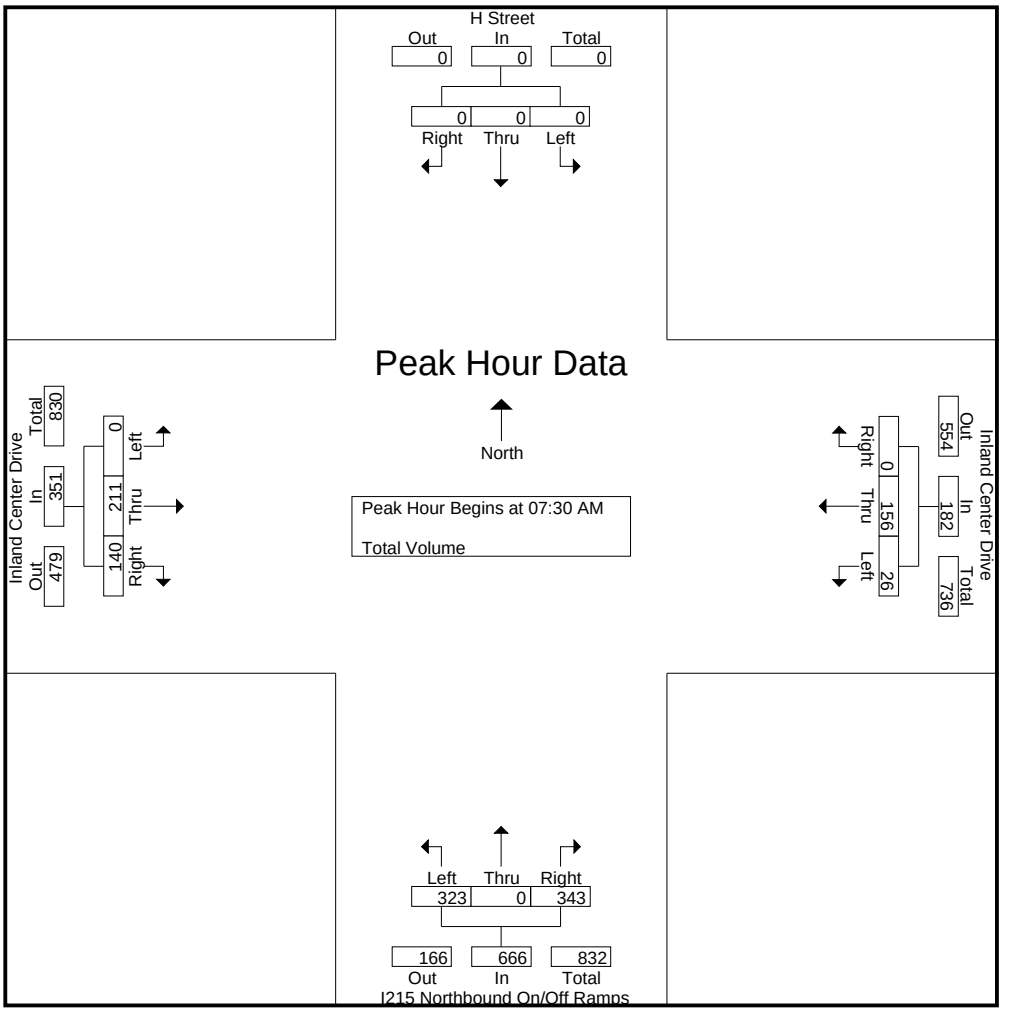
	H Street Southbound				Inland Center Drive Westbound				I215 Northbound On/Off Ramps Northbound				Inland Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	1	21	0	22	74	0	59	133	0	34	30	64	219
07:15 AM	0	0	0	0	1	42	0	43	70	0	59	129	0	33	29	62	234
07:30 AM	0	0	0	0	7	34	0	41	83	0	82	165	0	38	38	76	282
07:45 AM	0	0	0	0	8	51	0	59	104	0	106	210	0	67	38	105	374
Total	0	0	0	0	17	148	0	165	331	0	306	637	0	172	135	307	1109
08:00 AM	0	0	0	0	4	35	0	39	74	0	86	160	0	59	30	89	288
08:15 AM	0	0	0	0	7	36	0	43	62	0	69	131	0	47	34	81	255
08:30 AM	0	0	0	0	3	42	0	45	68	0	68	136	0	57	29	86	267
08:45 AM	0	0	0	0	5	59	0	64	63	0	82	145	0	62	39	101	310
Total	0	0	0	0	19	172	0	191	267	0	305	572	0	225	132	357	1120
Grand Total	0	0	0	0	36	320	0	356	598	0	611	1209	0	397	267	664	2229
Apprch %	0	0	0		10.1	89.9	0		49.5	0	50.5		0	59.8	40.2		
Total %	0	0	0	0	1.6	14.4	0	16	26.8	0	27.4	54.2	0	17.8	12	29.8	

	H Street Southbound				Inland Center Drive Westbound				I215 Northbound On/Off Ramps Northbound				Inland Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	7	34	0	41	83	0	82	165	0	38	**38**	76	282
07:45 AM	0	0	0	0	**8**	**51**	0	**59**	**104**	0	**106**	**210**	0	**67**	38	**105**	**374**
08:00 AM	0	0	0	0	4	35	0	39	74	0	86	160	0	59	30	89	288
08:15 AM	0	0	0	0	7	36	0	43	62	0	69	131	0	47	34	81	255
Total Volume	0	0	0	0	26	156	0	182	323	0	343	666	0	211	140	351	1199
% App. Total	0	0	0		14.3	85.7	0		48.5	0	51.5		0	60.1	39.9		
PHF	.000	.000	.000	.000	.813	.765	.000	.771	.776	.000	.809	.793	.000	.787	.921	.836	.801

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I-215 Northbound On/Off Ramps
E/W: Inland Center Drive
Weather: Sunny

File Name : SB215NICAM
Site Code : 08035982
Start Date : 10/8/2008
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM				08:00 AM				07:30 AM				07:45 AM			
+0 mins.	0	0	0	0	4	35	0	39	83	0	82	165	0	**67**	**38**	**105**
+15 mins.	0	0	0	0	**7**	36	0	43	**104**	0	**106**	**210**	0	59	30	89
+30 mins.	0	0	0	0	3	42	0	45	74	0	86	160	0	47	34	81
+45 mins.	0	0	0	0	5	**59**	0	**64**	62	0	69	131	0	57	29	86
Total Volume	0	0	0	0	19	172	0	191	323	0	343	666	0	230	131	361
% App. Total	0	0	0		9.9	90.1	0		48.5	0	51.5		0	63.7	36.3	
PHF	.000	.000	.000	.000	.679	.729	.000	.746	.776	.000	.809	.793	.000	.858	.862	.860

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I215 Northbound On/Off Ramps
E/W: Inland Center Drive
Weather: Sunny

File Name : SB215NICPM
Site Code : 08035982
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

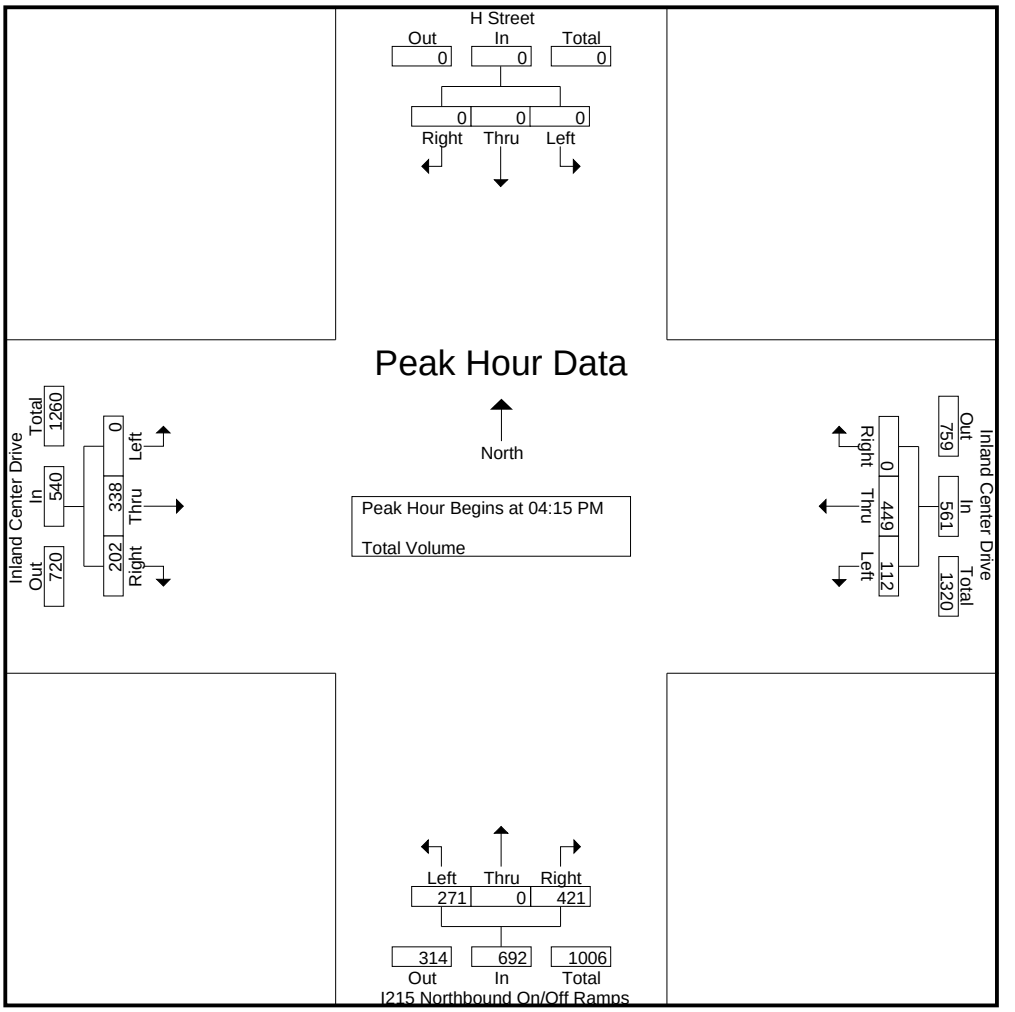
	H Street Southbound				Inland Center Drive Westbound				I215 Northbound On/Off Ramps Northbound				Inland Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	20	114	0	134	76	0	83	159	0	75	28	103	396
04:15 PM	0	0	0	0	31	104	0	135	63	0	107	170	0	97	44	141	446
04:30 PM	0	0	0	0	28	120	0	148	71	0	111	182	0	86	55	141	471
04:45 PM	0	0	0	0	24	108	0	132	63	0	105	168	0	77	58	135	435
Total	0	0	0	0	103	446	0	549	273	0	406	679	0	335	185	520	1748
05:00 PM	0	0	0	0	29	117	0	146	74	0	98	172	0	78	45	123	441
05:15 PM	0	0	0	0	30	120	0	150	63	0	51	114	0	78	35	113	377
05:30 PM	0	0	0	0	32	94	0	126	81	0	73	154	0	85	49	134	414
05:45 PM	0	0	0	0	31	91	0	122	69	0	56	125	0	66	48	114	361
Total	0	0	0	0	122	422	0	544	287	0	278	565	0	307	177	484	1593
Grand Total	0	0	0	0	225	868	0	1093	560	0	684	1244	0	642	362	1004	3341
Apprch %	0	0	0		20.6	79.4	0		45	0	55		0	63.9	36.1		
Total %	0	0	0	0	6.7	26	0	32.7	16.8	0	20.5	37.2	0	19.2	10.8	30.1	

	H Street Southbound				Inland Center Drive Westbound				I215 Northbound On/Off Ramps Northbound				Inland Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	**31**	104	0	135	63	0	107	170	0	**97**	44	**141**	446
04:30 PM	0	0	0	0	28	**120**	0	**148**	71	0	**111**	**182**	0	86	55	141	**471**
04:45 PM	0	0	0	0	24	108	0	132	63	0	105	168	0	77	**58**	135	435
05:00 PM	0	0	0	0	29	117	0	146	**74**	0	98	172	0	78	45	123	441
Total Volume	0	0	0	0	112	449	0	561	271	0	421	692	0	338	202	540	1793
% App. Total	0	0	0		20	80	0		39.2	0	60.8		0	62.6	37.4		
PHF	.000	.000	.000	.000	.903	.935	.000	.948	.916	.000	.948	.951	.000	.871	.871	.957	.952

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I215 Northbound On/Off Ramps
E/W: Inland Center Drive
Weather: Sunny

File Name : SB215NICPM
Site Code : 08035982
Start Date : 10/8/2008
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:15 PM				04:15 PM			
+0 mins.	0	0	0	0	28	**120**	0	148	63	0	107	170	0	**97**	44	**141**
+15 mins.	0	0	0	0	24	108	0	132	71	0	**111**	**182**	0	86	55	141
+30 mins.	0	0	0	0	29	117	0	146	63	0	105	168	0	77	**58**	135
+45 mins.	0	0	0	0	**30**	120	0	**150**	**74**	0	98	172	0	78	45	123
Total Volume	0	0	0	0	111	465	0	576	271	0	421	692	0	338	202	540
% App. Total	0	0	0		19.3	80.7	0		39.2	0	60.8		0	62.6	37.4	
PHF	.000	.000	.000	.000	.925	.969	.000	.960	.916	.000	.948	.951	.000	.871	.871	.957

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I-215 Southbound On/Off Ramps
E/W: Inland Center Drive
Weather: Sunny

File Name : SB215SICAM
Site Code : 08035994
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

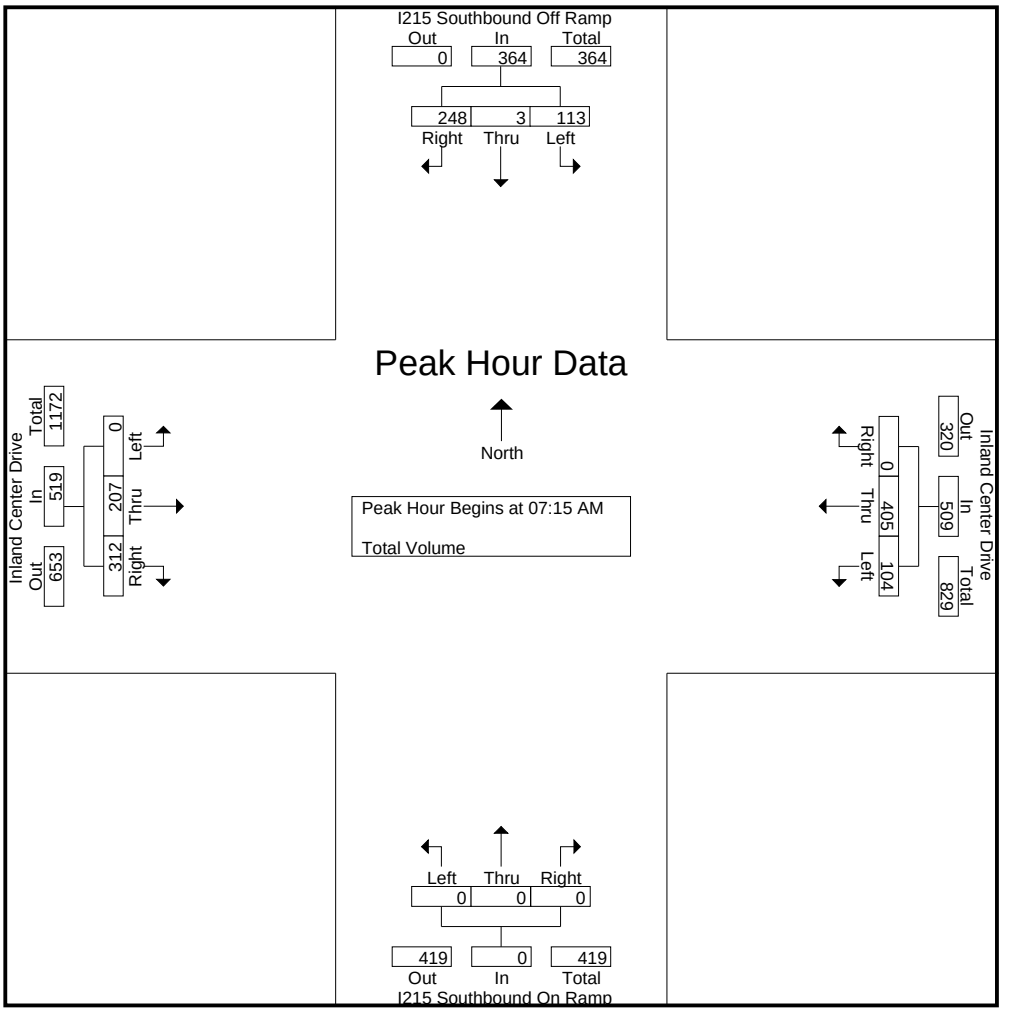
	I215 Southbound Off Ramp Southbound				Inland Center Drive Westbound				I215 Southbound On Ramp Northbound				Inland Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	23	1	45	69	14	79	0	93	0	0	0	0	0	41	89	130	292
07:15 AM	18	0	51	69	22	93	0	115	0	0	0	0	0	41	82	123	307
07:30 AM	25	1	68	94	21	89	0	110	0	0	0	0	0	56	93	149	353
07:45 AM	31	2	77	110	32	130	0	162	0	0	0	0	0	66	64	130	402
Total	97	4	241	342	89	391	0	480	0	0	0	0	0	204	328	532	1354
08:00 AM	39	0	52	91	29	93	0	122	0	0	0	0	0	44	73	117	330
08:15 AM	25	2	44	71	27	75	0	102	0	0	0	0	0	54	63	117	290
08:30 AM	27	1	71	99	38	76	0	114	0	0	0	0	0	63	79	142	355
08:45 AM	40	2	62	104	41	72	0	113	0	0	0	0	0	62	88	150	367
Total	131	5	229	365	135	316	0	451	0	0	0	0	0	223	303	526	1342
Grand Total	228	9	470	707	224	707	0	931	0	0	0	0	0	427	631	1058	2696
Apprch %	32.2	1.3	66.5		24.1	75.9	0		0	0	0		0	40.4	59.6		
Total %	8.5	0.3	17.4	26.2	8.3	26.2	0	34.5	0	0	0	0	0	15.8	23.4	39.2	

	I215 Southbound Off Ramp Southbound				Inland Center Drive Westbound				I215 Southbound On Ramp Northbound				Inland Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	18	0	51	69	22	93	0	115	0	0	0	0	0	41	82	123	307
07:30 AM	25	1	68	94	21	89	0	110	0	0	0	0	0	56	**93**	**149**	353
07:45 AM	31	**2**	**77**	**110**	**32**	**130**	0	**162**	0	0	0	0	0	**66**	64	130	**402**
08:00 AM	**39**	0	52	91	29	93	0	122	0	0	0	0	0	44	73	117	330
Total Volume	113	3	248	364	104	405	0	509	0	0	0	0	0	207	312	519	1392
% App. Total	31	0.8	68.1		20.4	79.6	0		0	0	0		0	39.9	60.1		
PHF	.724	.375	.805	.827	.813	.779	.000	.785	.000	.000	.000	.000	.000	.784	.839	.871	.866

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I-215 Southbound On/Off Ramps
E/W: Inland Center Drive
Weather: Sunny

File Name : SB215SICAM
Site Code : 08035994
Start Date : 10/8/2008
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM				07:15 AM				07:00 AM				07:00 AM			
+0 mins.	31	**2**	**77**	**110**	22	93	0	115	0	0	0	0	0	41	89	130
+15 mins.	**39**	0	52	91	21	89	0	110	0	0	0	0	0	41	82	123
+30 mins.	25	2	44	71	**32**	**130**	0	**162**	0	0	0	0	0	56	**93**	**149**
+45 mins.	27	1	71	99	29	93	0	122	0	0	0	0	0	**66**	64	130
Total Volume	122	5	244	371	104	405	0	509	0	0	0	0	0	204	328	532
% App. Total	32.9	1.3	65.8		20.4	79.6	0		0	0	0		0	38.3	61.7	
PHF	.782	.625	.792	.843	.813	.779	.000	.785	.000	.000	.000	.000	.000	.773	.882	.893

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I-215 Southbound On/Off Ramps
E/W: Inland Center Drive
Weather: Sunny

File Name : SB215SICPM
Site Code : 08035994
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

	I215 Southbound Off Ramp Southbound				Inland Center Drive Westbound				I215 Southbound On Ramp Northbound				Inland Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	34	1	47	82	70	99	0	169	0	0	0	0	0	76	93	169	420
04:15 PM	44	2	77	123	69	103	0	172	0	0	0	0	0	88	96	184	479
04:30 PM	38	0	49	87	84	115	0	199	0	0	0	0	0	94	97	191	477
04:45 PM	48	3	59	110	70	104	0	174	0	0	0	0	0	96	96	192	476
Total	164	6	232	402	293	421	0	714	0	0	0	0	0	354	382	736	1852
05:00 PM	40	2	79	121	67	132	0	199	0	0	0	0	0	77	89	166	486
05:15 PM	30	1	106	137	53	116	0	169	0	0	0	0	0	86	83	169	475
05:30 PM	46	0	70	116	72	111	0	183	0	0	0	0	0	91	68	159	458
05:45 PM	47	0	54	101	74	111	0	185	0	0	0	0	0	77	77	154	440
Total	163	3	309	475	266	470	0	736	0	0	0	0	0	331	317	648	1859
Grand Total	327	9	541	877	559	891	0	1450	0	0	0	0	0	685	699	1384	3711
Apprch %	37.3	1	61.7		38.6	61.4	0		0	0	0		0	49.5	50.5		
Total %	8.8	0.2	14.6	23.6	15.1	24	0	39.1	0	0	0	0	0	18.5	18.8	37.3	

	I215 Southbound Off Ramp Southbound				Inland Center Drive Westbound				I215 Southbound On Ramp Northbound				Inland Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	44	2	77	**123**	69	103	0	172	0	0	0	0	0	88	96	184	479
04:30 PM	38	0	49	87	**84**	115	0	**199**	0	0	0	0	0	94	**97**	191	477
04:45 PM	**48**	**3**	59	110	70	104	0	174	0	0	0	0	0	**96**	96	**192**	476
05:00 PM	40	2	**79**	121	67	**132**	0	199	0	0	0	0	0	77	89	166	**486**
Total Volume	170	7	264	441	290	454	0	744	0	0	0	0	0	355	378	733	1918
% App. Total	38.5	1.6	59.9		39	61	0		0	0	0		0	48.4	51.6		
PHF	.885	.583	.835	.896	.863	.860	.000	.935	.000	.000	.000	.000	.000	.924	.974	.954	.987

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I-215 Southbound On/Off Ramps
E/W: Inland Center Drive
Weather: Sunny

File Name : SB215SICPM
Site Code : 08035994
Start Date : 10/8/2008
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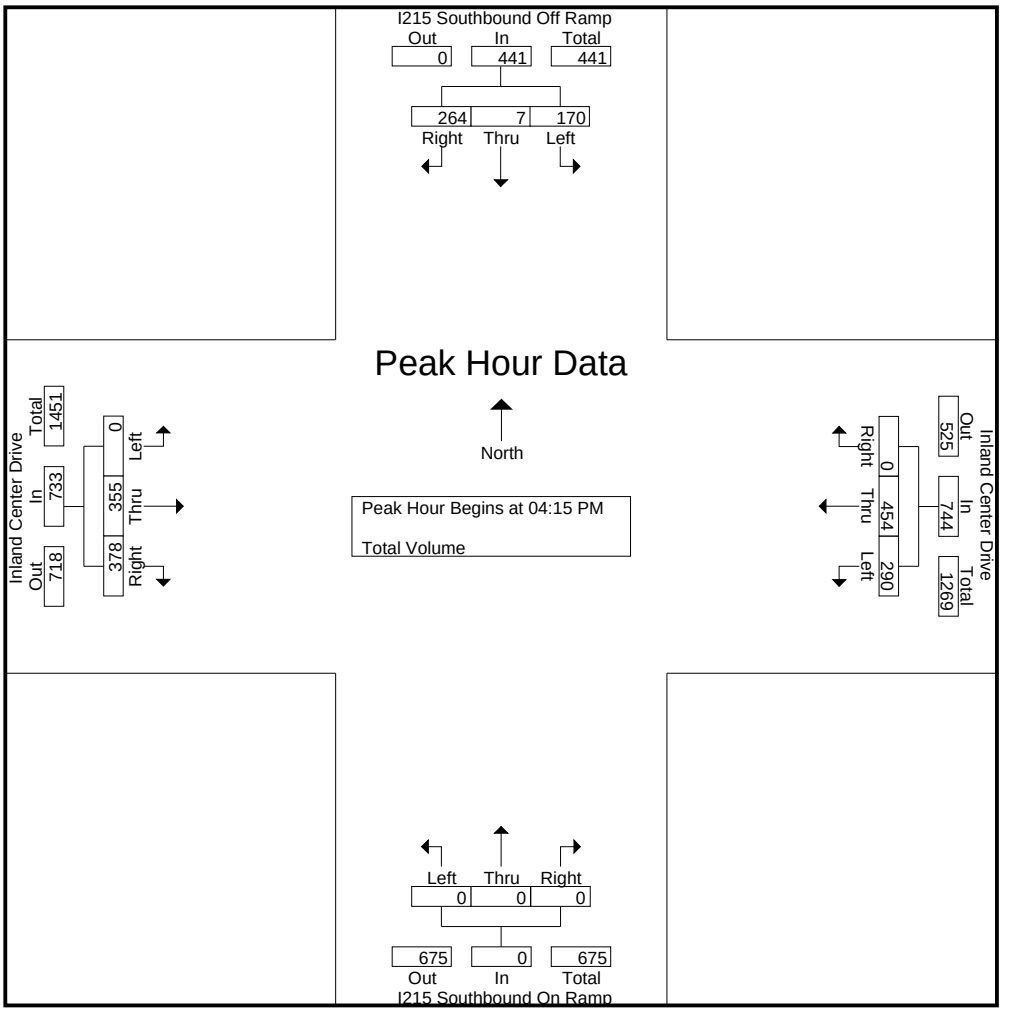


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM				04:15 PM				04:00 PM				04:00 PM			
+0 mins.	**48**	**3**	59	110	69	103	0	172	0	0	0	0	0	76	93	169
+15 mins.	40	2	79	121	**84**	115	0	**199**	0	0	0	0	0	88	96	184
+30 mins.	30	1	**106**	**137**	70	104	0	174	0	0	0	0	0	94	**97**	191
+45 mins.	46	0	70	116	67	**132**	0	199	0	0	0	0	0	**96**	96	**192**
Total Volume	164	6	314	484	290	454	0	744	0	0	0	0	0	354	382	736
% App. Total	33.9	1.2	64.9		39	61	0		0	0	0		0	48.1	51.9	
PHF	.854	.500	.741	.883	.863	.860	.000	.935	.000	.000	.000	.000	.000	.922	.985	.958

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Eureka Avenue
E/W: Esperanza Street
Weather: Sunny

File Name : SBEUESAM
Site Code : 08035949
Start Date : 10/8/2008

Groups Printed- Total Volume

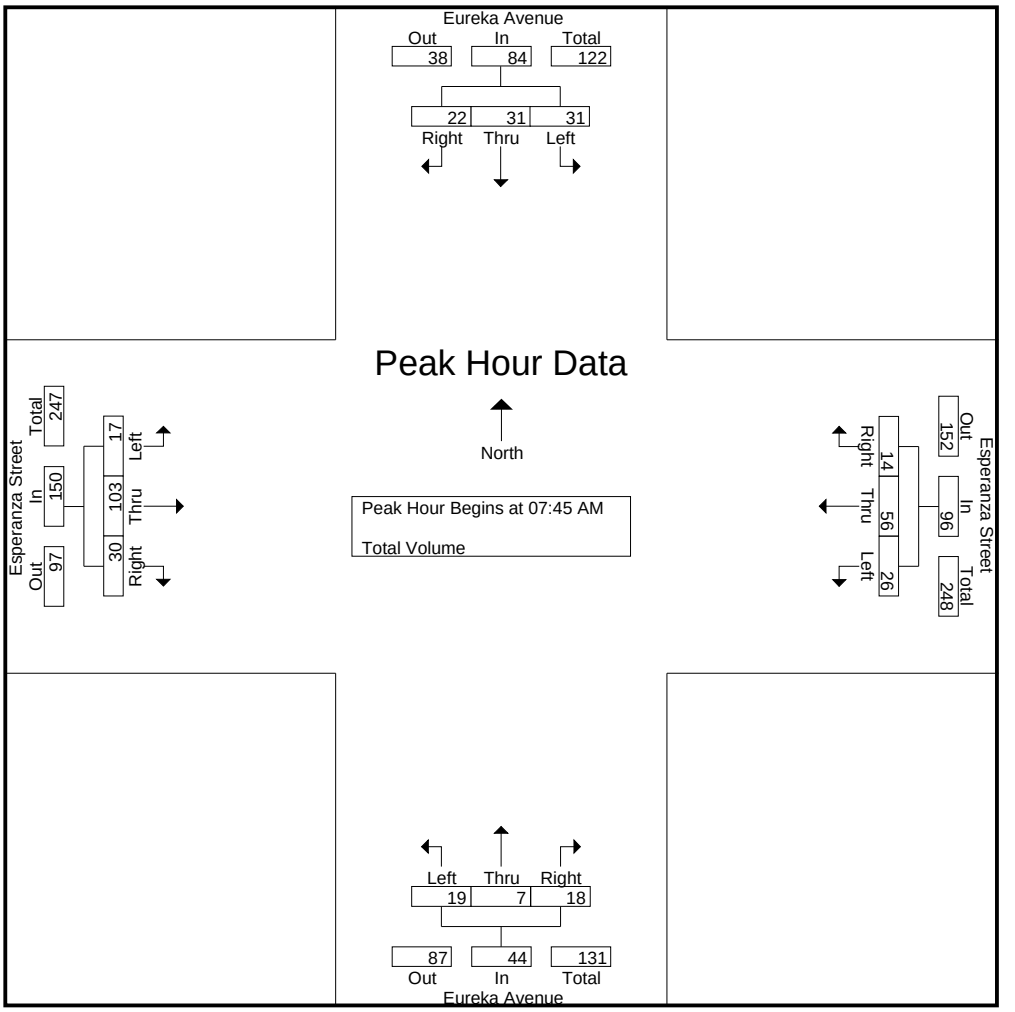
	Eureka Avenue Southbound				Esperanza Street Westbound				Eureka Avenue Northbound				Esperanza Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	5	2	10	4	5	2	11	2	2	3	7	1	6	5	12	40
07:15 AM	4	5	0	9	2	18	2	22	2	5	1	8	1	15	6	22	61
07:30 AM	5	4	4	13	9	18	0	27	2	1	3	6	5	12	8	25	71
07:45 AM	5	13	12	30	9	23	4	36	9	1	6	16	7	40	17	64	146
Total	17	27	18	62	24	64	8	96	15	9	13	37	14	73	36	123	318
08:00 AM	5	10	4	19	5	11	2	18	2	2	7	11	5	21	7	33	81
08:15 AM	10	6	4	20	6	9	2	17	4	3	2	9	4	15	5	24	70
08:30 AM	11	2	2	15	6	13	6	25	4	1	3	8	1	27	1	29	77
08:45 AM	2	6	4	12	10	25	12	47	5	2	7	14	2	27	5	34	107
Total	28	24	14	66	27	58	22	107	15	8	19	42	12	90	18	120	335
Grand Total	45	51	32	128	51	122	30	203	30	17	32	79	26	163	54	243	653
Apprch %	35.2	39.8	25		25.1	60.1	14.8		38	21.5	40.5		10.7	67.1	22.2		
Total %	6.9	7.8	4.9	19.6	7.8	18.7	4.6	31.1	4.6	2.6	4.9	12.1	4	25	8.3	37.2	

	Eureka Avenue Southbound				Esperanza Street Westbound				Eureka Avenue Northbound				Esperanza Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	5	**13**	**12**	**30**	**9**	**23**	4	**36**	**9**	1	6	**16**	**7**	**40**	**17**	**64**	**146**
08:00 AM	5	10	4	19	5	11	2	18	2	2	**7**	11	5	21	7	33	81
08:15 AM	10	6	4	20	6	9	2	17	4	**3**	2	9	4	15	5	24	70
08:30 AM	**11**	2	2	15	6	13	**6**	25	4	1	3	8	1	27	1	29	77
Total Volume	31	31	22	84	26	56	14	96	19	7	18	44	17	103	30	150	374
% App. Total	36.9	36.9	26.2		27.1	58.3	14.6		43.2	15.9	40.9		11.3	68.7	20		
PHF	.705	.596	.458	.700	.722	.609	.583	.667	.528	.583	.643	.688	.607	.644	.441	.586	.640

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Eureka Avenue
E/W: Esperanza Street
Weather: Sunny

File Name : SBEUESAM
Site Code : 08035949
Start Date : 10/8/2008
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM				08:00 AM				07:45 AM				07:45 AM			
+0 mins.	5	**13**	**12**	**30**	5	11	2	18	**9**	1	6	**16**	**7**	**40**	**17**	**64**
+15 mins.	5	10	4	19	6	9	2	17	2	2	**7**	11	5	21	7	33
+30 mins.	10	6	4	20	6	13	6	25	4	**3**	2	9	4	15	5	24
+45 mins.	**11**	2	2	15	**10**	**25**	**12**	**47**	4	1	3	8	1	27	1	29
Total Volume	31	31	22	84	27	58	22	107	19	7	18	44	17	103	30	150
% App. Total	36.9	36.9	26.2		25.2	54.2	20.6		43.2	15.9	40.9		11.3	68.7	20	
PHF	.705	.596	.458	.700	.675	.580	.458	.569	.528	.583	.643	.688	.607	.644	.441	.586

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Eureka Avenue
E/W: Esperanza Street
Weather: Sunny

File Name : SBEUESPM
Site Code : 08035949
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

	Eureka Avenue Southbound				Esperanza Street Westbound				Eureka Avenue Northbound				Esperanza Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	2	4	0	6	3	25	2	30	5	1	4	10	1	28	4	33	79
04:15 PM	6	3	1	10	6	25	6	37	3	2	2	7	0	31	8	39	93
04:30 PM	3	3	5	11	5	15	5	25	5	0	1	6	3	26	10	39	81
04:45 PM	5	3	5	13	3	11	8	22	2	2	1	5	2	23	6	31	71
Total	16	13	11	40	17	76	21	114	15	5	8	28	6	108	28	142	324
05:00 PM	1	2	2	5	0	15	3	18	7	4	6	17	1	15	7	23	63
05:15 PM	5	6	3	14	8	30	9	47	5	1	9	15	9	34	14	57	133
05:30 PM	5	2	4	11	6	12	5	23	8	1	1	10	4	28	20	52	96
05:45 PM	8	8	9	25	13	19	9	41	14	5	10	29	8	44	24	76	171
Total	19	18	18	55	27	76	26	129	34	11	26	71	22	121	65	208	463
Grand Total	35	31	29	95	44	152	47	243	49	16	34	99	28	229	93	350	787
Apprch %	36.8	32.6	30.5		18.1	62.6	19.3		49.5	16.2	34.3		8	65.4	26.6		
Total %	4.4	3.9	3.7	12.1	5.6	19.3	6	30.9	6.2	2	4.3	12.6	3.6	29.1	11.8	44.5	

	Eureka Avenue Southbound				Esperanza Street Westbound				Eureka Avenue Northbound				Esperanza Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	1	2	2	5	0	15	3	18	7	4	6	17	1	15	7	23	63
05:15 PM	5	6	3	14	8	**30**	**9**	**47**	5	1	9	15	**9**	34	14	57	133
05:30 PM	5	2	4	11	6	12	5	23	8	1	1	10	4	28	20	52	96
05:45 PM	**8**	**8**	**9**	**25**	**13**	19	9	41	**14**	**5**	**10**	**29**	8	**44**	**24**	**76**	**171**
Total Volume	19	18	18	55	27	76	26	129	34	11	26	71	22	121	65	208	463
% App. Total	34.5	32.7	32.7		20.9	58.9	20.2		47.9	15.5	36.6		10.6	58.2	31.2		
PHF	.594	.563	.500	.550	.519	.633	.722	.686	.607	.550	.650	.612	.611	.688	.677	.684	.677

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Eureka Avenue
E/W: Esperanza Street
Weather: Sunny

File Name : SBEUESPM
Site Code : 08035949
Start Date : 10/8/2008
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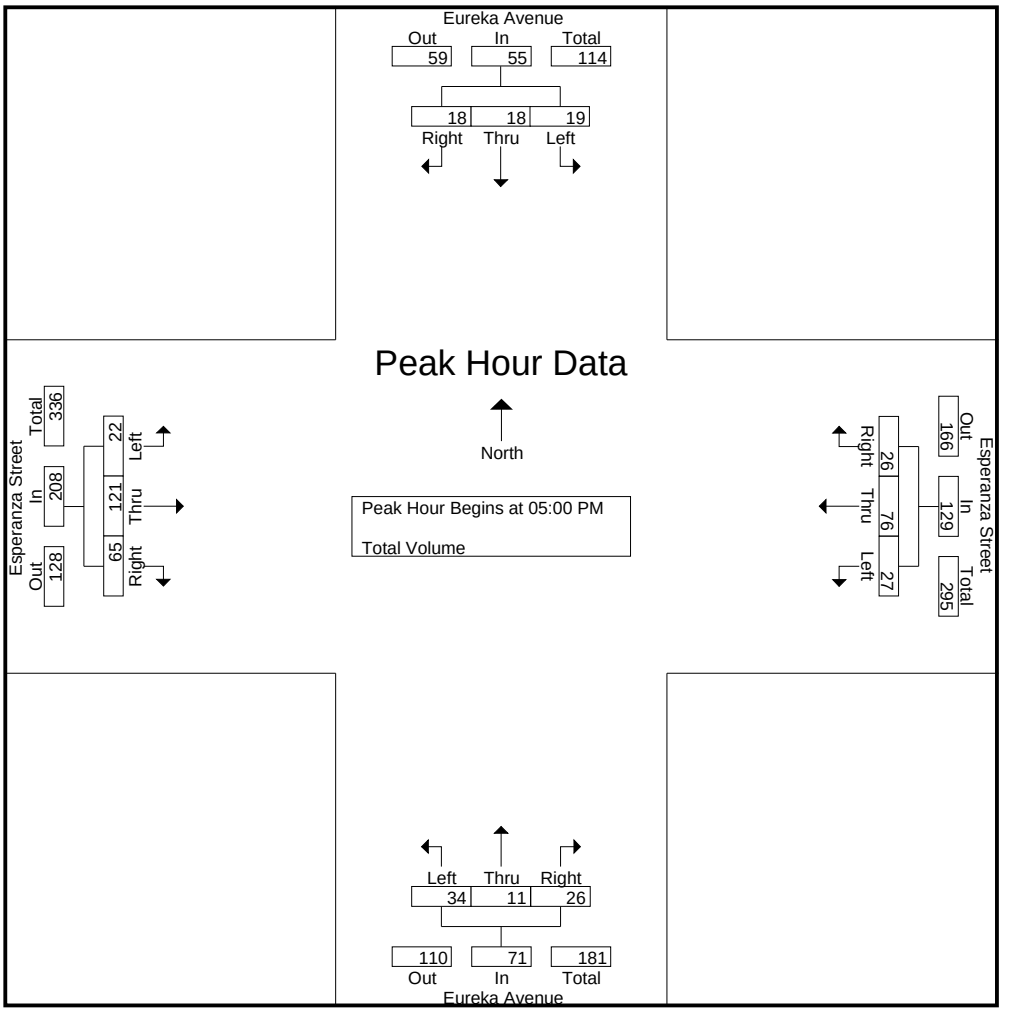


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	1	2	2	5	0	15	3	18	7	4	6	17	1	15	7	23
+15 mins.	5	6	3	14	8	**30**	**9**	**47**	5	1	9	15	**9**	34	14	57
+30 mins.	5	2	4	11	6	12	5	23	8	1	1	10	4	28	20	52
+45 mins.	**8**	**8**	**9**	**25**	**13**	19	9	41	**14**	**5**	**10**	**29**	8	**44**	**24**	**76**
Total Volume	19	18	18	55	27	76	26	129	34	11	26	71	22	121	65	208
% App. Total	34.5	32.7	32.7		20.9	58.9	20.2		47.9	15.5	36.6		10.6	58.2	31.2	
PHF	.594	.563	.500	.550	.519	.633	.722	.686	.607	.550	.650	.612	.611	.688	.677	.684

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Fairview Avenue
E/W: Grant Avenue
Weather: Sunny

File Name : SBFAGRAM
Site Code : 08035999
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

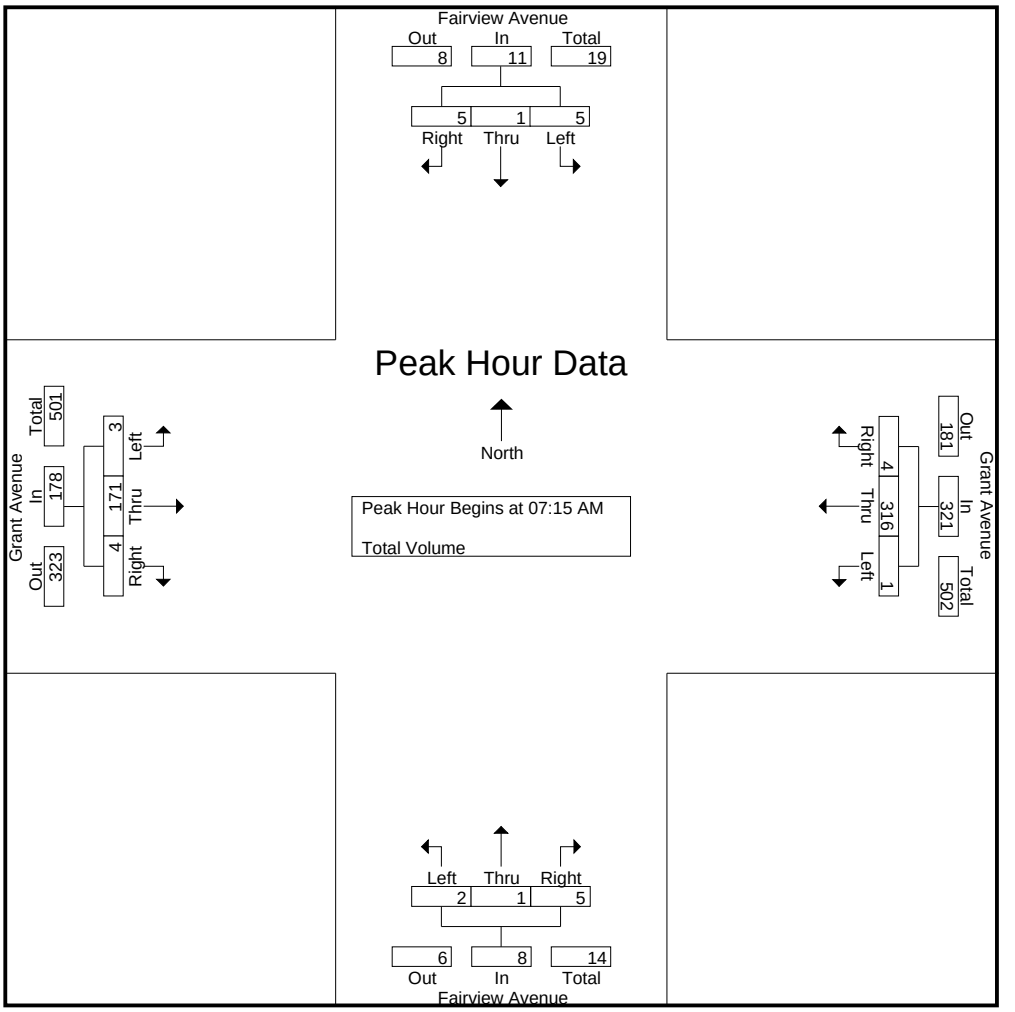
	Fairview Avenue Southbound				Grant Avenue Westbound				Fairview Avenue Northbound				Grant Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	0	0	1	0	41	2	43	2	1	0	3	0	17	0	17	64
07:15 AM	0	0	1	1	0	68	2	70	0	0	0	0	1	37	0	38	109
07:30 AM	0	0	0	0	0	108	0	108	0	0	1	1	1	45	1	47	156
07:45 AM	2	0	2	4	1	54	1	56	2	1	2	5	1	46	1	48	113
Total	3	0	3	6	1	271	5	277	4	2	3	9	3	145	2	150	442
08:00 AM	3	1	2	6	0	86	1	87	0	0	2	2	0	43	2	45	140
08:15 AM	2	2	1	5	0	50	2	52	1	1	0	2	0	41	0	41	100
08:30 AM	6	0	2	8	1	75	4	80	0	0	0	0	1	47	0	48	136
08:45 AM	0	0	3	3	2	95	0	97	0	0	0	0	1	39	0	40	140
Total	11	3	8	22	3	306	7	316	1	1	2	4	2	170	2	174	516
Grand Total	14	3	11	28	4	577	12	593	5	3	5	13	5	315	4	324	958
Apprch %	50	10.7	39.3		0.7	97.3	2		38.5	23.1	38.5		1.5	97.2	1.2		
Total %	1.5	0.3	1.1	2.9	0.4	60.2	1.3	61.9	0.5	0.3	0.5	1.4	0.5	32.9	0.4	33.8	

	Fairview Avenue Southbound				Grant Avenue Westbound				Fairview Avenue Northbound				Grant Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	1	1	0	68	**2**	70	0	0	0	0	**1**	37	0	38	109
07:30 AM	0	0	0	0	0	**108**	0	**108**	0	0	1	1	1	45	1	47	**156**
07:45 AM	2	0	**2**	4	**1**	54	1	56	**2**	**1**	**2**	**5**	1	**46**	1	**48**	113
08:00 AM	**3**	**1**	2	**6**	0	86	1	87	0	0	2	2	0	43	**2**	45	140
Total Volume	5	1	5	11	1	316	4	321	2	1	5	8	3	171	4	178	518
% App. Total	45.5	9.1	45.5		0.3	98.4	1.2		25	12.5	62.5		1.7	96.1	2.2		
PHF	.417	.250	.625	.458	.250	.731	.500	.743	.250	.250	.625	.400	.750	.929	.500	.927	.830

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Fairview Avenue
E/W: Grant Avenue
Weather: Sunny

File Name : SBFAGRAM
Site Code : 08035999
Start Date : 10/8/2008
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM				07:15 AM				07:30 AM				07:45 AM			
+0 mins.	2	0	**2**	4	0	68	**2**	70	0	0	1	1	**1**	46	1	**48**
+15 mins.	3	1	2	6	0	**108**	0	**108**	**2**	**1**	**2**	**5**	0	43	**2**	45
+30 mins.	2	**2**	1	5	**1**	54	1	56	0	0	2	2	0	41	0	41
+45 mins.	**6**	0	2	**8**	0	86	1	87	1	1	0	2	1	**47**	0	48
Total Volume	13	3	7	23	1	316	4	321	3	2	5	10	2	177	3	182
% App. Total	56.5	13	30.4		0.3	98.4	1.2		30	20	50		1.1	97.3	1.6	
PHF	.542	.375	.875	.719	.250	.731	.500	.743	.375	.500	.625	.500	.500	.941	.375	.948

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Fairview Avenue
E/W: Grant Avenue
Weather: Sunny

File Name : SBFAGRPM
Site Code : 08035999
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

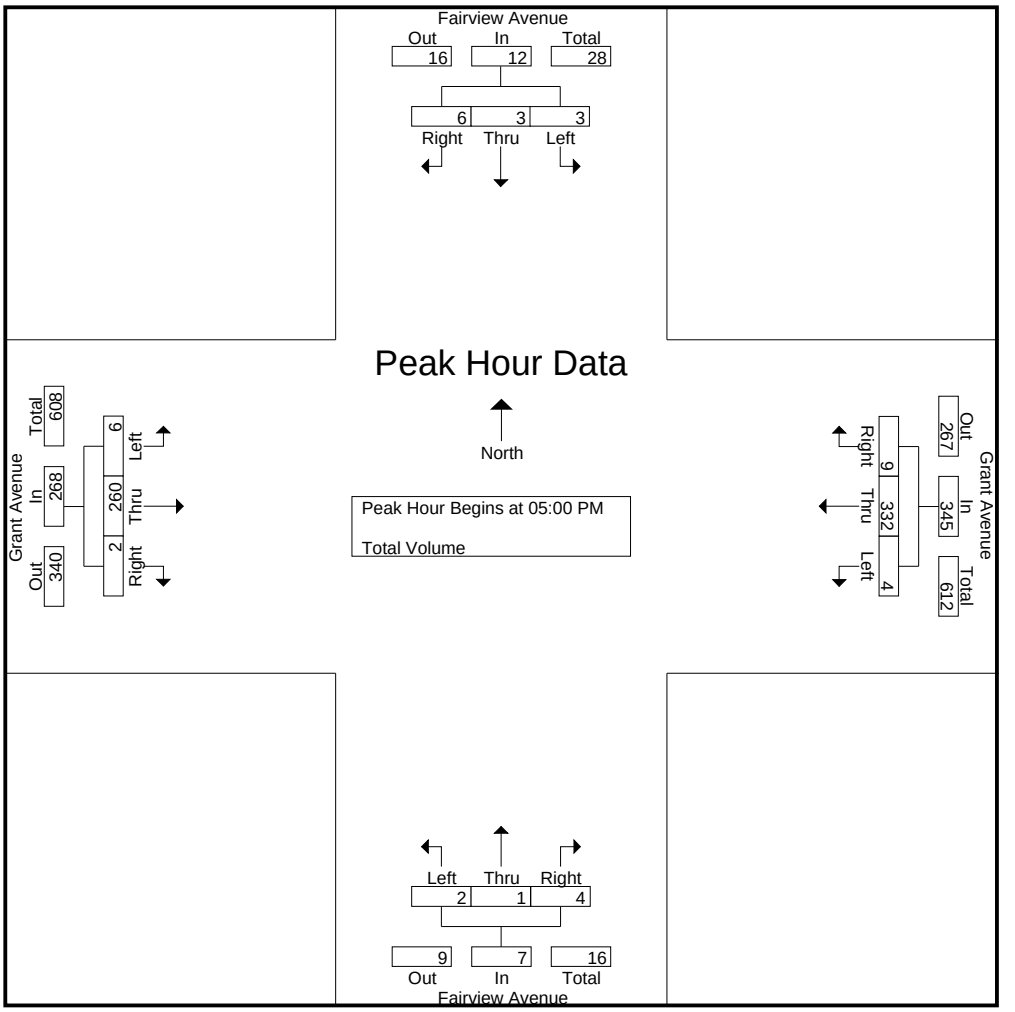
	Fairview Avenue Southbound				Grant Avenue Westbound				Fairview Avenue Northbound				Grant Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	1	0	1	2	54	4	60	1	0	0	1	2	66	0	68	130
04:15 PM	0	0	0	0	2	60	3	65	0	1	1	2	2	62	1	65	132
04:30 PM	0	0	0	0	0	55	3	58	0	0	0	0	1	61	0	62	120
04:45 PM	3	2	4	9	0	53	2	55	0	0	0	0	1	79	0	80	144
Total	3	3	4	10	4	222	12	238	1	1	1	3	6	268	1	275	526
05:00 PM	0	2	3	5	0	52	2	54	1	1	3	5	0	85	1	86	150
05:15 PM	1	0	1	2	1	83	4	88	1	0	1	2	2	56	1	59	151
05:30 PM	2	0	2	4	2	106	1	109	0	0	0	0	3	58	0	61	174
05:45 PM	0	1	0	1	1	91	2	94	0	0	0	0	1	61	0	62	157
Total	3	3	6	12	4	332	9	345	2	1	4	7	6	260	2	268	632
Grand Total	6	6	10	22	8	554	21	583	3	2	5	10	12	528	3	543	1158
Apprch %	27.3	27.3	45.5		1.4	95	3.6		30	20	50		2.2	97.2	0.6		
Total %	0.5	0.5	0.9	1.9	0.7	47.8	1.8	50.3	0.3	0.2	0.4	0.9	1	45.6	0.3	46.9	

	Fairview Avenue Southbound				Grant Avenue Westbound				Fairview Avenue Northbound				Grant Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	**2**	**3**	**5**	0	52	2	54	**1**	**1**	**3**	**5**	0	**85**	**1**	**86**	150
05:15 PM	1	0	1	2	1	83	**4**	88	1	0	1	2	2	56	1	59	151
05:30 PM	**2**	0	2	4	**2**	**106**	1	**109**	0	0	0	0	**3**	58	0	61	**174**
05:45 PM	0	1	0	1	1	91	2	94	0	0	0	0	1	61	0	62	157
Total Volume	3	3	6	12	4	332	9	345	2	1	4	7	6	260	2	268	632
% App. Total	25	25	50		1.2	96.2	2.6		28.6	14.3	57.1		2.2	97	0.7		
PHF	.375	.375	.500	.600	.500	.783	.563	.791	.500	.250	.333	.350	.500	.765	.500	.779	.908

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Fairview Avenue
E/W: Grant Avenue
Weather: Sunny

File Name : SBFAGRPM
Site Code : 08035999
Start Date : 10/8/2008
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				04:15 PM				04:15 PM			
+0 mins.	**3**	**2**	**4**	**9**	0	52	2	54	0	**1**	1	2	**2**	62	**1**	65
+15 mins.	0	2	3	5	1	83	**4**	88	0	0	0	0	1	61	0	62
+30 mins.	1	0	1	2	**2**	**106**	1	**109**	0	0	0	0	1	79	0	80
+45 mins.	2	0	2	4	1	91	2	94	**1**	1	**3**	**5**	0	**85**	1	**86**
Total Volume	6	4	10	20	4	332	9	345	1	2	4	7	4	287	2	293
% App. Total	30	20	50		1.2	96.2	2.6		14.3	28.6	57.1		1.4	98	0.7	
PHF	.500	.500	.625	.556	.500	.783	.563	.791	.250	.500	.333	.350	.500	.844	.500	.852

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I Street
E/W: Grant Avenue
Weather: Sunny

File Name : SBIGRAM
Site Code : 08035935
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

	I Street Southbound			I Street Northbound			Grant Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	48	3	51	59	38	97	1	34	35	183
07:15 AM	45	4	49	64	34	98	1	31	32	179
07:30 AM	57	3	60	100	33	133	2	43	45	238
07:45 AM	31	2	33	130	37	167	1	47	48	248
Total	181	12	193	353	142	495	5	155	160	848
08:00 AM	36	1	37	95	34	129	2	30	32	198
08:15 AM	29	3	32	42	41	83	3	36	39	154
08:30 AM	56	9	65	81	47	128	4	36	40	233
08:45 AM	47	9	56	71	25	96	7	67	74	226
Total	168	22	190	289	147	436	16	169	185	811
Grand Total	349	34	383	642	289	931	21	324	345	1659
Apprch %	91.1	8.9		69	31		6.1	93.9		
Total %	21	2	23.1	38.7	17.4	56.1	1.3	19.5	20.8	

	I Street Southbound			I Street Northbound			Grant Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	45	**4**	49	64	34	98	1	31	32	179
07:30 AM	**57**	3	**60**	100	33	133	**2**	43	45	238
07:45 AM	31	2	33	**130**	**37**	**167**	1	**47**	**48**	**248**
08:00 AM	36	1	37	95	34	129	2	30	32	198
Total Volume	169	10	179	389	138	527	6	151	157	863
% App. Total	94.4	5.6		73.8	26.2		3.8	96.2		
PHF	.741	.625	.746	.748	.932	.789	.750	.803	.818	.870

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I Street
E/W: Grant Avenue
Weather: Sunny

File Name : SBIGRAM
Site Code : 08035935
Start Date : 10/8/2008
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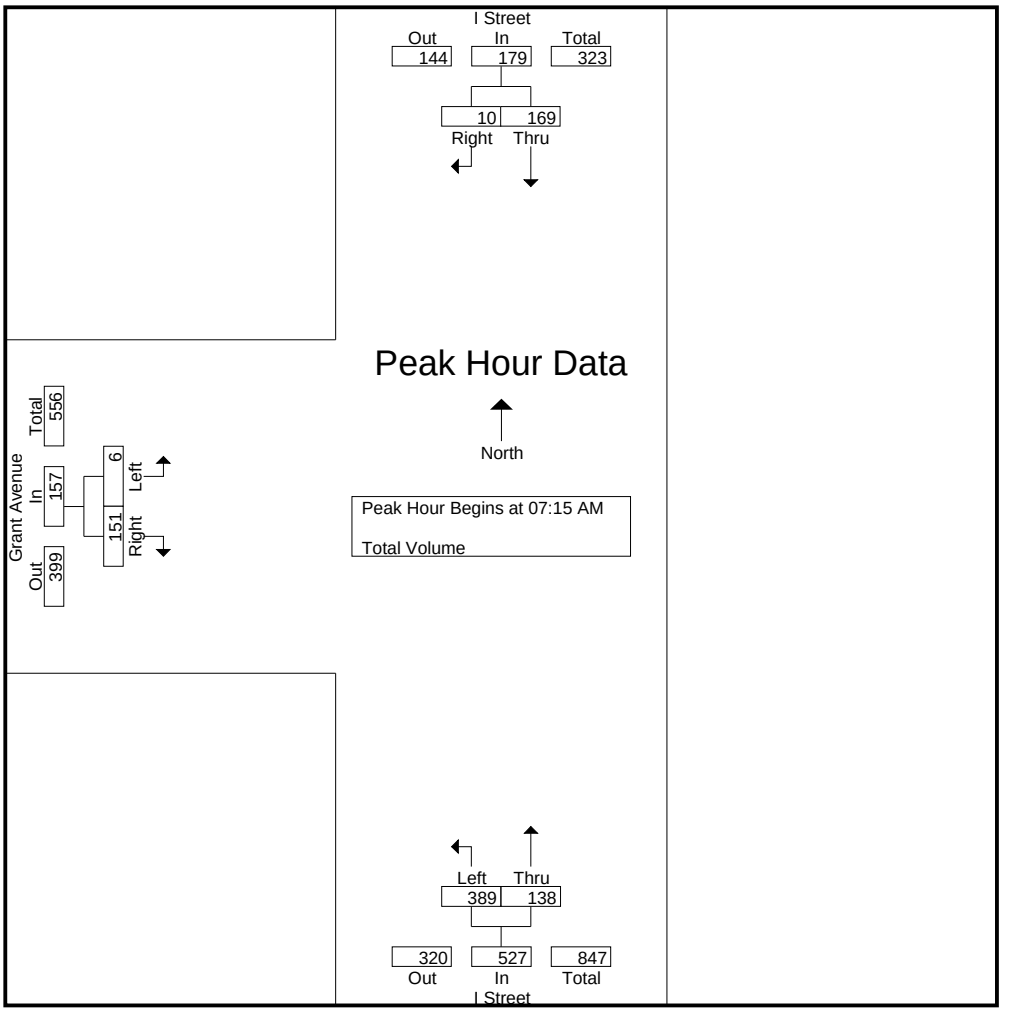


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:15 AM			08:00 AM		
+0 mins.	48	3	51	64	34	98	2	30	32
+15 mins.	45	**4**	49	100	33	133	3	36	39
+30 mins.	**57**	3	**60**	**130**	**37**	**167**	4	36	40
+45 mins.	31	2	33	95	34	129	**7**	**67**	**74**
Total Volume	181	12	193	389	138	527	16	169	185
% App. Total	93.8	6.2		73.8	26.2		8.6	91.4	
PHF	.794	.750	.804	.748	.932	.789	.571	.631	.625

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I Street
E/W: Grant Avenue
Weather: Sunny

File Name : SBIGRPM
Site Code : 08035935
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

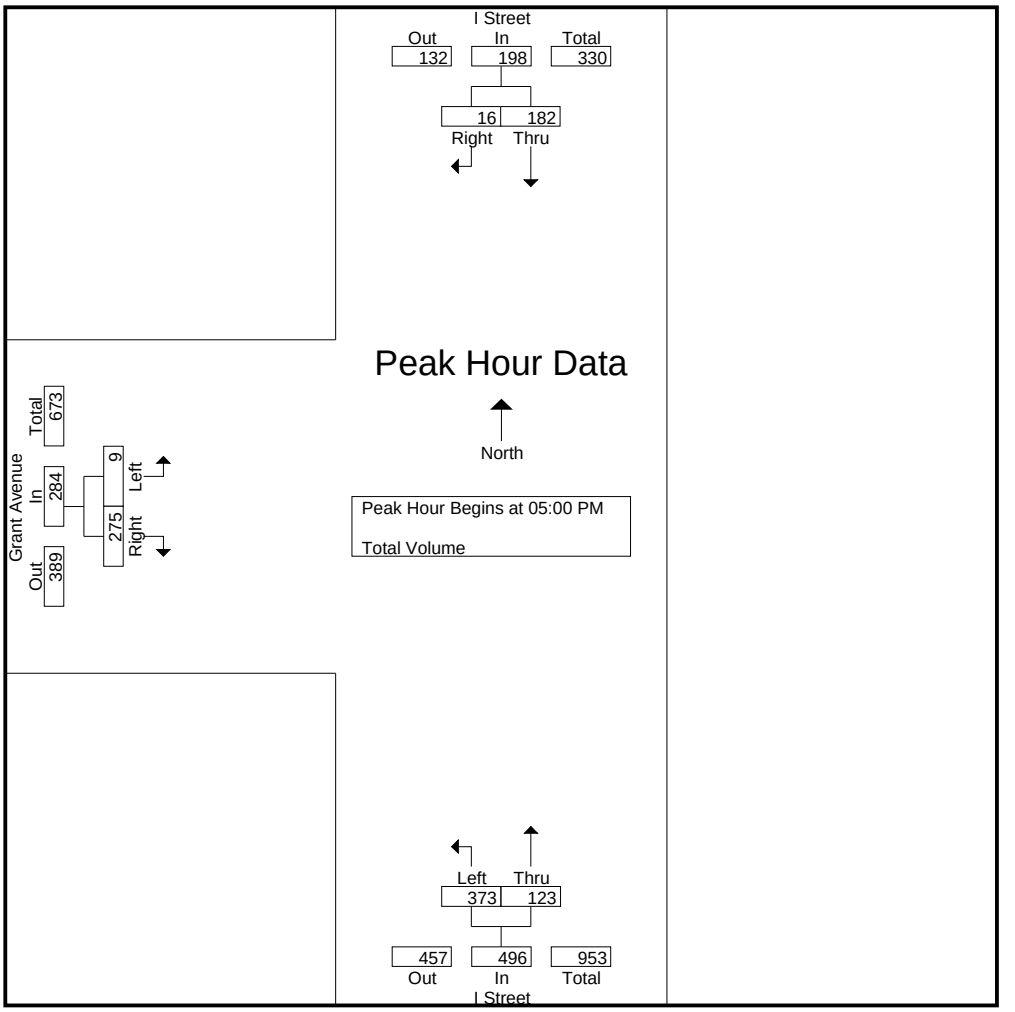
	I Street Southbound			I Street Northbound			Grant Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	64	2	66	72	25	97	1	67	68	231
04:15 PM	45	5	50	67	37	104	5	58	63	217
04:30 PM	45	1	46	49	35	84	3	61	64	194
04:45 PM	52	3	55	64	23	87	9	74	83	225
Total	206	11	217	252	120	372	18	260	278	867
05:00 PM	45	5	50	49	34	83	3	75	78	211
05:15 PM	47	4	51	71	43	114	4	58	62	227
05:30 PM	44	2	46	115	27	142	2	60	62	250
05:45 PM	46	5	51	138	19	157	0	82	82	290
Total	182	16	198	373	123	496	9	275	284	978
Grand Total	388	27	415	625	243	868	27	535	562	1845
Apprch %	93.5	6.5		72	28		4.8	95.2		
Total %	21	1.5	22.5	33.9	13.2	47	1.5	29	30.5	

	I Street Southbound			I Street Northbound			Grant Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	45	**5**	50	49	34	83	3	75	78	211
05:15 PM	**47**	4	**51**	71	**43**	114	**4**	58	62	227
05:30 PM	44	2	46	115	27	142	2	60	62	250
05:45 PM	46	5	51	**138**	19	**157**	0	**82**	**82**	**290**
Total Volume	182	16	198	373	123	496	9	275	284	978
% App. Total	91.9	8.1		75.2	24.8		3.2	96.8		
PHF	.968	.800	.971	.676	.715	.790	.563	.838	.866	.843

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I Street
E/W: Grant Avenue
Weather: Sunny

File Name : SBIGRPM
Site Code : 08035935
Start Date : 10/8/2008
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM			05:00 PM			04:15 PM		
+0 mins.	**64**	2	**66**	49	34	83	5	58	63
+15 mins.	45	**5**	50	71	**43**	114	3	61	64
+30 mins.	45	1	46	115	27	142	**9**	74	**83**
+45 mins.	52	3	55	**138**	19	**157**	3	**75**	78
Total Volume	206	11	217	373	123	496	20	268	288
% App. Total	94.9	5.1		75.2	24.8		6.9	93.1	
PHF	.805	.550	.822	.676	.715	.790	.556	.893	.867

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I Street
E/W: Inland Center Drive
Weather: Sunny

File Name : SBIICAM
Site Code : 08035963
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

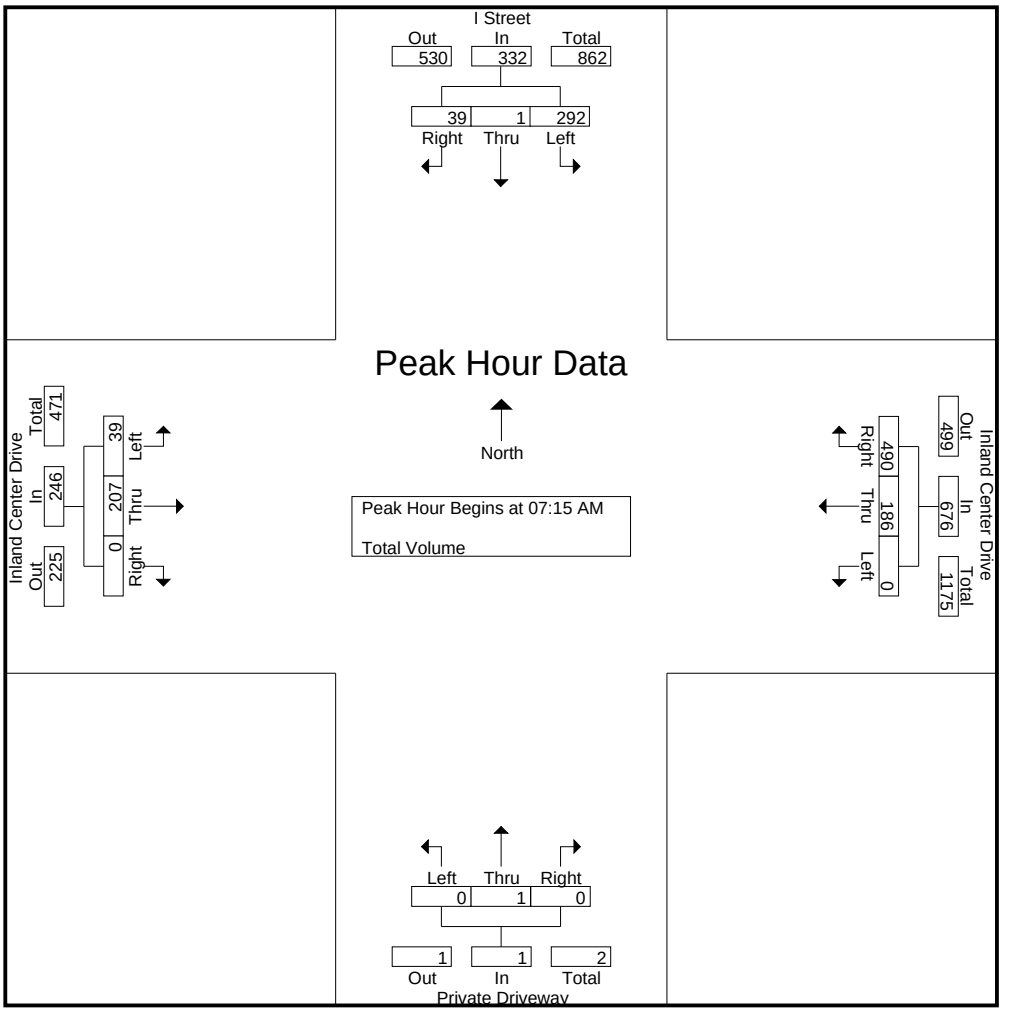
	I Street Southbound				Inland Center Drive Westbound				Private Driveway Northbound				Inland Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	79	2	4	85	0	35	92	127	0	0	0	0	9	37	0	46	258
07:15 AM	68	0	10	78	0	55	88	143	0	0	0	0	10	47	0	57	278
07:30 AM	89	0	12	101	0	41	122	163	0	0	0	0	6	54	0	60	324
07:45 AM	72	1	8	81	0	34	164	198	0	1	0	1	13	57	0	70	350
Total	308	3	34	345	0	165	466	631	0	1	0	1	38	195	0	233	1210
08:00 AM	63	0	9	72	0	56	116	172	0	0	0	0	10	49	0	59	303
08:15 AM	56	0	14	70	0	36	76	112	0	0	0	0	12	54	0	66	248
08:30 AM	79	0	17	96	0	38	109	147	0	0	0	0	18	46	0	64	307
08:45 AM	93	0	13	106	0	41	97	138	0	0	0	0	7	39	0	46	290
Total	291	0	53	344	0	171	398	569	0	0	0	0	47	188	0	235	1148
Grand Total	599	3	87	689	0	336	864	1200	0	1	0	1	85	383	0	468	2358
Apprch %	86.9	0.4	12.6		0	28	72		0	100	0		18.2	81.8	0		
Total %	25.4	0.1	3.7	29.2	0	14.2	36.6	50.9	0	0	0	0	3.6	16.2	0	19.8	

	I Street Southbound				Inland Center Drive Westbound				Private Driveway Northbound				Inland Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	68	0	10	78	0	55	88	143	0	0	0	0	10	47	0	57	278
07:30 AM	**89**	0	**12**	**101**	0	41	122	163	0	0	0	0	6	54	0	60	324
07:45 AM	72	**1**	8	81	0	34	**164**	**198**	0	**1**	0	**1**	**13**	**57**	0	**70**	**350**
08:00 AM	63	0	9	72	0	**56**	116	172	0	0	0	0	10	49	0	59	303
Total Volume	292	1	39	332	0	186	490	676	0	1	0	1	39	207	0	246	1255
% App. Total	88	0.3	11.7		0	27.5	72.5		0	100	0		15.9	84.1	0		
PHF	.820	.250	.813	.822	.000	.830	.747	.854	.000	.250	.000	.250	.750	.908	.000	.879	.896

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I Street
E/W: Inland Center Drive
Weather: Sunny

File Name : SBIICAM
Site Code : 08035963
Start Date : 10/8/2008
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:00 AM				07:45 AM			
+0 mins.	79	**2**	4	85	0	55	88	143	0	0	0	0	13	**57**	0	**70**
+15 mins.	68	0	10	78	0	41	122	163	0	0	0	0	10	49	0	59
+30 mins.	**89**	0	**12**	**101**	0	34	**164**	**198**	0	0	0	0	12	54	0	66
+45 mins.	72	1	8	81	0	**56**	116	172	0	**1**	0	**1**	**18**	46	0	64
Total Volume	308	3	34	345	0	186	490	676	0	1	0	1	53	206	0	259
% App. Total	89.3	0.9	9.9		0	27.5	72.5		0	100	0		20.5	79.5	0	
PHF	.865	.375	.708	.854	.000	.830	.747	.854	.000	.250	.000	.250	.736	.904	.000	.925

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I Street
E/W: Inland Center Drive
Weather: Sunny

File Name : SBIICPM
Site Code : 08035963
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

	I Street Southbound				Inland Center Drive Westbound				Private Driveway Northbound				Inland Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	114	1	11	126	1	77	91	169	0	1	1	2	6	56	0	62	359
04:15 PM	107	0	8	115	0	87	91	178	0	0	0	0	16	65	0	81	374
04:30 PM	103	0	6	109	0	87	71	158	0	0	0	0	7	67	0	74	341
04:45 PM	123	0	13	136	0	82	79	161	0	0	0	0	5	64	0	69	366
Total	447	1	38	486	1	333	332	666	0	1	1	2	34	252	0	286	1440
05:00 PM	124	0	12	136	0	62	72	134	0	0	0	0	16	75	0	91	361
05:15 PM	97	0	8	105	0	86	103	189	0	0	0	0	10	66	0	76	370
05:30 PM	104	0	10	114	0	79	127	206	0	0	0	0	13	59	0	72	392
05:45 PM	123	0	14	137	0	68	130	198	0	0	0	0	14	60	0	74	409
Total	448	0	44	492	0	295	432	727	0	0	0	0	53	260	0	313	1532
Grand Total	895	1	82	978	1	628	764	1393	0	1	1	2	87	512	0	599	2972
Apprch %	91.5	0.1	8.4		0.1	45.1	54.8		0	50	50		14.5	85.5	0		
Total %	30.1	0	2.8	32.9	0	21.1	25.7	46.9	0	0	0	0.1	2.9	17.2	0	20.2	

	I Street Southbound				Inland Center Drive Westbound				Private Driveway Northbound				Inland Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**124**	0	12	136	0	62	72	134	0	0	0	0	**16**	**75**	0	**91**	361
05:15 PM	97	0	8	105	0	**86**	103	189	0	0	0	0	10	66	0	76	370
05:30 PM	104	0	10	114	0	79	127	**206**	0	0	0	0	13	59	0	72	392
05:45 PM	123	0	**14**	**137**	0	68	**130**	198	0	0	0	0	14	60	0	74	**409**
Total Volume	448	0	44	492	0	295	432	727	0	0	0	0	53	260	0	313	1532
% App. Total	91.1	0	8.9		0	40.6	59.4		0	0	0		16.9	83.1	0		
PHF	.903	.000	.786	.898	.000	.858	.831	.882	.000	.000	.000	.000	.828	.867	.000	.860	.936

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: I Street
E/W: Inland Center Drive
Weather: Sunny

File Name : SBIICPM
Site Code : 08035963
Start Date : 10/8/2008
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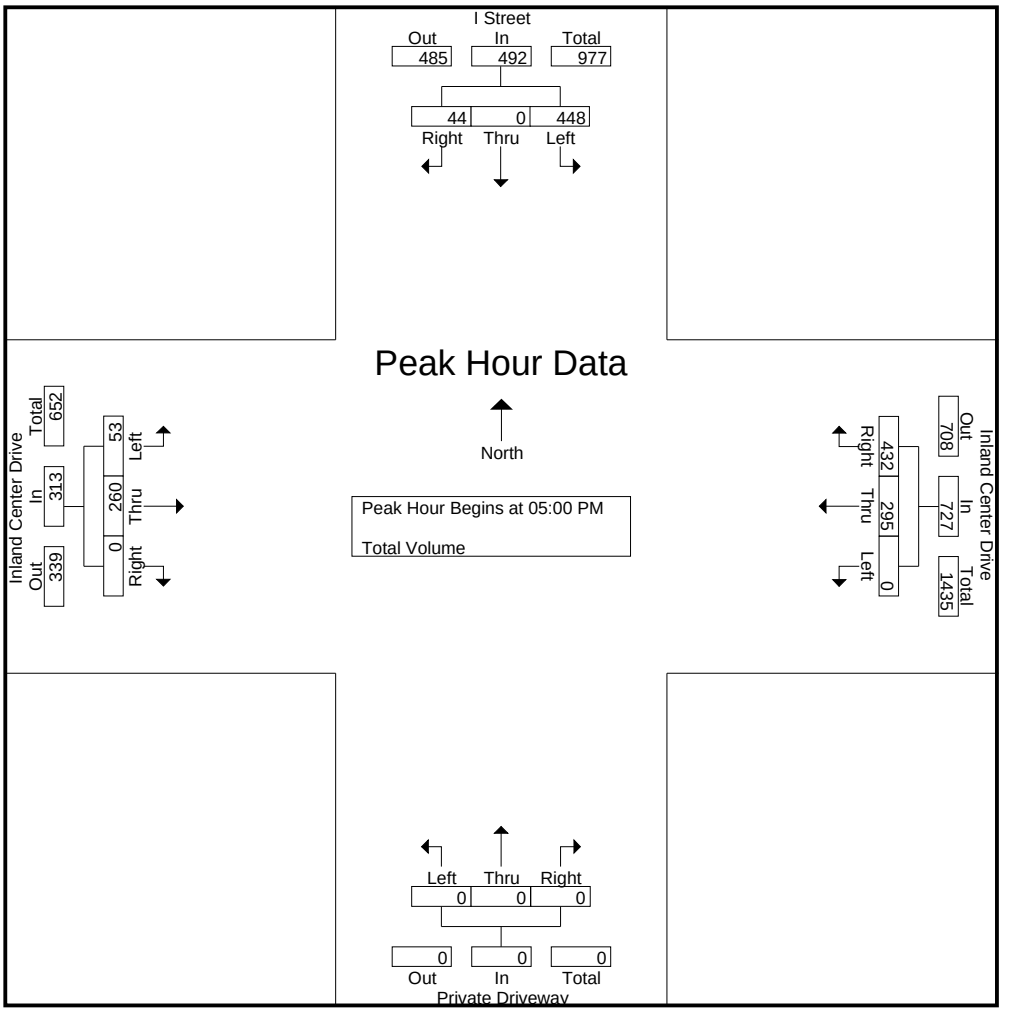


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:15 PM				05:00 PM				04:00 PM				04:15 PM			
+0 mins.	107	0	8	115	0	62	72	134	0	**1**	**1**	**2**	**16**	65	0	81
+15 mins.	103	0	6	109	0	**86**	103	189	0	0	0	0	7	67	0	74
+30 mins.	123	0	**13**	**136**	0	79	127	**206**	0	0	0	0	5	64	0	69
+45 mins.	**124**	0	12	136	0	68	**130**	198	0	0	0	0	16	**75**	0	**91**
Total Volume	457	0	39	496	0	295	432	727	0	1	1	2	44	271	0	315
% App. Total	92.1	0	7.9		0	40.6	59.4		0	50	50		14	86	0	
PHF	.921	.000	.750	.912	.000	.858	.831	.882	.000	.250	.250	.250	.688	.903	.000	.865

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: J Street
E/W: Grant Avenue
Weather: Sunny

File Name : SBJGRAM
Site Code : 08035951
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

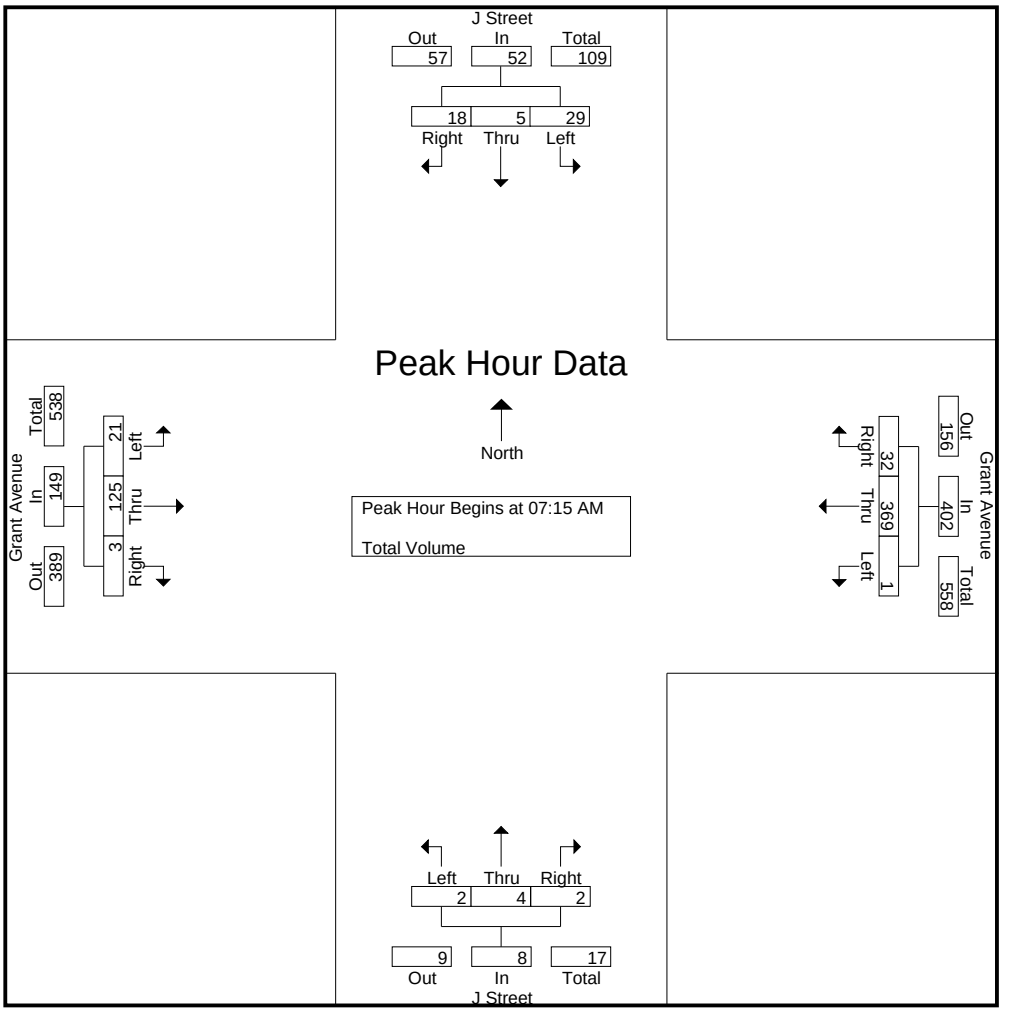
	J Street Southbound				Grant Avenue Westbound				J Street Northbound				Grant Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	0	1	4	1	51	8	60	0	0	0	0	5	31	0	36	100
07:15 AM	9	0	2	11	1	60	9	70	0	0	0	0	5	23	0	28	109
07:30 AM	8	1	1	10	0	91	11	102	0	1	1	2	6	33	0	39	153
07:45 AM	6	2	13	21	0	122	6	128	1	2	1	4	7	40	1	48	201
Total	26	3	17	46	2	324	34	360	1	3	2	6	23	127	1	151	563
08:00 AM	6	2	2	10	0	96	6	102	1	1	0	2	3	29	2	34	148
08:15 AM	7	0	4	11	0	37	11	48	0	1	1	2	12	30	1	43	104
08:30 AM	6	2	6	14	1	55	22	78	0	3	0	3	15	29	0	44	139
08:45 AM	6	2	18	26	0	91	3	94	1	4	0	5	10	60	0	70	195
Total	25	6	30	61	1	279	42	322	2	9	1	12	40	148	3	191	586
Grand Total	51	9	47	107	3	603	76	682	3	12	3	18	63	275	4	342	1149
Apprch %	47.7	8.4	43.9		0.4	88.4	11.1		16.7	66.7	16.7		18.4	80.4	1.2		
Total %	4.4	0.8	4.1	9.3	0.3	52.5	6.6	59.4	0.3	1	0.3	1.6	5.5	23.9	0.3	29.8	

	J Street Southbound				Grant Avenue Westbound				J Street Northbound				Grant Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**9**	0	2	11	**1**	60	9	70	0	0	0	0	5	23	0	28	109
07:30 AM	8	1	1	10	0	91	**11**	102	0	1	**1**	2	6	33	0	39	153
07:45 AM	6	**2**	**13**	**21**	0	**122**	6	**128**	**1**	**2**	1	**4**	**7**	**40**	1	**48**	**201**
08:00 AM	6	2	2	10	0	96	6	102	1	1	0	2	3	29	**2**	34	148
Total Volume	29	5	18	52	1	369	32	402	2	4	2	8	21	125	3	149	611
% App. Total	55.8	9.6	34.6		0.2	91.8	8		25	50	25		14.1	83.9	2		
PHF	.806	.625	.346	.619	.250	.756	.727	.785	.500	.500	.500	.500	.750	.781	.375	.776	.760

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: J Street
E/W: Grant Avenue
Weather: Sunny

File Name : SBJGRAM
Site Code : 08035951
Start Date : 10/8/2008
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	08:00 AM				07:15 AM				08:00 AM				08:00 AM			
+0 mins.	6	**2**	2	10	**1**	60	9	70	**1**	1	0	2	3	29	**2**	34
+15 mins.	**7**	0	4	11	0	91	**11**	102	0	1	**1**	2	12	30	1	43
+30 mins.	6	2	6	14	0	**122**	6	**128**	0	3	0	3	**15**	29	0	44
+45 mins.	6	2	**18**	**26**	0	96	6	102	1	**4**	0	**5**	10	**60**	0	**70**
Total Volume	25	6	30	61	1	369	32	402	2	9	1	12	40	148	3	191
% App. Total	41	9.8	49.2		0.2	91.8	8		16.7	75	8.3		20.9	77.5	1.6	
PHF	.893	.750	.417	.587	.250	.756	.727	.785	.500	.563	.250	.600	.667	.617	.375	.682

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: J Street
E/W: Grant Avenue
Weather: Sunny

File Name : SBJGRPM
Site Code : 08035951
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

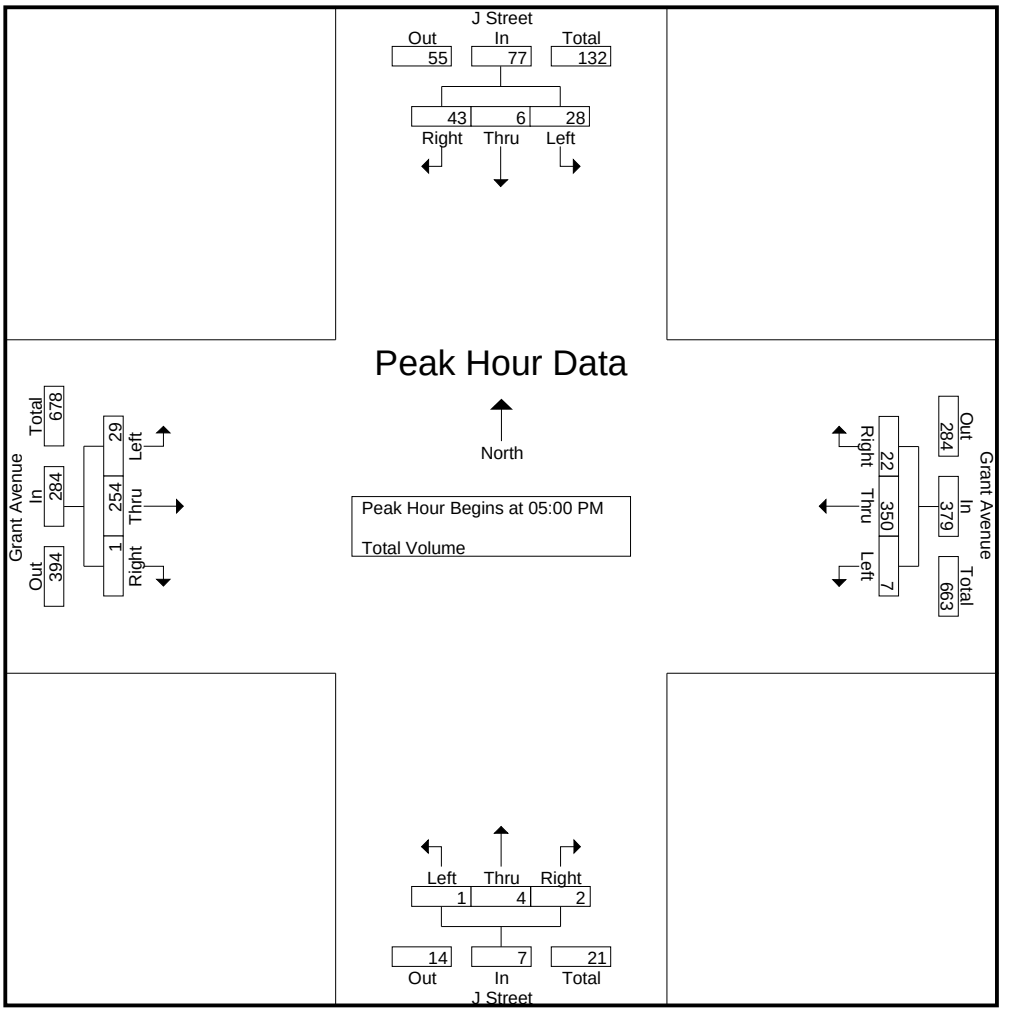
	J Street Southbound				Grant Avenue Westbound				J Street Northbound				Grant Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	10	0	4	14	0	67	8	75	2	0	0	2	6	55	1	62	153
04:15 PM	5	0	1	6	1	65	4	70	1	2	0	3	3	58	2	63	142
04:30 PM	4	1	7	12	2	38	9	49	4	0	0	4	5	61	0	66	131
04:45 PM	9	1	3	13	2	57	8	67	1	4	0	5	5	75	0	80	165
Total	28	2	15	45	5	227	29	261	8	6	0	14	19	249	3	271	591
05:00 PM	5	2	7	14	2	47	2	51	0	1	0	1	8	74	0	82	148
05:15 PM	3	2	7	12	2	65	7	74	1	0	1	2	5	56	0	61	149
05:30 PM	11	0	16	27	1	103	7	111	0	2	0	2	7	53	1	61	201
05:45 PM	9	2	13	24	2	135	6	143	0	1	1	2	9	71	0	80	249
Total	28	6	43	77	7	350	22	379	1	4	2	7	29	254	1	284	747
Grand Total	56	8	58	122	12	577	51	640	9	10	2	21	48	503	4	555	1338
Apprch %	45.9	6.6	47.5		1.9	90.2	8		42.9	47.6	9.5		8.6	90.6	0.7		
Total %	4.2	0.6	4.3	9.1	0.9	43.1	3.8	47.8	0.7	0.7	0.1	1.6	3.6	37.6	0.3	41.5	

	J Street Southbound				Grant Avenue Westbound				J Street Northbound				Grant Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	5	**2**	7	14	**2**	47	2	51	0	1	0	1	8	**74**	0	**82**	148
05:15 PM	3	2	7	12	2	65	**7**	74	**1**	0	**1**	**2**	5	56	0	61	149
05:30 PM	**11**	0	**16**	**27**	1	103	7	111	0	**2**	0	2	7	53	**1**	61	201
05:45 PM	9	2	13	24	2	**135**	6	**143**	0	1	1	2	**9**	71	0	80	**249**
Total Volume	28	6	43	77	7	350	22	379	1	4	2	7	29	254	1	284	747
% App. Total	36.4	7.8	55.8		1.8	92.3	5.8		14.3	57.1	28.6		10.2	89.4	0.4		
PHF	.636	.750	.672	.713	.875	.648	.786	.663	.250	.500	.500	.875	.806	.858	.250	.866	.750

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: J Street
E/W: Grant Avenue
Weather: Sunny

File Name : SBJGRPM
Site Code : 08035951
Start Date : 10/8/2008



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:00 PM				04:15 PM			
+0 mins.	5	**2**	7	14	**2**	47	2	51	2	0	0	2	3	58	**2**	63
+15 mins.	3	2	7	12	2	65	**7**	74	1	2	0	3	5	61	0	66
+30 mins.	**11**	0	**16**	**27**	1	103	7	111	**4**	0	0	4	5	**75**	0	80
+45 mins.	9	2	13	24	2	**135**	6	**143**	1	**4**	0	**5**	**8**	74	0	**82**
Total Volume	28	6	43	77	7	350	22	379	8	6	0	14	21	268	2	291
% App. Total	36.4	7.8	55.8		1.8	92.3	5.8		57.1	42.9	0		7.2	92.1	0.7	
PHF	.636	.750	.672	.713	.875	.648	.786	.663	.500	.375	.000	.700	.656	.893	.250	.887

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: K Street
E/W: Esperanza Street
Weather: Sunny

File Name : SBKESAM
Site Code : 08035944
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

	K Street Southbound				Esperanza Street Westbound				K Street Northbound				Esperanza Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	17	0	18	0	0	4	4	3	12	0	15	0	0	3	3	40
07:15 AM	2	29	7	38	2	2	1	5	5	16	0	21	7	0	9	16	80
07:30 AM	0	50	15	65	2	3	3	8	13	21	1	35	3	2	7	12	120
07:45 AM	3	57	21	81	2	5	0	7	15	13	0	28	10	1	27	38	154
Total	6	153	43	202	6	10	8	24	36	62	1	99	20	3	46	69	394
08:00 AM	0	29	7	36	1	2	3	6	10	15	2	27	9	0	14	23	92
08:15 AM	0	22	9	31	0	4	1	5	6	14	0	20	2	3	20	25	81
08:30 AM	0	16	5	21	0	5	3	8	13	14	1	28	4	1	25	30	87
08:45 AM	0	27	10	37	2	3	3	8	21	16	0	37	4	0	27	31	113
Total	0	94	31	125	3	14	10	27	50	59	3	112	19	4	86	109	373
Grand Total	6	247	74	327	9	24	18	51	86	121	4	211	39	7	132	178	767
Apprch %	1.8	75.5	22.6		17.6	47.1	35.3		40.8	57.3	1.9		21.9	3.9	74.2		
Total %	0.8	32.2	9.6	42.6	1.2	3.1	2.3	6.6	11.2	15.8	0.5	27.5	5.1	0.9	17.2	23.2	

	K Street Southbound				Esperanza Street Westbound				K Street Northbound				Esperanza Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	50	15	65	**2**	3	**3**	**8**	13	**21**	1	**35**	3	2	7	12	120
07:45 AM	**3**	**57**	**21**	**81**	2	**5**	0	7	**15**	13	0	28	**10**	1	**27**	**38**	**154**
08:00 AM	0	29	7	36	1	2	3	6	10	15	**2**	27	9	0	14	23	92
08:15 AM	0	22	9	31	0	4	1	5	6	14	0	20	2	**3**	20	25	81
Total Volume	3	158	52	213	5	14	7	26	44	63	3	110	24	6	68	98	447
% App. Total	1.4	74.2	24.4		19.2	53.8	26.9		40	57.3	2.7		24.5	6.1	69.4		
PHF	.250	.693	.619	.657	.625	.700	.583	.813	.733	.750	.375	.786	.600	.500	.630	.645	.726

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: K Street
E/W: Esperanza Street
Weather: Sunny

File Name : SBKESAM
Site Code : 08035944
Start Date : 10/8/2008
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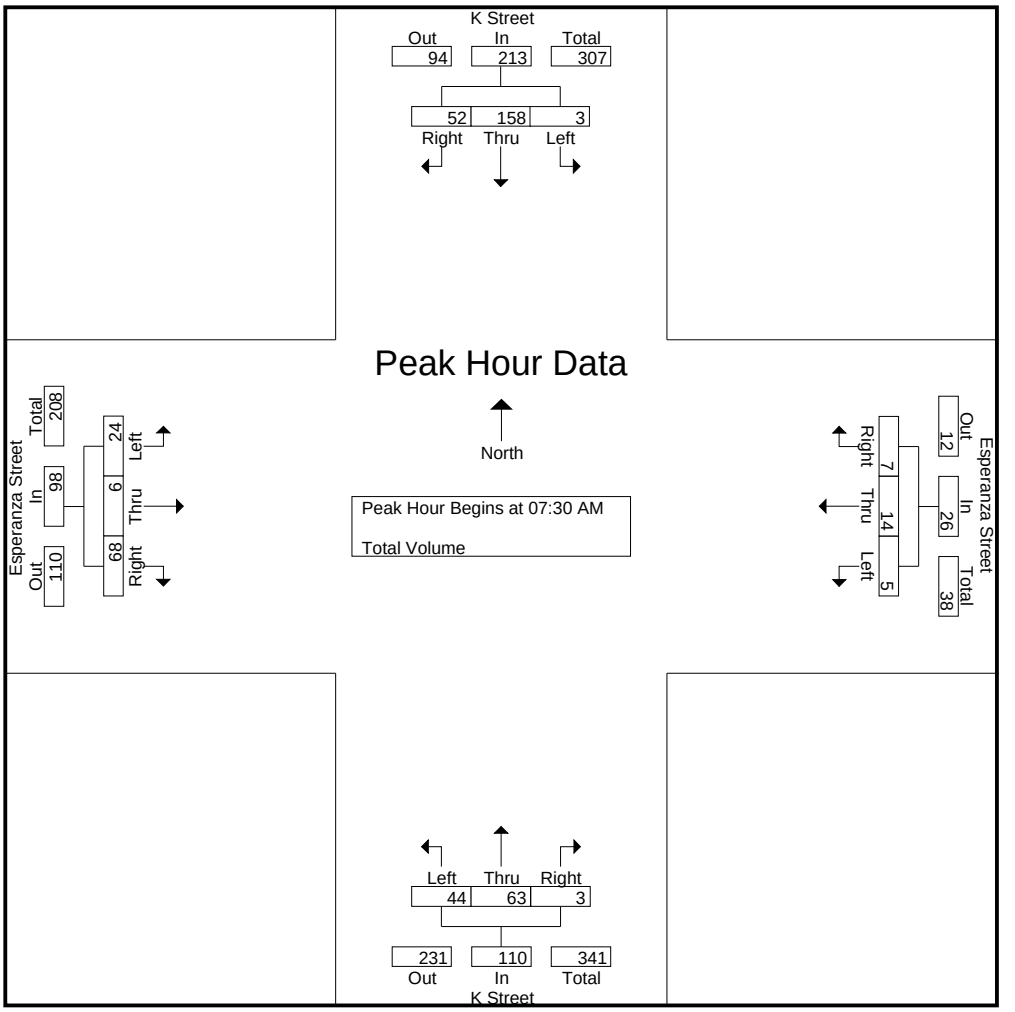

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM				08:00 AM				08:00 AM				07:45 AM			
+0 mins.	2	29	7	38	1	2	**3**	6	10	15	**2**	27	**10**	1	**27**	**38**
+15 mins.	0	50	15	65	0	4	1	5	6	14	0	20	9	0	14	23
+30 mins.	**3**	**57**	**21**	**81**	0	**5**	3	**8**	13	14	1	28	2	**3**	20	25
+45 mins.	0	29	7	36	**2**	3	3	8	**21**	**16**	0	**37**	4	1	25	30
Total Volume	5	165	50	220	3	14	10	27	50	59	3	112	25	5	86	116
% App. Total	2.3	75	22.7		11.1	51.9	37		44.6	52.7	2.7		21.6	4.3	74.1	
PHF	.417	.724	.595	.679	.375	.700	.833	.844	.595	.922	.375	.757	.625	.417	.796	.763

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: K Street
E/W: Esperanza Street
Weather: Sunny

File Name : SBKESPM
Site Code : 08035944
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

	K Street Southbound				Esperanza Street Westbound				K Street Northbound				Esperanza Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	6	12	19	0	3	0	3	12	6	0	18	0	1	27	28	68
04:15 PM	0	15	9	24	1	3	0	4	15	18	0	33	5	2	24	31	92
04:30 PM	1	17	13	31	1	0	3	4	9	15	1	25	9	6	18	33	93
04:45 PM	2	25	4	31	4	1	3	8	13	13	0	26	7	3	15	25	90
Total	4	63	38	105	6	7	6	19	49	52	1	102	21	12	84	117	343
05:00 PM	0	30	13	43	1	3	2	6	9	23	3	35	7	2	10	19	103
05:15 PM	3	36	15	54	2	4	3	9	24	24	0	48	15	3	17	35	146
05:30 PM	1	46	7	54	3	0	0	3	11	18	0	29	9	2	16	27	113
05:45 PM	1	70	18	89	6	3	1	10	12	17	1	30	12	1	37	50	179
Total	5	182	53	240	12	10	6	28	56	82	4	142	43	8	80	131	541
Grand Total	9	245	91	345	18	17	12	47	105	134	5	244	64	20	164	248	884
Apprch %	2.6	71	26.4		38.3	36.2	25.5		43	54.9	2		25.8	8.1	66.1		
Total %	1	27.7	10.3	39	2	1.9	1.4	5.3	11.9	15.2	0.6	27.6	7.2	2.3	18.6	28.1	

	K Street Southbound				Esperanza Street Westbound				K Street Northbound				Esperanza Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	30	13	43	1	3	2	6	9	23	**3**	35	7	2	10	19	103
05:15 PM	**3**	36	15	54	2	**4**	**3**	9	**24**	**24**	0	**48**	**15**	**3**	17	35	146
05:30 PM	1	46	7	54	3	0	0	3	11	18	0	29	9	2	16	27	113
05:45 PM	1	**70**	**18**	**89**	**6**	3	1	**10**	12	17	1	30	12	1	**37**	**50**	**179**
Total Volume	5	182	53	240	12	10	6	28	56	82	4	142	43	8	80	131	541
% App. Total	2.1	75.8	22.1		42.9	35.7	21.4		39.4	57.7	2.8		32.8	6.1	61.1		
PHF	.417	.650	.736	.674	.500	.625	.500	.700	.583	.854	.333	.740	.717	.667	.541	.655	.756

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: K Street
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File Name : SBKESPM
Site Code : 08035944
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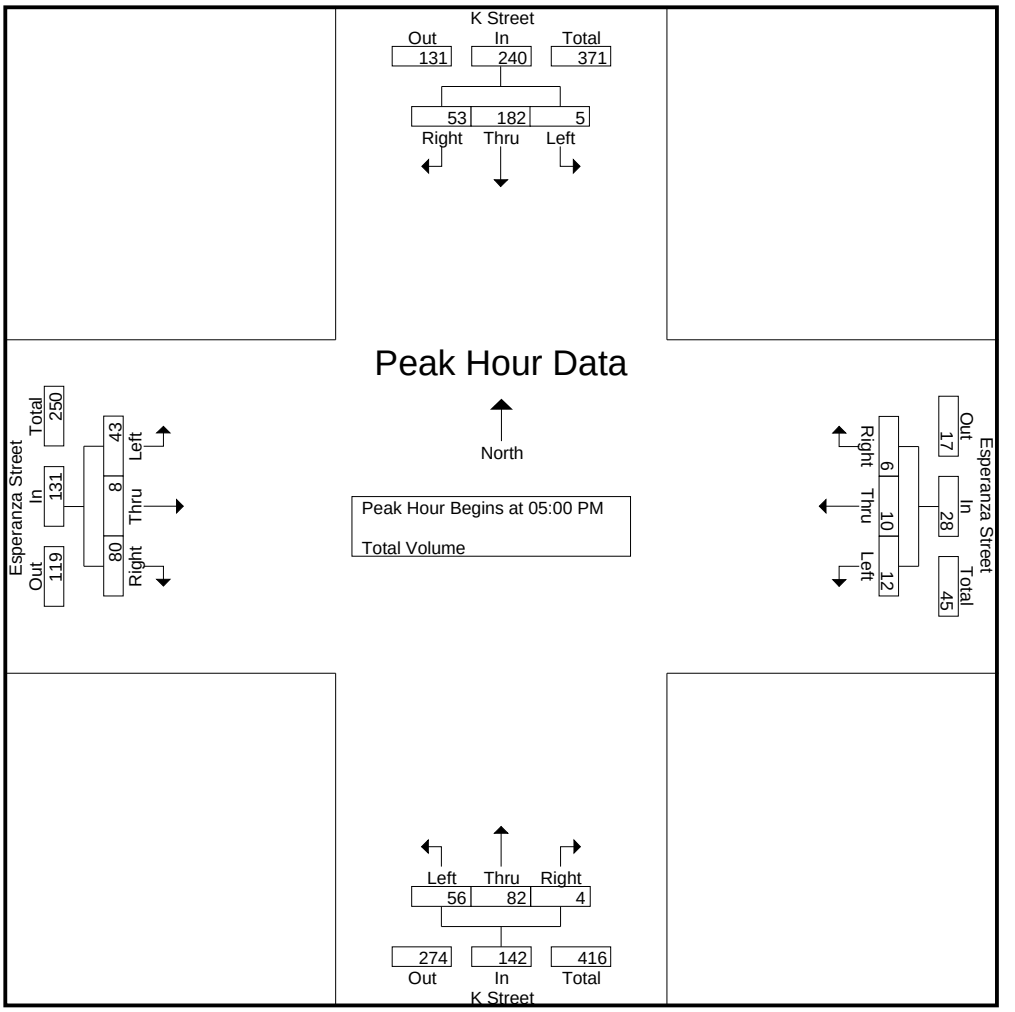

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	30	13	43	1	3	2	6	9	23	**3**	35	7	2	10	19
+15 mins.	**3**	36	15	54	2	**4**	**3**	9	**24**	**24**	0	**48**	**15**	**3**	17	35
+30 mins.	1	46	7	54	3	0	0	3	11	18	0	29	9	2	16	27
+45 mins.	1	**70**	**18**	**89**	**6**	3	1	**10**	12	17	1	30	12	1	**37**	**50**
Total Volume	5	182	53	240	12	10	6	28	56	82	4	142	43	8	80	131
% App. Total	2.1	75.8	22.1		42.9	35.7	21.4		39.4	57.7	2.8		32.8	6.1	61.1	
PHF	.417	.650	.736	.674	.500	.625	.500	.700	.583	.854	.333	.740	.717	.667	.541	.655

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: K Street
E/W: Grant Avenue
Weather: Sunny

File Name : SBKGRAM
Site Code : 08035999
Start Date : 10/8/2008
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Groups Printed- Total Volume

	K Street Southbound				Grant Avenue Westbound				K Street Northbound				Grant Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	5	0	8	13	0	21	21	42	4	3	1	8	5	10	0	15	78
07:15 AM	15	2	22	39	0	43	20	63	0	4	1	5	10	20	1	31	138
07:30 AM	15	2	28	45	0	56	35	91	4	2	2	8	19	23	0	42	186
07:45 AM	14	7	45	66	0	79	53	132	3	3	1	7	15	29	1	45	250
Total	49	11	103	163	0	199	129	328	11	12	5	28	49	82	2	133	652
08:00 AM	20	0	27	47	0	32	26	58	4	5	1	10	21	13	0	34	149
08:15 AM	22	2	24	48	0	31	17	48	2	3	0	5	12	25	3	40	141
08:30 AM	24	1	24	49	0	49	27	76	4	3	1	8	23	27	3	53	186
08:45 AM	29	0	22	51	3	56	30	89	6	1	4	11	7	35	0	42	193
Total	95	3	97	195	3	168	100	271	16	12	6	34	63	100	6	169	669
Grand Total	144	14	200	358	3	367	229	599	27	24	11	62	112	182	8	302	1321
Apprch %	40.2	3.9	55.9		0.5	61.3	38.2		43.5	38.7	17.7		37.1	60.3	2.6		
Total %	10.9	1.1	15.1	27.1	0.2	27.8	17.3	45.3	2	1.8	0.8	4.7	8.5	13.8	0.6	22.9	

	K Street Southbound				Grant Avenue Westbound				K Street Northbound				Grant Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	15	2	28	45	0	56	35	91	**4**	2	**2**	8	19	23	0	42	186
07:45 AM	14	**7**	**45**	**66**	0	**79**	**53**	**132**	3	3	1	7	15	**29**	1	**45**	**250**
08:00 AM	20	0	27	47	0	32	26	58	4	**5**	1	**10**	**21**	13	0	34	149
08:15 AM	**22**	2	24	48	0	31	17	48	2	3	0	5	12	25	**3**	40	141
Total Volume	71	11	124	206	0	198	131	329	13	13	4	30	67	90	4	161	726
% App. Total	34.5	5.3	60.2		0	60.2	39.8		43.3	43.3	13.3		41.6	55.9	2.5		
PHF	.807	.393	.689	.780	.000	.627	.618	.623	.813	.650	.500	.750	.798	.776	.333	.894	.726

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: K Street
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Weather: Sunny

File Name : SBKGRAM
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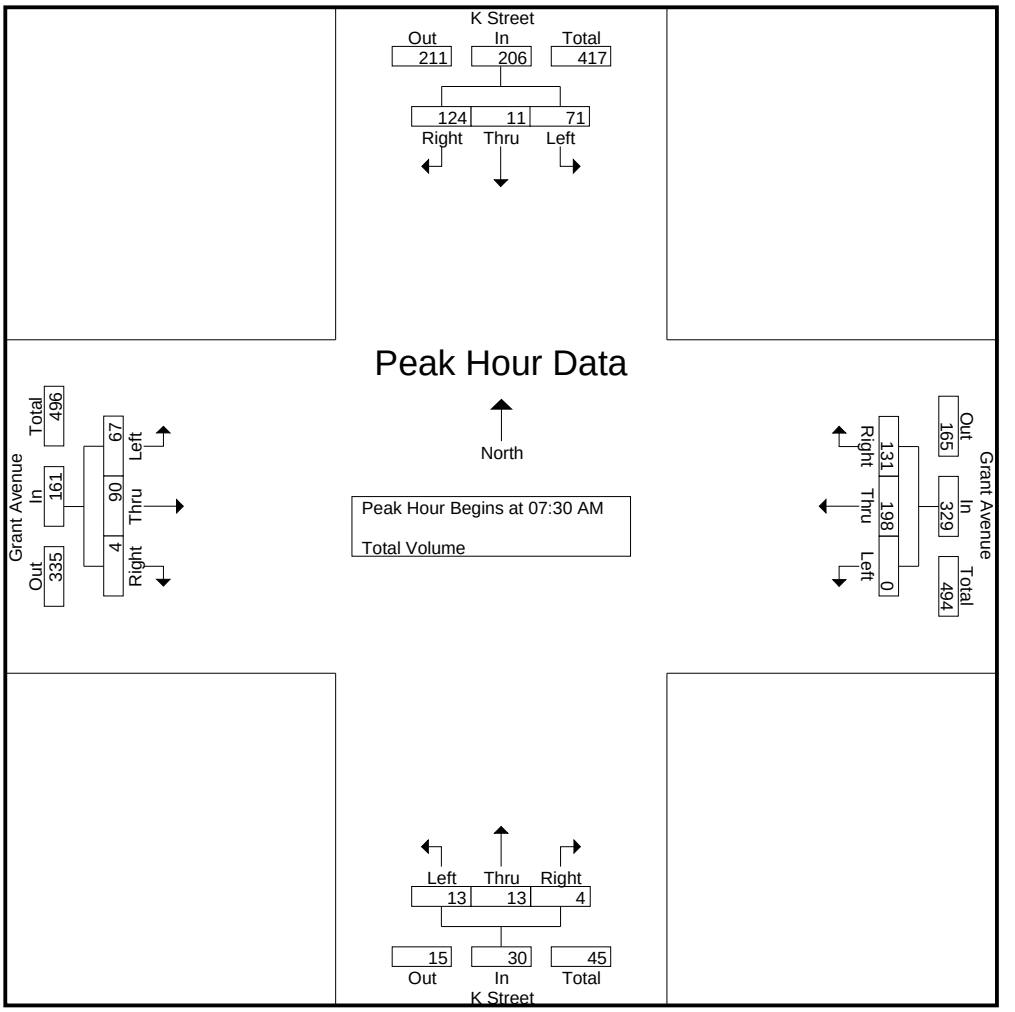

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM				07:15 AM				08:00 AM				07:45 AM			
+0 mins.	14	**7**	**45**	**66**	0	43	20	63	4	**5**	1	10	15	**29**	1	45
+15 mins.	20	0	27	47	0	56	35	91	2	3	0	5	21	13	0	34
+30 mins.	22	2	24	48	0	**79**	**53**	**132**	4	3	1	8	12	25	**3**	40
+45 mins.	**24**	1	24	49	0	32	26	58	**6**	1	**4**	**11**	**23**	27	3	**53**
Total Volume	80	10	120	210	0	210	134	344	16	12	6	34	71	94	7	172
% App. Total	38.1	4.8	57.1		0	61	39		47.1	35.3	17.6		41.3	54.7	4.1	
PHF	.833	.357	.667	.795	.000	.665	.632	.652	.667	.600	.375	.773	.772	.810	.583	.811

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: K Street
E/W: Grant Avenue
Weather: Sunny

File Name : SBKGRPM
Site Code : 08035999
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

	K Street Southbound				Grant Avenue Westbound				K Street Northbound				Grant Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	25	1	24	50	1	37	13	51	1	2	1	4	13	46	2	61	166
04:15 PM	31	4	17	52	3	40	19	62	4	2	0	6	7	39	3	49	169
04:30 PM	23	3	22	48	1	32	18	51	3	2	0	5	9	37	4	50	154
04:45 PM	26	0	17	43	0	34	20	54	2	1	0	3	14	53	3	70	170
Total	105	8	80	193	5	143	70	218	10	7	1	18	43	175	12	230	659
05:00 PM	44	1	19	64	0	35	18	53	1	2	0	3	9	47	0	56	176
05:15 PM	25	0	18	43	0	47	32	79	2	0	2	4	11	38	0	49	175
05:30 PM	19	2	31	52	2	58	33	93	2	1	0	3	16	41	0	57	205
05:45 PM	31	3	33	67	0	17	37	54	1	0	2	3	19	53	3	75	199
Total	119	6	101	226	2	157	120	279	6	3	4	13	55	179	3	237	755
Grand Total	224	14	181	419	7	300	190	497	16	10	5	31	98	354	15	467	1414
Apprch %	53.5	3.3	43.2		1.4	60.4	38.2		51.6	32.3	16.1		21	75.8	3.2		
Total %	15.8	1	12.8	29.6	0.5	21.2	13.4	35.1	1.1	0.7	0.4	2.2	6.9	25	1.1	33	

	K Street Southbound				Grant Avenue Westbound				K Street Northbound				Grant Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**44**	1	19	64	0	35	18	53	1	**2**	0	3	9	47	0	56	176
05:15 PM	25	0	18	43	0	47	32	79	**2**	0	**2**	**4**	11	38	0	49	175
05:30 PM	19	2	31	52	**2**	**58**	33	**93**	2	1	0	3	16	41	0	57	**205**
05:45 PM	31	**3**	**33**	**67**	0	17	**37**	54	1	0	2	3	**19**	**53**	**3**	**75**	199
Total Volume	119	6	101	226	2	157	120	279	6	3	4	13	55	179	3	237	755
% App. Total	52.7	2.7	44.7		0.7	56.3	43		46.2	23.1	30.8		23.2	75.5	1.3		
PHF	.676	.500	.765	.843	.250	.677	.811	.750	.750	.375	.500	.813	.724	.844	.250	.790	.921

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: K Street
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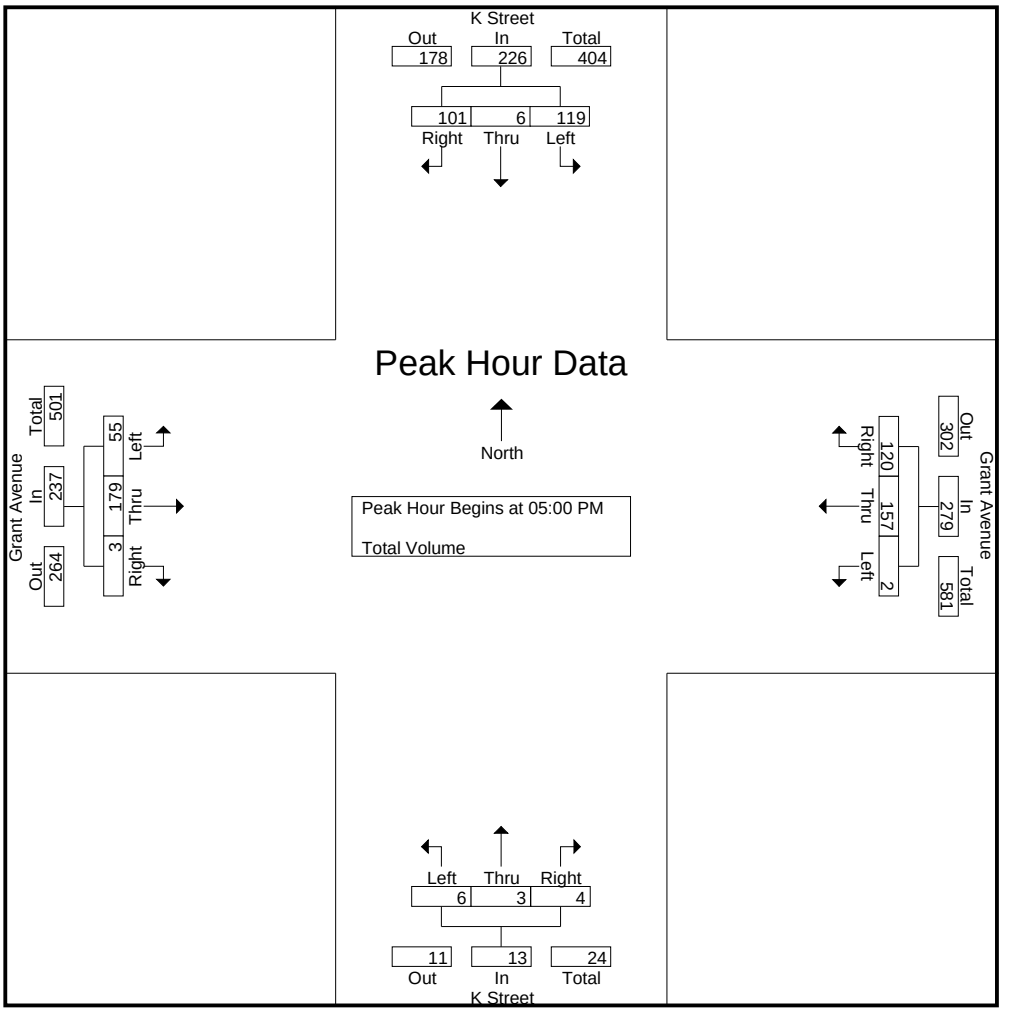

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				04:00 PM				05:00 PM			
+0 mins.	**44**	1	19	64	0	34	20	54	1	**2**	**1**	4	9	47	0	56
+15 mins.	25	0	18	43	0	35	18	53	**4**	2	0	**6**	11	38	0	49
+30 mins.	19	2	31	52	0	47	32	79	3	2	0	5	16	41	0	57
+45 mins.	31	**3**	**33**	**67**	**2**	**58**	**33**	**93**	2	1	0	3	**19**	**53**	**3**	**75**
Total Volume	119	6	101	226	2	174	103	279	10	7	1	18	55	179	3	237
% App. Total	52.7	2.7	44.7		0.7	62.4	36.9		55.6	38.9	5.6		23.2	75.5	1.3	
PHF	.676	.500	.765	.843	.250	.750	.780	.750	.625	.875	.250	.750	.724	.844	.250	.790

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: K Street
E/W: Mill Street
Weather: Sunny

File Name : SBKMIAM
Site Code : 08035941
Start Date : 10/8/2008
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Groups Printed- Total Volume

	K Street Southbound				Mill Street Westbound				K Street Northbound				Mill Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	12	5	12	29	4	44	24	72	3	11	1	15	11	63	9	83	199
07:15 AM	16	20	16	52	13	41	49	103	3	12	9	24	11	75	4	90	269
07:30 AM	19	29	10	58	34	65	21	120	4	15	8	27	11	92	8	111	316
07:45 AM	5	34	13	52	51	61	8	120	5	8	14	27	9	95	4	108	307
Total	52	88	51	191	102	211	102	415	15	46	32	93	42	325	25	392	1091
08:00 AM	6	17	9	32	18	59	5	82	5	10	13	28	7	79	6	92	234
08:15 AM	7	11	9	27	18	31	14	63	6	12	5	23	9	42	4	55	168
08:30 AM	11	10	13	34	11	51	15	77	5	12	8	25	15	60	4	79	215
08:45 AM	16	20	9	45	33	60	11	104	6	9	10	25	8	64	4	76	250
Total	40	58	40	138	80	201	45	326	22	43	36	101	39	245	18	302	867
Grand Total	92	146	91	329	182	412	147	741	37	89	68	194	81	570	43	694	1958
Apprch %	28	44.4	27.7		24.6	55.6	19.8		19.1	45.9	35.1		11.7	82.1	6.2		
Total %	4.7	7.5	4.6	16.8	9.3	21	7.5	37.8	1.9	4.5	3.5	9.9	4.1	29.1	2.2	35.4	

	K Street Southbound				Mill Street Westbound				K Street Northbound				Mill Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	16	20	**16**	52	13	41	**49**	103	3	12	9	24	**11**	75	4	90	269
07:30 AM	**19**	29	10	**58**	34	**65**	21	**120**	4	**15**	8	27	11	92	**8**	**111**	**316**
07:45 AM	5	**34**	13	52	**51**	61	8	120	**5**	8	**14**	27	9	**95**	4	108	307
08:00 AM	6	17	9	32	18	59	5	82	5	10	13	**28**	7	79	6	92	234
Total Volume	46	100	48	194	116	226	83	425	17	45	44	106	38	341	22	401	1126
% App. Total	23.7	51.5	24.7		27.3	53.2	19.5		16	42.5	41.5		9.5	85	5.5		
PHF	.605	.735	.750	.836	.569	.869	.423	.885	.850	.750	.786	.946	.864	.897	.688	.903	.891

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: K Street
E/W: Mill Street
Weather: Sunny

File Name : SBKMIAM
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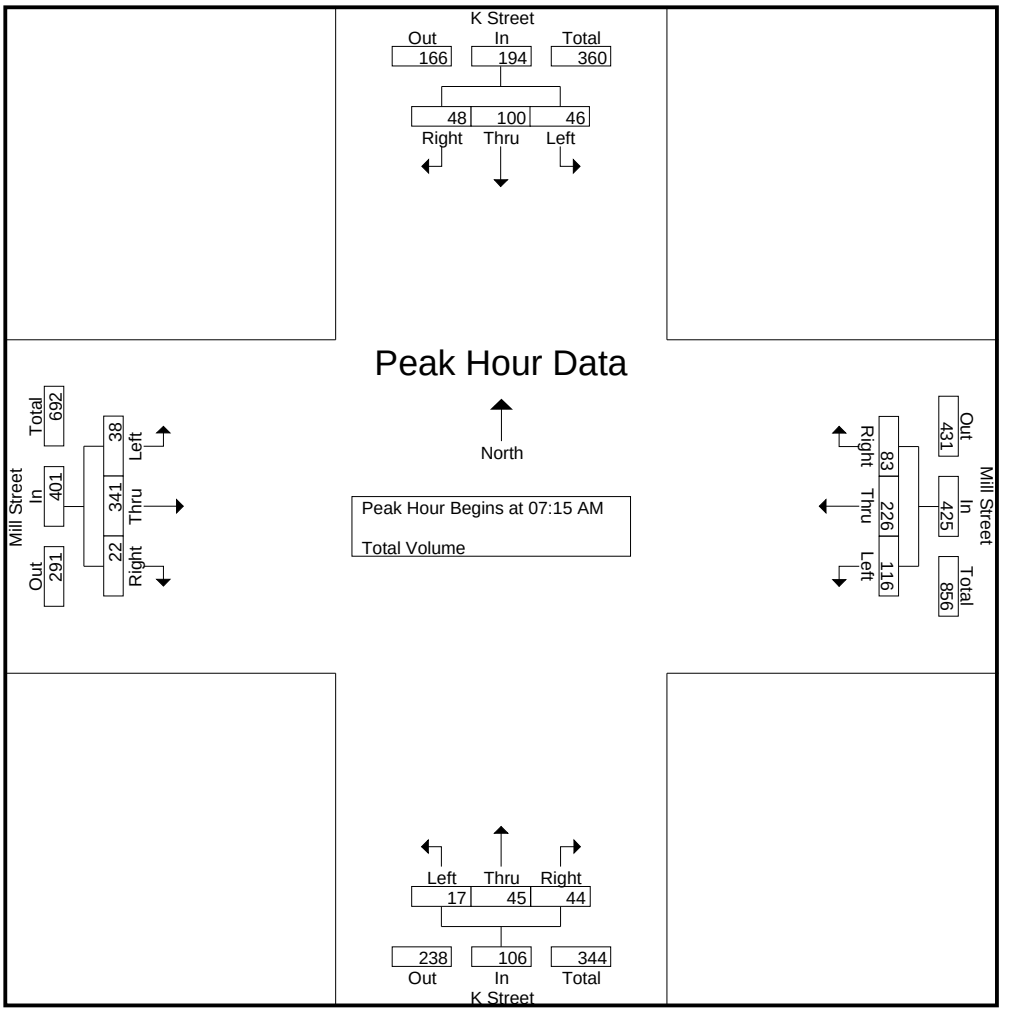


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	16	20	**16**	52	13	41	**49**	103	3	12	9	24	**11**	75	4	90
+15 mins.	**19**	29	10	**58**	34	**65**	21	**120**	4	**15**	8	27	11	92	**8**	**111**
+30 mins.	5	**34**	13	52	**51**	61	8	120	**5**	8	**14**	27	9	**95**	4	108
+45 mins.	6	17	9	32	18	59	5	82	5	10	13	**28**	7	79	6	92
Total Volume	46	100	48	194	116	226	83	425	17	45	44	106	38	341	22	401
% App. Total	23.7	51.5	24.7		27.3	53.2	19.5		16	42.5	41.5		9.5	85	5.5	
PHF	.605	.735	.750	.836	.569	.869	.423	.885	.850	.750	.786	.946	.864	.897	.688	.903

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: K Street
E/W: Mill Street
Weather: Sunny

File Name : SBKMIPM
Site Code : 08035941
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

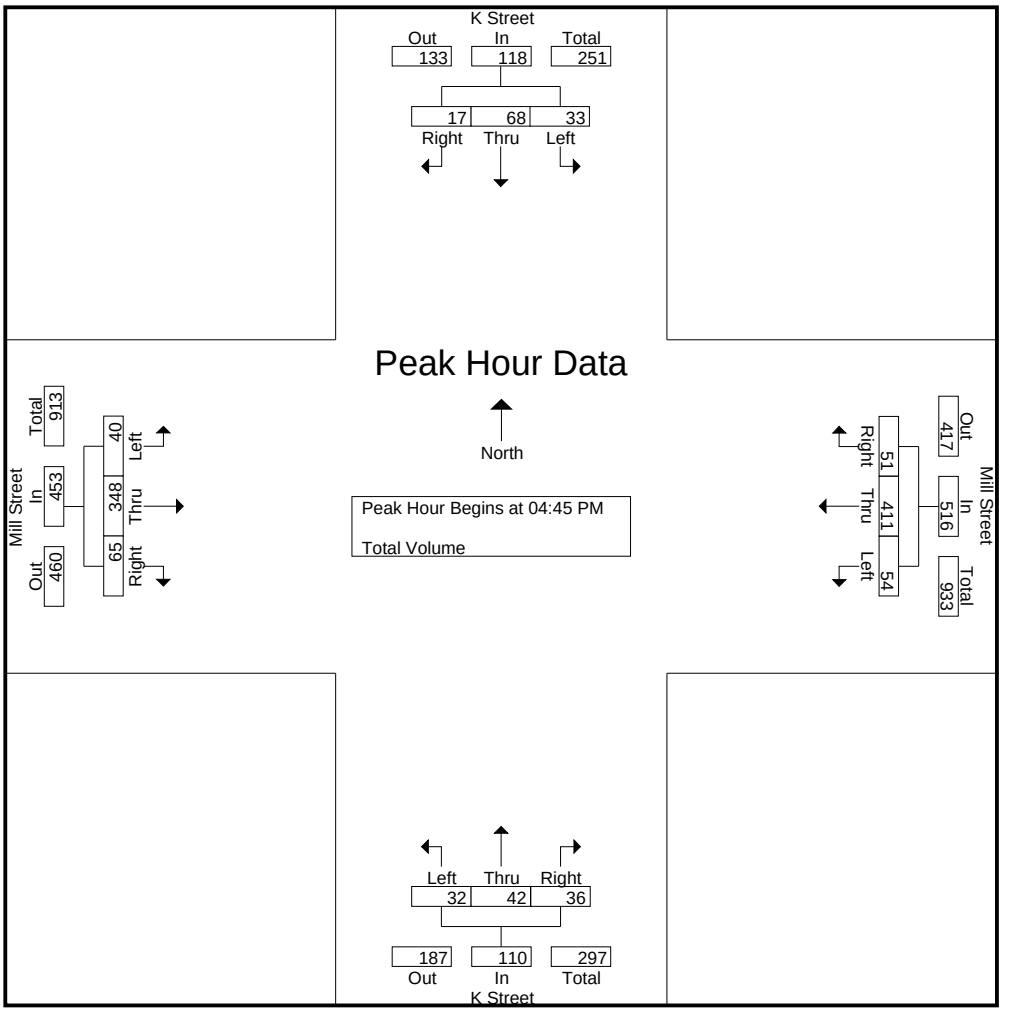
	K Street Southbound				Mill Street Westbound				K Street Northbound				Mill Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	9	12	16	37	5	81	11	97	12	11	8	31	2	86	26	114	279
04:15 PM	8	18	15	41	9	77	13	99	18	12	8	38	11	87	13	111	289
04:30 PM	7	19	5	31	8	68	18	94	12	15	7	34	11	79	15	105	264
04:45 PM	6	23	9	38	7	86	12	105	10	8	12	30	9	86	16	111	284
Total	30	72	45	147	29	312	54	395	52	46	35	133	33	338	70	441	1116
05:00 PM	5	12	3	20	18	92	13	123	9	10	10	29	7	79	18	104	276
05:15 PM	10	15	3	28	18	112	14	144	8	12	9	29	9	92	19	120	321
05:30 PM	12	18	2	32	11	121	12	144	5	12	5	22	15	91	12	118	316
05:45 PM	9	13	1	23	10	119	9	138	4	9	3	16	8	84	10	102	279
Total	36	58	9	103	57	444	48	549	26	43	27	96	39	346	59	444	1192
Grand Total	66	130	54	250	86	756	102	944	78	89	62	229	72	684	129	885	2308
Apprch %	26.4	52	21.6		9.1	80.1	10.8		34.1	38.9	27.1		8.1	77.3	14.6		
Total %	2.9	5.6	2.3	10.8	3.7	32.8	4.4	40.9	3.4	3.9	2.7	9.9	3.1	29.6	5.6	38.3	

	K Street Southbound				Mill Street Westbound				K Street Northbound				Mill Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	6	**23**	**9**	**38**	7	86	12	105	**10**	8	**12**	**30**	9	86	16	111	284
05:00 PM	5	12	3	20	**18**	92	13	123	9	10	10	29	7	79	18	104	276
05:15 PM	10	15	3	28	18	112	**14**	**144**	8	**12**	9	29	9	**92**	**19**	**120**	**321**
05:30 PM	**12**	18	2	32	11	**121**	12	144	5	12	5	22	**15**	91	12	118	316
Total Volume	33	68	17	118	54	411	51	516	32	42	36	110	40	348	65	453	1197
% App. Total	28	57.6	14.4		10.5	79.7	9.9		29.1	38.2	32.7		8.8	76.8	14.3		
PHF	.688	.739	.472	.776	.750	.849	.911	.896	.800	.875	.750	.917	.667	.946	.855	.944	.932

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: K Street
E/W: Mill Street
Weather: Sunny

File Name : SBKMIPM
Site Code : 08035941
Start Date : 10/8/2008
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:00 PM				04:45 PM			
+0 mins.	**9**	12	**16**	37	**18**	92	13	123	12	11	8	31	9	86	16	111
+15 mins.	8	18	15	**41**	18	112	**14**	**144**	**18**	12	8	**38**	7	79	18	104
+30 mins.	7	19	5	31	11	**121**	12	144	12	**15**	7	34	9	**92**	**19**	**120**
+45 mins.	6	**23**	9	38	10	119	9	138	10	8	**12**	30	**15**	91	12	118
Total Volume	30	72	45	147	57	444	48	549	52	46	35	133	40	348	65	453
% App. Total	20.4	49	30.6		10.4	80.9	8.7		39.1	34.6	26.3		8.8	76.8	14.3	
PHF	.833	.783	.703	.896	.792	.917	.857	.953	.722	.767	.729	.875	.667	.946	.855	.944

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Mount Vernon Avenue
E/W: Colton Avenue
Weather: Sunny

File Name : SBMVCOAM
Site Code : 08035997
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

	Mount Vernon Avenue Southbound				Colton Avenue Westbound				Mount Vernon Avenue Northbound				Colton Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	67	14	85	7	41	5	53	1	65	6	72	7	11	2	20	230
07:15 AM	6	90	20	116	12	33	8	53	1	100	13	114	19	24	3	46	329
07:30 AM	10	128	8	146	23	20	8	51	0	114	16	130	18	28	1	47	374
07:45 AM	10	125	13	148	19	23	8	50	1	125	10	136	3	14	2	19	353
Total	30	410	55	495	61	117	29	207	3	404	45	452	47	77	8	132	1286
08:00 AM	9	119	12	140	9	22	14	45	2	123	7	132	7	20	1	28	345
08:15 AM	10	109	13	132	11	15	13	39	0	82	10	92	6	7	0	13	276
08:30 AM	12	84	5	101	16	17	6	39	1	80	10	91	7	16	2	25	256
08:45 AM	5	80	6	91	13	19	7	39	3	89	10	102	8	12	0	20	252
Total	36	392	36	464	49	73	40	162	6	374	37	417	28	55	3	86	1129
Grand Total	66	802	91	959	110	190	69	369	9	778	82	869	75	132	11	218	2415
Apprch %	6.9	83.6	9.5		29.8	51.5	18.7		1	89.5	9.4		34.4	60.6	5		
Total %	2.7	33.2	3.8	39.7	4.6	7.9	2.9	15.3	0.4	32.2	3.4	36	3.1	5.5	0.5	9	

	Mount Vernon Avenue Southbound				Colton Avenue Westbound				Mount Vernon Avenue Northbound				Colton Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	6	90	**20**	116	12	**33**	8	**53**	1	100	13	114	**19**	24	**3**	46	329
07:30 AM	**10**	**128**	8	146	**23**	20	8	51	0	114	**16**	130	18	**28**	1	**47**	**374**
07:45 AM	10	125	13	**148**	19	23	8	50	1	**125**	10	**136**	3	14	2	19	353
08:00 AM	9	119	12	140	9	22	**14**	45	**2**	123	7	132	7	20	1	28	345
Total Volume	35	462	53	550	63	98	38	199	4	462	46	512	47	86	7	140	1401
% App. Total	6.4	84	9.6		31.7	49.2	19.1		0.8	90.2	9		33.6	61.4	5		
PHF	.875	.902	.663	.929	.685	.742	.679	.939	.500	.924	.719	.941	.618	.768	.583	.745	.936

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Mount Vernon Avenue
E/W: Colton Avenue
Weather: Sunny

File Name : SBMVCOAM
Site Code : 08035997
Start Date : 10/8/2008
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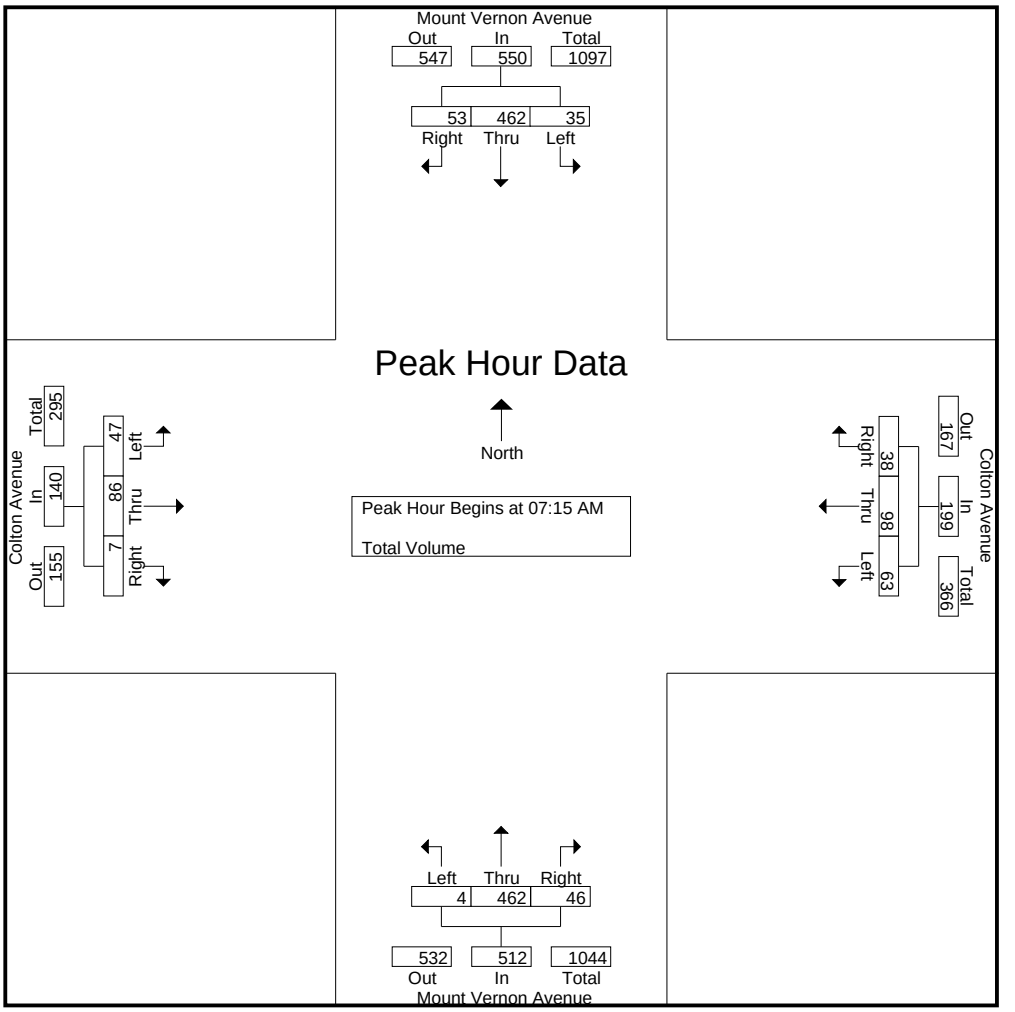

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM				07:00 AM				07:15 AM				07:15 AM			
+0 mins.	**10**	**128**	8	146	7	**41**	5	**53**	1	100	13	114	**19**	24	**3**	46
+15 mins.	10	125	**13**	**148**	12	33	**8**	53	0	114	**16**	130	18	**28**	1	**47**
+30 mins.	9	119	12	140	**23**	20	8	51	1	**125**	10	**136**	3	14	2	19
+45 mins.	10	109	13	132	19	23	8	50	**2**	123	7	132	7	20	1	28
Total Volume	39	481	46	566	61	117	29	207	4	462	46	512	47	86	7	140
% App. Total	6.9	85	8.1		29.5	56.5	14		0.8	90.2	9		33.6	61.4	5	
PHF	.975	.939	.885	.956	.663	.713	.906	.976	.500	.924	.719	.941	.618	.768	.583	.745

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Mount Vernon Avenue
E/W: Colton Avenue
Weather: Sunny

File Name : SBMVCOPM
Site Code : 08035997
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

	Mount Vernon Avenue Southbound				Colton Avenue Westbound				Mount Vernon Avenue Northbound				Colton Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	15	116	14	145	23	35	19	77	1	180	24	205	22	40	1	63	490
04:15 PM	16	134	17	167	24	28	18	70	3	169	19	191	20	32	3	55	483
04:30 PM	21	132	11	164	13	31	21	65	1	160	12	173	28	35	1	64	466
04:45 PM	23	124	18	165	20	39	28	87	4	166	17	187	18	42	1	61	500
Total	75	506	60	641	80	133	86	299	9	675	72	756	88	149	6	243	1939
05:00 PM	13	131	14	158	14	20	23	57	1	179	29	209	23	38	3	64	488
05:15 PM	11	136	6	153	16	30	22	68	2	196	18	216	16	36	2	54	491
05:30 PM	15	128	21	164	13	20	28	61	1	205	18	224	15	33	1	49	498
05:45 PM	18	143	17	178	14	37	26	77	3	180	12	195	21	25	2	48	498
Total	57	538	58	653	57	107	99	263	7	760	77	844	75	132	8	215	1975
Grand Total	132	1044	118	1294	137	240	185	562	16	1435	149	1600	163	281	14	458	3914
Apprch %	10.2	80.7	9.1		24.4	42.7	32.9		1	89.7	9.3		35.6	61.4	3.1		
Total %	3.4	26.7	3	33.1	3.5	6.1	4.7	14.4	0.4	36.7	3.8	40.9	4.2	7.2	0.4	11.7	

	Mount Vernon Avenue Southbound				Colton Avenue Westbound				Mount Vernon Avenue Northbound				Colton Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**23**	124	18	**165**	**20**	**39**	**28**	**87**	**4**	166	17	187	18	**42**	1	61	**500**
05:00 PM	13	131	14	158	14	20	23	57	1	179	**29**	209	**23**	38	**3**	**64**	488
05:15 PM	11	**136**	6	153	16	30	22	68	2	196	18	216	16	36	2	54	491
05:30 PM	15	128	**21**	164	13	20	28	61	1	**205**	18	**224**	15	33	1	49	498
Total Volume	62	519	59	640	63	109	101	273	8	746	82	836	72	149	7	228	1977
% App. Total	9.7	81.1	9.2		23.1	39.9	37		1	89.2	9.8		31.6	65.4	3.1		
PHF	.674	.954	.702	.970	.788	.699	.902	.784	.500	.910	.707	.933	.783	.887	.583	.891	.989

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Mount Vernon Avenue
E/W: Colton Avenue
Weather: Sunny

File Name : SBMVCOPM
Site Code : 08035997
Start Date : 10/8/2008
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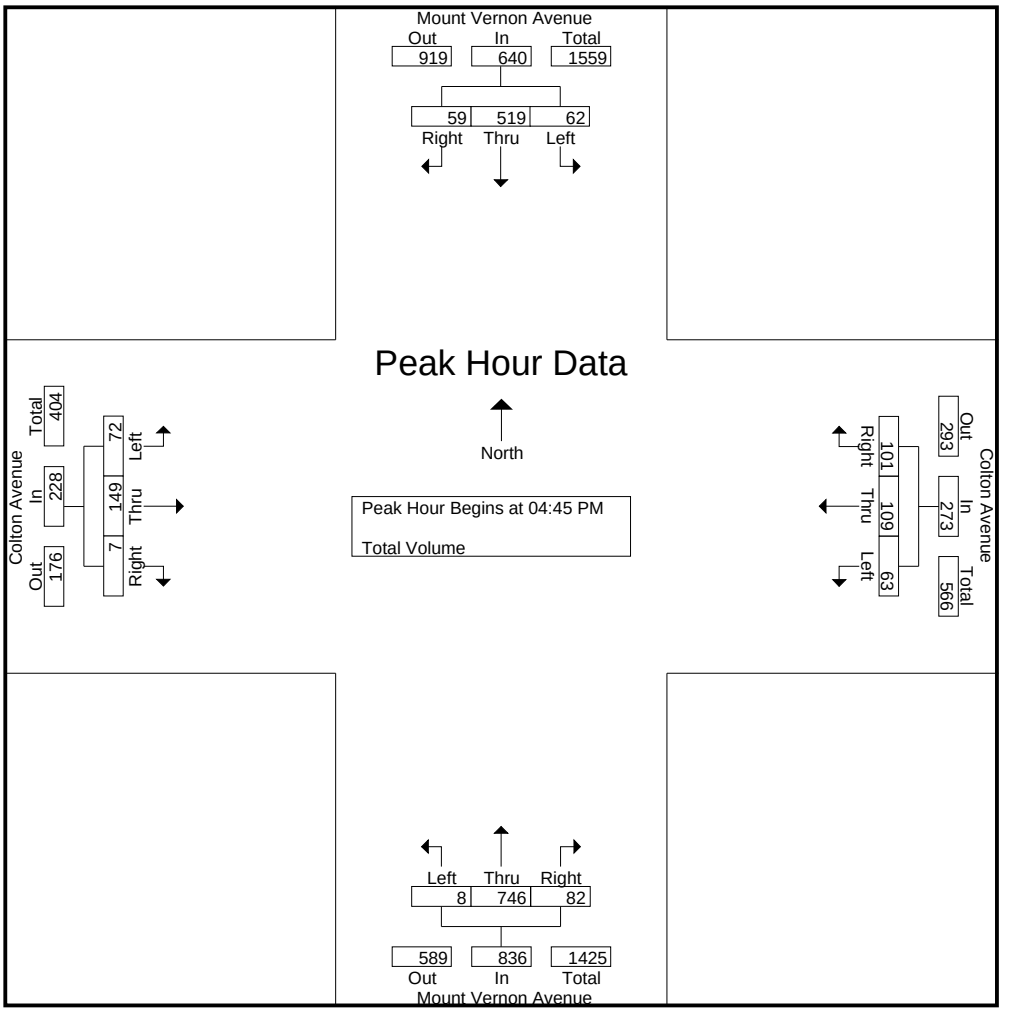

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:15 PM				04:00 PM				05:00 PM				04:15 PM			
+0 mins.	16	**134**	17	**167**	23	35	19	77	1	179	**29**	209	20	32	**3**	55
+15 mins.	21	132	11	164	**24**	28	18	70	2	196	18	216	**28**	35	1	**64**
+30 mins.	**23**	124	**18**	165	13	31	21	65	1	**205**	18	**224**	18	**42**	1	61
+45 mins.	13	131	14	158	20	**39**	**28**	**87**	**3**	180	12	195	23	38	3	64
Total Volume	73	521	60	654	80	133	86	299	7	760	77	844	89	147	8	244
% App. Total	11.2	79.7	9.2		26.8	44.5	28.8		0.8	90	9.1		36.5	60.2	3.3	
PHF	.793	.972	.833	.979	.833	.853	.768	.859	.583	.927	.664	.942	.795	.875	.667	.953

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Mount Vernon Avenue
E/W: Esperanza Street
Weather: Sunny

File Name : SBMVESAM
Site Code : 08035934
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

	Mount Vernon Avenue Southbound				Esperanza Avenue Westbound				Mount Vernon Avenue Northbound				Private Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	34	61	3	98	3	0	9	12	1	50	10	61	0	0	1	1	172
07:15 AM	35	91	8	134	1	0	7	8	1	66	18	85	2	0	2	4	231
07:30 AM	51	157	2	210	3	1	8	12	2	89	20	111	2	0	4	6	339
07:45 AM	90	181	5	276	9	1	18	28	5	83	15	103	1	0	3	4	411
Total	210	490	18	718	16	2	42	60	9	288	63	360	5	0	10	15	1153
08:00 AM	36	102	6	144	7	0	13	20	5	82	17	104	4	2	2	8	276
08:15 AM	26	86	2	114	3	0	8	11	3	67	10	80	4	0	5	9	214
08:30 AM	31	84	8	123	7	0	8	15	10	78	13	101	4	0	3	7	246
08:45 AM	29	109	3	141	10	3	28	41	4	96	13	113	8	0	5	13	308
Total	122	381	19	522	27	3	57	87	22	323	53	398	20	2	15	37	1044
Grand Total	332	871	37	1240	43	5	99	147	31	611	116	758	25	2	25	52	2197
Apprch %	26.8	70.2	3		29.3	3.4	67.3		4.1	80.6	15.3		48.1	3.8	48.1		
Total %	15.1	39.6	1.7	56.4	2	0.2	4.5	6.7	1.4	27.8	5.3	34.5	1.1	0.1	1.1	2.4	

	Mount Vernon Avenue Southbound				Esperanza Avenue Westbound				Mount Vernon Avenue Northbound				Private Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	35	91	**8**	134	1	0	7	8	1	66	18	85	2	0	2	4	231
07:30 AM	51	157	2	210	3	**1**	8	12	2	**89**	**20**	**111**	2	0	**4**	6	339
07:45 AM	**90**	**181**	5	**276**	**9**	1	**18**	**28**	**5**	83	15	103	1	0	3	4	**411**
08:00 AM	36	102	6	144	7	0	13	20	5	82	17	104	**4**	**2**	2	**8**	276
Total Volume	212	531	21	764	20	2	46	68	13	320	70	403	9	2	11	22	1257
% App. Total	27.7	69.5	2.7		29.4	2.9	67.6		3.2	79.4	17.4		40.9	9.1	50		
PHF	.589	.733	.656	.692	.556	.500	.639	.607	.650	.899	.875	.908	.563	.250	.688	.688	.765

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Mount Vernon Avenue
E/W: Esperanza Street
Weather: Sunny

File Name : SBMVESAM
Site Code : 08035934
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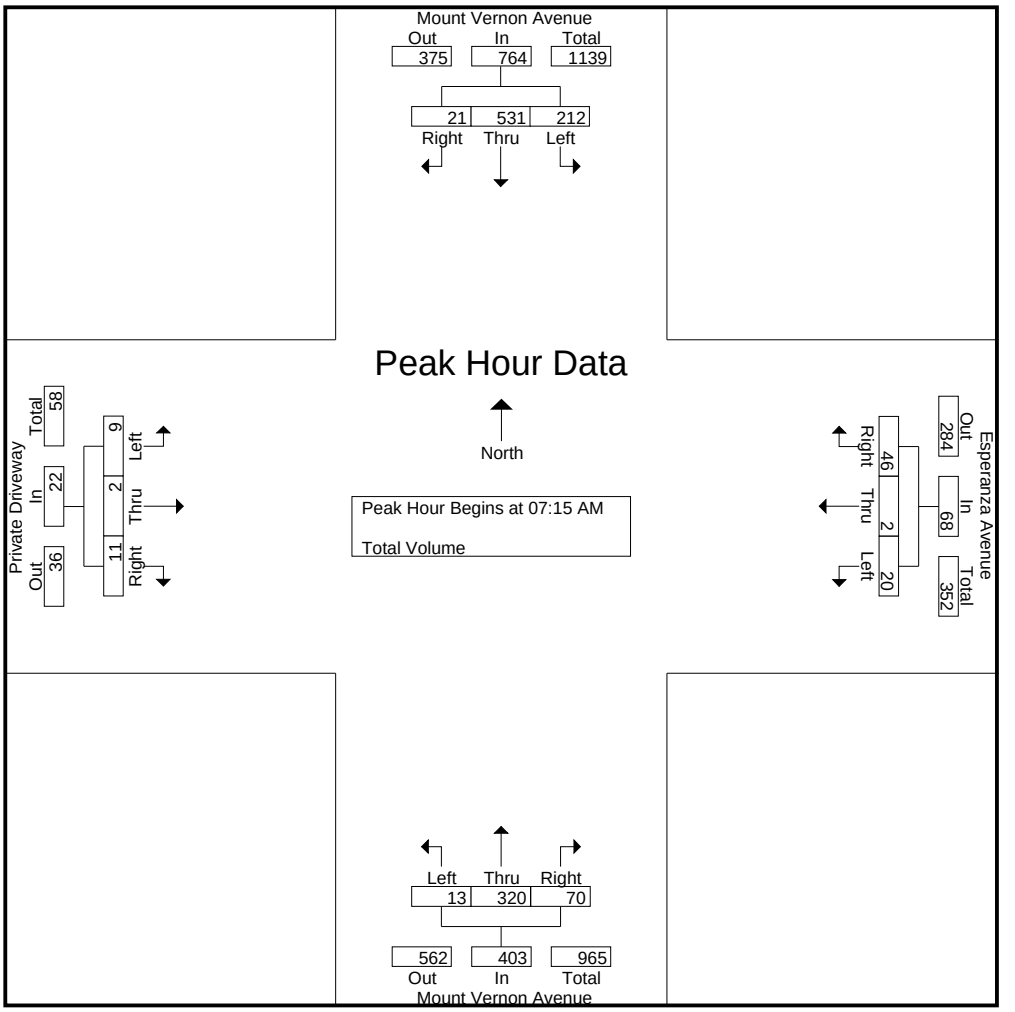

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM				08:00 AM				07:15 AM				08:00 AM			
+0 mins.	35	91	**8**	134	7	0	13	20	1	66	18	85	4	**2**	2	8
+15 mins.	51	157	2	210	3	0	8	11	2	**89**	**20**	**111**	4	0	**5**	9
+30 mins.	**90**	**181**	5	**276**	7	0	8	15	**5**	83	15	103	4	0	3	7
+45 mins.	36	102	6	144	**10**	**3**	**28**	**41**	5	82	17	104	**8**	0	5	**13**
Total Volume	212	531	21	764	27	3	57	87	13	320	70	403	20	2	15	37
% App. Total	27.7	69.5	2.7		31	3.4	65.5		3.2	79.4	17.4		54.1	5.4	40.5	
PHF	.589	.733	.656	.692	.675	.250	.509	.530	.650	.899	.875	.908	.625	.250	.750	.712

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Mount Vernon Avenue
E/W: Esperanza Street
Weather: Sunny

File Name : SBMVESPM
Site Code : 08035934
Start Date : 10/8/2008
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Groups Printed- Total Volume

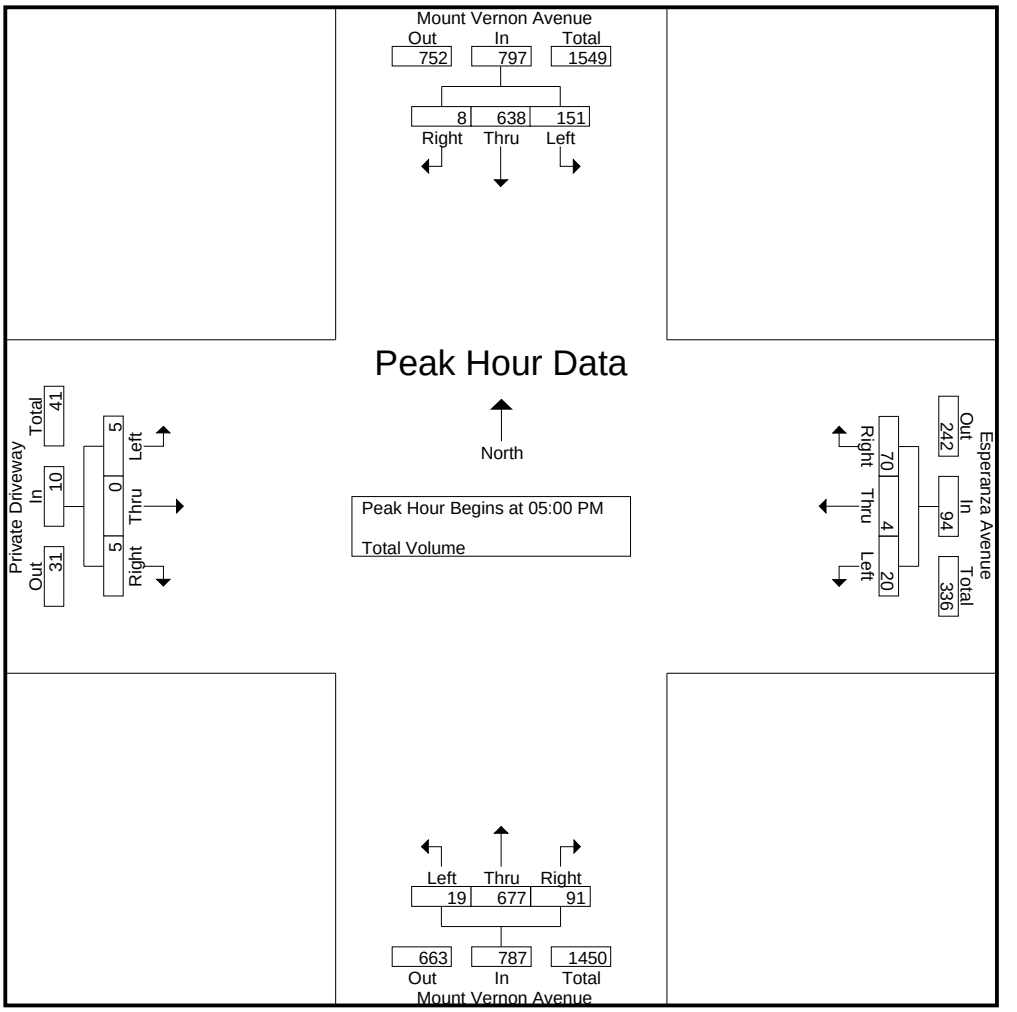
	Mount Vernon Avenue Southbound				Esperanza Avenue Westbound				Mount Vernon Avenue Northbound				Private Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	26	133	6	165	14	0	20	34	5	178	17	200	3	1	3	7	406
04:15 PM	28	131	2	161	11	1	19	31	5	155	13	173	3	0	8	11	376
04:30 PM	14	134	3	151	11	1	9	21	2	153	14	169	2	2	2	6	347
04:45 PM	24	112	3	139	5	0	10	15	3	141	17	161	3	0	2	5	320
Total	92	510	14	616	41	2	58	101	15	627	61	703	11	3	15	29	1449
05:00 PM	19	147	3	169	11	0	16	27	3	210	22	235	2	0	3	5	436
05:15 PM	37	151	3	191	4	2	19	25	10	154	17	181	0	0	1	1	398
05:30 PM	34	165	0	199	4	1	13	18	4	142	27	173	1	0	0	1	391
05:45 PM	61	175	2	238	1	1	22	24	2	171	25	198	2	0	1	3	463
Total	151	638	8	797	20	4	70	94	19	677	91	787	5	0	5	10	1688
Grand Total	243	1148	22	1413	61	6	128	195	34	1304	152	1490	16	3	20	39	3137
Apprch %	17.2	81.2	1.6		31.3	3.1	65.6		2.3	87.5	10.2		41	7.7	51.3		
Total %	7.7	36.6	0.7	45	1.9	0.2	4.1	6.2	1.1	41.6	4.8	47.5	0.5	0.1	0.6	1.2	

	Mount Vernon Avenue Southbound				Esperanza Avenue Westbound				Mount Vernon Avenue Northbound				Private Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	19	147	**3**	169	**11**	0	16	**27**	3	**210**	22	**235**	**2**	0	**3**	**5**	436
05:15 PM	37	151	3	191	4	**2**	19	25	**10**	154	17	181	0	0	1	1	398
05:30 PM	34	165	0	199	4	1	13	18	4	142	**27**	173	1	0	0	1	391
05:45 PM	**61**	**175**	2	**238**	1	1	**22**	24	2	171	25	198	2	0	1	3	**463**
Total Volume	151	638	8	797	20	4	70	94	19	677	91	787	5	0	5	10	1688
% App. Total	18.9	80.1	1		21.3	4.3	74.5		2.4	86	11.6		50	0	50		
PHF	.619	.911	.667	.837	.455	.500	.795	.870	.475	.806	.843	.837	.625	.000	.417	.500	.911

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Mount Vernon Avenue
E/W: Esperanza Street
Weather: Sunny

File Name : SBMVESPM
Site Code : 08035934
Start Date : 10/8/2008
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				05:00 PM				04:00 PM			
+0 mins.	19	147	**3**	169	**14**	0	**20**	**34**	3	**210**	22	**235**	**3**	1	3	7
+15 mins.	37	151	3	191	11	**1**	19	31	**10**	154	17	181	3	0	**8**	**11**
+30 mins.	34	165	0	199	11	1	9	21	4	142	**27**	173	2	**2**	2	6
+45 mins.	**61**	**175**	2	**238**	5	0	10	15	2	171	25	198	3	0	2	5
Total Volume	151	638	8	797	41	2	58	101	19	677	91	787	11	3	15	29
% App. Total	18.9	80.1	1		40.6	2	57.4		2.4	86	11.6		37.9	10.3	51.7	
PHF	.619	.911	.667	.837	.732	.500	.725	.743	.475	.806	.843	.837	.917	.375	.469	.659

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Mount Vernon Avenue
E/W: Mill Street
Weather: Sunny

File Name : SBMVMIAM
Site Code : 08035922
Start Date : 10/8/2008
Page No : 1

Groups Printed- Total Volume

	Mount Vernon Avenue Southbound				Mill Street Westbound				Mount Vernon Avenue Northbound				Mill Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	5	70	16	91	14	34	5	53	17	35	9	61	23	49	41	113	318
07:15 AM	12	53	18	83	16	35	6	57	10	46	9	65	18	68	35	121	326
07:30 AM	13	111	28	152	13	28	12	53	17	49	14	80	28	63	31	122	407
07:45 AM	22	171	20	213	28	30	11	69	32	68	10	110	28	97	76	201	593
Total	52	405	82	539	71	127	34	232	76	198	42	316	97	277	183	557	1644
08:00 AM	15	145	20	180	17	32	9	58	14	65	12	91	23	53	54	130	459
08:15 AM	9	86	16	111	12	32	8	52	17	55	12	84	19	56	22	97	344
08:30 AM	4	70	15	89	15	36	7	58	13	56	8	77	29	37	19	85	309
08:45 AM	6	81	21	108	16	29	11	56	23	72	13	108	18	58	40	116	388
Total	34	382	72	488	60	129	35	224	67	248	45	360	89	204	135	428	1500
Grand Total	86	787	154	1027	131	256	69	456	143	446	87	676	186	481	318	985	3144
Apprch %	8.4	76.6	15		28.7	56.1	15.1		21.2	66	12.9		18.9	48.8	32.3		
Total %	2.7	25	4.9	32.7	4.2	8.1	2.2	14.5	4.5	14.2	2.8	21.5	5.9	15.3	10.1	31.3	

	Mount Vernon Avenue Southbound				Mill Street Westbound				Mount Vernon Avenue Northbound				Mill Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	13	111	**28**	152	13	28	**12**	53	17	49	**14**	80	**28**	63	31	122	407
07:45 AM	**22**	**171**	20	**213**	**28**	30	11	**69**	**32**	**68**	10	**110**	28	**97**	**76**	**201**	**593**
08:00 AM	15	145	20	180	17	**32**	9	58	14	65	12	91	23	53	54	130	459
08:15 AM	9	86	16	111	12	32	8	52	17	55	12	84	19	56	22	97	344
Total Volume	59	513	84	656	70	122	40	232	80	237	48	365	98	269	183	550	1803
% App. Total	9	78.2	12.8		30.2	52.6	17.2		21.9	64.9	13.2		17.8	48.9	33.3		
PHF	.670	.750	.750	.770	.625	.953	.833	.841	.625	.871	.857	.830	.875	.693	.602	.684	.760

Counts Unlimited Inc.
25286 Jaclyn Avenue
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City of San Bernardino
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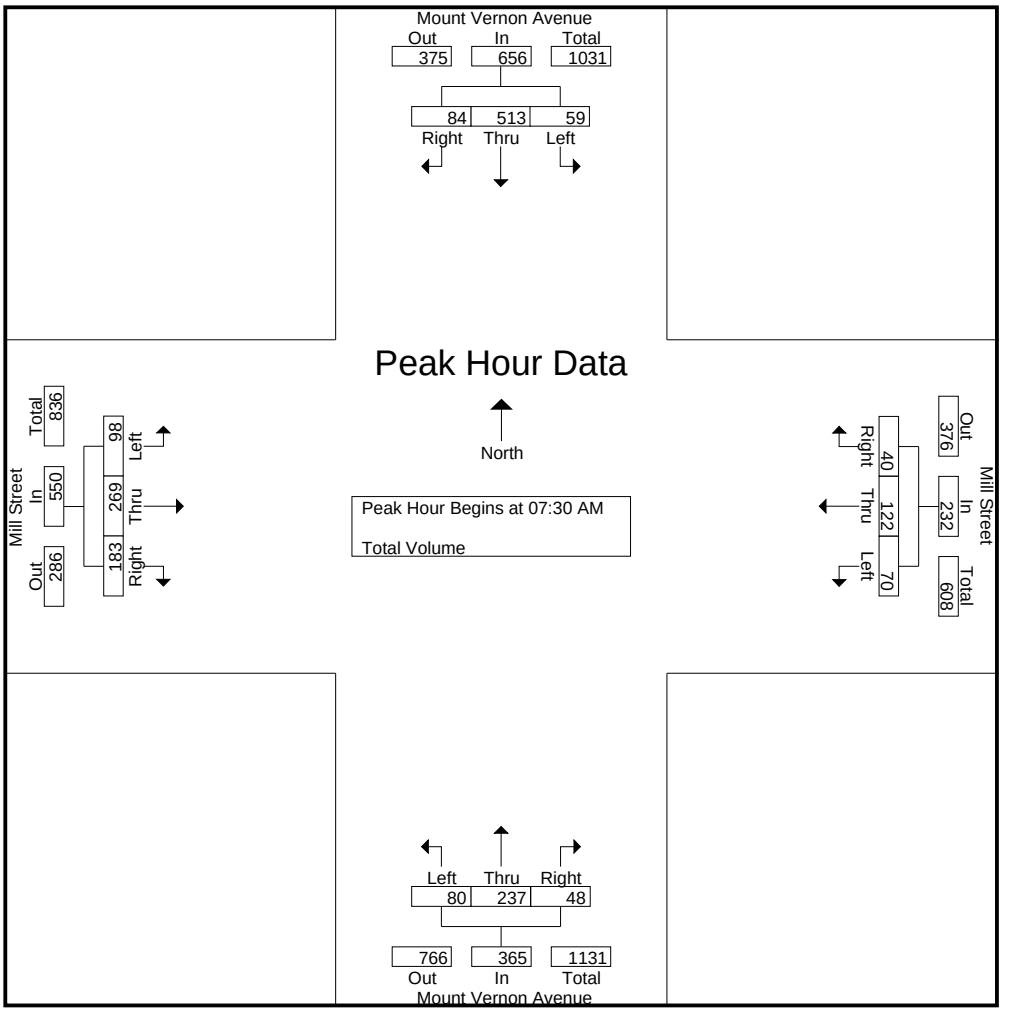
E/W: Mill Street
Weather: Sunny

File Name : SBMVMIAM
Site Code : 08035922
Start Date : 10/8/2008



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:30 AM				07:15 AM			
+0 mins.	13	111	**28**	152	16	**35**	6	57	17	49	**14**	80	18	68	35	121
+15 mins.	**22**	**171**	20	**213**	13	28	**12**	53	**32**	**68**	10	**110**	**28**	63	31	122
+30 mins.	15	145	20	180	**28**	30	11	**69**	14	65	12	91	28	**97**	**76**	**201**
+45 mins.	9	86	16	111	17	32	9	58	17	55	12	84	23	53	54	130
Total Volume	59	513	84	656	74	125	38	237	80	237	48	365	97	281	196	574
% App. Total	9	78.2	12.8		31.2	52.7	16		21.9	64.9	13.2		16.9	49	34.1	
PHF	.670	.750	.750	.770	.661	.893	.792	.859	.625	.871	.857	.830	.866	.724	.645	.714

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Mount Vernon Avenue
E/W: Mill Street
Weather: Sunny

File Name : SBMVMIPM
Site Code : 08035922
Start Date : 10/8/2008

Groups Printed- Total Volume

	Mount Vernon Avenue Southbound				Mill Street Westbound				Mount Vernon Avenue Northbound				Mill Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	15	111	29	155	29	71	16	116	23	143	18	184	38	88	38	164	619
04:15 PM	11	100	20	131	27	77	9	113	37	124	31	192	34	70	37	141	577
04:30 PM	20	114	25	159	18	54	20	92	43	129	13	185	27	78	19	124	560
04:45 PM	8	115	36	159	25	49	27	101	26	118	16	160	30	73	39	142	562
Total	54	440	110	604	99	251	72	422	129	514	78	721	129	309	133	571	2318
05:00 PM	12	112	35	159	17	76	18	111	41	135	11	187	35	68	30	133	590
05:15 PM	12	131	35	178	29	91	17	137	43	127	15	185	39	74	28	141	641
05:30 PM	16	130	41	187	37	63	15	115	38	135	22	195	47	75	40	162	659
05:45 PM	11	147	22	180	43	64	14	121	34	121	27	182	29	74	64	167	650
Total	51	520	133	704	126	294	64	484	156	518	75	749	150	291	162	603	2540
Grand Total	105	960	243	1308	225	545	136	906	285	1032	153	1470	279	600	295	1174	4858
Apprch %	8	73.4	18.6		24.8	60.2	15		19.4	70.2	10.4		23.8	51.1	25.1		
Total %	2.2	19.8	5	26.9	4.6	11.2	2.8	18.6	5.9	21.2	3.1	30.3	5.7	12.4	6.1	24.2	

	Mount Vernon Avenue Southbound				Mill Street Westbound				Mount Vernon Avenue Northbound				Mill Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	12	112	35	159	17	76	**18**	111	41	**135**	11	187	35	68	30	133	590
05:15 PM	12	131	35	178	29	**91**	17	**137**	**43**	127	15	185	39	74	28	141	641
05:30 PM	**16**	130	**41**	**187**	37	63	15	115	38	135	22	**195**	**47**	**75**	40	162	**659**
05:45 PM	11	**147**	22	180	**43**	64	14	121	34	121	**27**	182	29	74	**64**	**167**	650
Total Volume	51	520	133	704	126	294	64	484	156	518	75	749	150	291	162	603	2540
% App. Total	7.2	73.9	18.9		26	60.7	13.2		20.8	69.2	10		24.9	48.3	26.9		
PHF	.797	.884	.811	.941	.733	.808	.889	.883	.907	.959	.694	.960	.798	.970	.633	.903	.964

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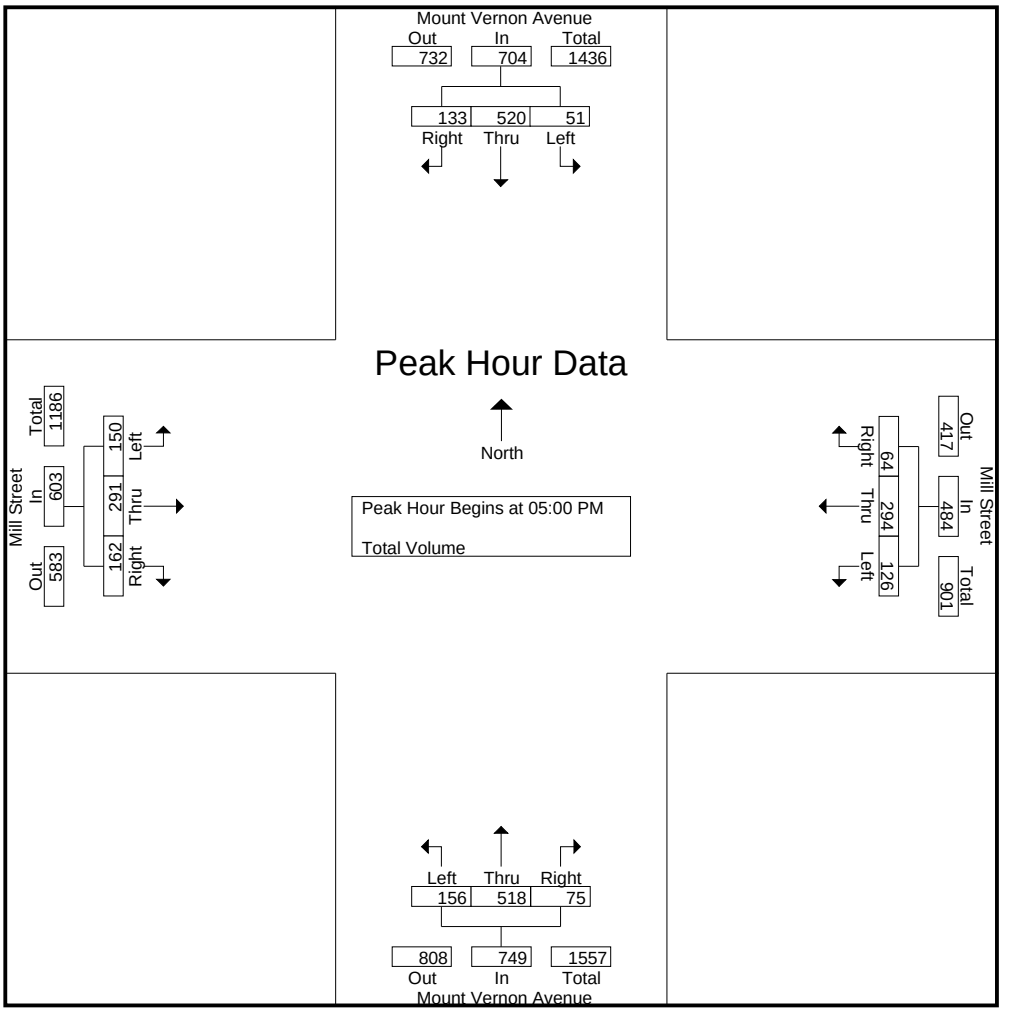
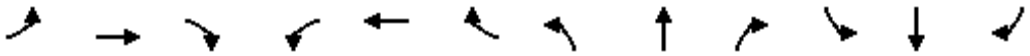


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

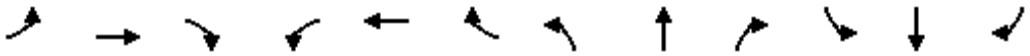
	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	12	112	35	159	17	76	**18**	111	41	**135**	11	187	35	68	30	133
+15 mins.	12	131	35	178	29	**91**	17	**137**	**43**	127	15	185	39	74	28	141
+30 mins.	**16**	130	**41**	**187**	37	63	15	115	38	135	22	**195**	**47**	**75**	40	162
+45 mins.	11	**147**	22	180	**43**	64	14	121	34	121	**27**	182	29	74	**64**	**167**
Total Volume	51	520	133	704	126	294	64	484	156	518	75	749	150	291	162	603
% App. Total	7.2	73.9	18.9		26	60.7	13.2		20.8	69.2	10		24.9	48.3	26.9	
PHF	.797	.884	.811	.941	.733	.808	.889	.883	.907	.959	.694	.960	.798	.970	.633	.903

APPENDIX B- EXISTING LOS RESULTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3324		1770	3408		1770	3450		1770	3464	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3324		1770	3408		1770	3450		1770	3464	
Volume (vph)	98	269	183	70	122	40	80	237	48	59	513	84
Peak-hour factor, PHF	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Adj. Flow (vph)	129	354	241	92	161	53	105	312	63	78	675	111
RTOR Reduction (vph)	0	177	0	0	44	0	0	17	0	0	13	0
Lane Group Flow (vph)	129	418	0	92	170	0	105	358	0	78	773	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.8	14.3		7.4	13.9		8.4	33.9		7.4	32.9	
Effective Green, g (s)	6.8	13.3		6.4	12.9		7.4	32.9		6.4	31.9	
Actuated g/C Ratio	0.09	0.18		0.09	0.17		0.10	0.44		0.09	0.43	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	160	589		151	586		175	1513		151	1473	
v/s Ratio Prot	c0.07	c0.13		0.05	0.05		c0.06	0.10		0.04	c0.22	
v/s Ratio Perm												
v/c Ratio	0.81	0.71		0.61	0.29		0.60	0.24		0.52	0.52	
Uniform Delay, d1	33.5	29.0		33.1	27.1		32.4	13.2		32.8	15.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.8	3.9		6.8	0.3		5.5	0.4		3.0	1.3	
Delay (s)	58.2	33.0		39.9	27.3		37.8	13.6		35.8	17.3	
Level of Service	E	C		D	C		D	B		D	B	
Approach Delay (s)		37.5			31.1			18.9			19.0	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.8%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.99		1.00	0.96			0.94			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3507		1770	3397			3294			3368	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.87	
Satd. Flow (perm)	1770	3507		1770	3397			2992			2951	
Volume (vph)	38	341	22	116	226	83	17	45	44	46	100	48
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)	43	383	25	130	254	93	19	51	49	52	112	54
RTOR Reduction (vph)	0	5	0	0	37	0	0	34	0	0	38	0
Lane Group Flow (vph)	43	403	0	130	310	0	0	85	0	0	180	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	5.1	35.4		9.6	39.9			25.0			25.0	
Effective Green, g (s)	5.1	35.4		9.6	39.9			25.0			25.0	
Actuated g/C Ratio	0.06	0.43		0.12	0.49			0.30			0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	110	1514		207	1653			912			900	
v/s Ratio Prot	0.02	c0.11		c0.07	0.09							
v/s Ratio Perm								0.03			c0.06	
v/c Ratio	0.39	0.27		0.63	0.19			0.09			0.20	
Uniform Delay, d1	37.0	15.0		34.5	11.9			20.4			21.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.3	0.4		5.8	0.3			0.2			0.5	
Delay (s)	39.2	15.4		40.3	12.1			20.6			21.6	
Level of Service	D	B		D	B			C			C	
Approach Delay (s)		17.7			19.8			20.6			21.6	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	20	46	320	70	212	531
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	26	60	416	91	275	690
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.91					
vC, conflicting volume	1356	253			506	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1294	253			506	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	92			74	
cM capacity (veh/h)	104	746			1054	

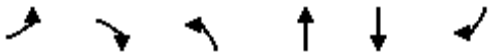
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	86	277	229	505	460
Volume Left	26	0	0	275	0
Volume Right	60	0	91	0	0
cSH	260	1700	1700	1054	1700
Volume to Capacity	0.33	0.16	0.13	0.26	0.27
Queue Length 95th (ft)	35	0	0	26	0
Control Delay (s)	25.5	0.0	0.0	6.6	0.0
Lane LOS	D			A	
Approach Delay (s)	25.5	0.0		3.4	
Approach LOS	D				

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	17	103	30	26	56	14	19	7	18	31	31	22
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	27	161	47	41	88	22	30	11	28	48	48	34
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	109			208			476	428	184	451	441	98
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	109			208			476	428	184	451	441	98
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			93	98	97	90	90	96
cM capacity (veh/h)	1481			1363			429	495	858	476	487	957

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	234	150	69	131
Volume Left	27	41	30	48
Volume Right	47	22	28	34
cSH	1481	1363	554	553
Volume to Capacity	0.02	0.03	0.12	0.24
Queue Length 95th (ft)	1	2	11	23
Control Delay (s)	1.0	2.3	12.4	13.5
Lane LOS	A	A	B	B
Approach Delay (s)	1.0	2.3	12.4	13.5
Approach LOS			B	B

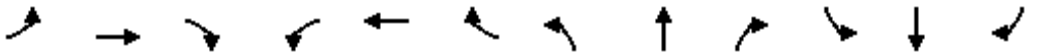
Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	24	68	44	63	158	52
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	33	93	60	86	216	71

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	126	147	288
Volume Left (vph)	33	60	0
Volume Right (vph)	93	0	71
Hadj (s)	-0.36	0.12	-0.11
Departure Headway (s)	4.5	4.6	4.3
Degree Utilization, x	0.16	0.19	0.34
Capacity (veh/h)	729	744	814
Control Delay (s)	8.4	8.7	9.4
Approach Delay (s)	8.4	8.7	9.4
Approach LOS	A	A	A

Intersection Summary			
Delay	9.0		
HCM Level of Service	A		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		



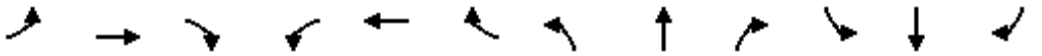
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	0.99		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3232		1770	1863	1583	1770	3399		1770	3436	
Flt Permitted	0.72	0.88		0.58	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1218	2888		1080	1863	1583	1770	3399		1770	3436	
Volume (vph)	90	87	39	50	47	14	17	276	99	109	305	74
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	112	109	49	62	59	18	21	345	124	136	381	92
RTOR Reduction (vph)	0	35	0	0	0	16	0	28	0	0	12	0
Lane Group Flow (vph)	72	163	0	62	59	2	21	441	0	136	461	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	11.7	11.7		11.7	11.7	11.7	2.5	52.2		10.4	60.1	
Effective Green, g (s)	11.7	11.7		11.7	11.7	11.7	2.5	52.2		10.4	60.1	
Actuated g/C Ratio	0.14	0.14		0.14	0.14	0.14	0.03	0.60		0.12	0.70	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	165	392		146	253	215	51	2056		213	2393	
v/s Ratio Prot					0.03		0.01	c0.13		c0.08	0.13	
v/s Ratio Perm	c0.06	0.06		0.06		0.00						
v/c Ratio	0.44	0.41		0.42	0.23	0.01	0.41	0.21		0.64	0.19	
Uniform Delay, d1	34.3	34.2		34.2	33.3	32.3	41.2	7.7		36.2	4.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.7		2.0	0.5	0.0	2.0	0.2		6.2	0.0	
Delay (s)	36.1	34.9		36.2	33.8	32.3	43.1	8.0		42.3	4.6	
Level of Service	D	C		D	C	C	D	A		D	A	
Approach Delay (s)		35.2			34.7			9.5			13.0	
Approach LOS		D			C			A			B	

Intersection Summary			
HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	86.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	171	4	1	316	2	5
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	206	5	1	381	2	6

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	137	73	128	254	8
Volume Left (vph)	0	0	1	0	2
Volume Right (vph)	0	5	0	0	6
Hadj (s)	0.03	-0.01	0.04	0.03	-0.34
Departure Headway (s)	4.8	4.8	4.7	4.7	4.8
Degree Utilization, x	0.18	0.10	0.17	0.33	0.01
Capacity (veh/h)	733	733	746	754	682
Control Delay (s)	7.7	7.1	7.5	8.8	7.8
Approach Delay (s)	7.5		8.4		7.8
Approach LOS	A		A		A

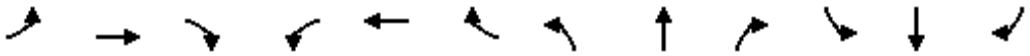
Intersection Summary			
Delay	8.1		
HCM Level of Service	A		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	67	90	4	0	198	131	13	13	4	71	11	124
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	92	123	5	0	271	179	18	18	5	97	15	170

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	153	67	451	41	112	170
Volume Left (vph)	92	0	0	18	97	0
Volume Right (vph)	0	5	179	5	0	170
Hadj (s)	0.33	-0.02	-0.20	0.04	0.47	-0.67
Departure Headway (s)	6.4	6.1	5.6	7.0	6.9	5.8
Degree Utilization, x	0.27	0.11	0.70	0.08	0.22	0.27
Capacity (veh/h)	526	556	627	440	483	576
Control Delay (s)	10.7	8.7	20.7	10.6	10.6	9.7
Approach Delay (s)	10.0		20.7	10.6	10.1	
Approach LOS	B		C	B	B	

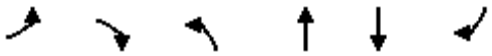
Intersection Summary				
Delay	14.9			
HCM Level of Service	B			
Intersection Capacity Utilization	41.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	21	125	3	1	369	32	2	4	2	29	5	18
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	28	164	4	1	486	42	3	5	3	38	7	24

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	196	529	11	68
Volume Left (vph)	28	1	3	38
Volume Right (vph)	4	42	3	24
Hadj (s)	0.05	-0.01	-0.07	-0.06
Departure Headway (s)	4.7	4.3	5.6	5.5
Degree Utilization, x	0.26	0.64	0.02	0.10
Capacity (veh/h)	732	812	545	578
Control Delay (s)	9.4	14.7	8.7	9.1
Approach Delay (s)	9.4	14.7	8.7	9.1
Approach LOS	A	B	A	A

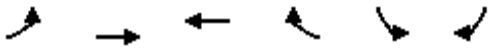
Intersection Summary			
Delay	12.8		
HCM Level of Service	B		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	6	151	389	138	10	169
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	7	174	447	159	11	194
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1082	103	206			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1082	103	206			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	81	67			
cM capacity (veh/h)	142	932	1363			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	180	500	106	8	198
Volume Left	7	447	0	0	0
Volume Right	174	0	0	0	194
cSH	769	1363	1700	1700	1700
Volume to Capacity	0.23	0.33	0.06	0.00	0.12
Queue Length 95th (ft)	23	36	0	0	0
Control Delay (s)	11.1	8.3	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.1	6.9		0.0	
Approach LOS	B				

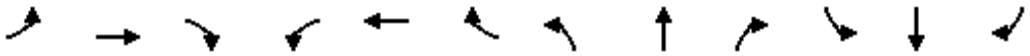
Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	39	207	186	490	292	39
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	43	230	207	544	324	43

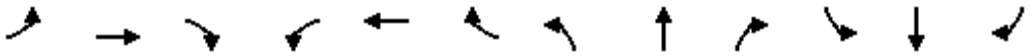
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	120	153	207	544	324	43
Volume Left (vph)	43	0	0	0	324	0
Volume Right (vph)	0	0	0	544	0	43
Hadj (s)	0.21	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	7.2	7.0	6.4	5.7	7.5	6.3
Degree Utilization, x	0.24	0.30	0.37	0.86	0.68	0.08
Capacity (veh/h)	472	487	542	619	461	541
Control Delay (s)	11.3	11.8	11.9	33.2	23.6	8.6
Approach Delay (s)	11.5		27.4		21.8	
Approach LOS	B		D		C	

Intersection Summary			
Delay	22.8		
HCM Level of Service	C		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		



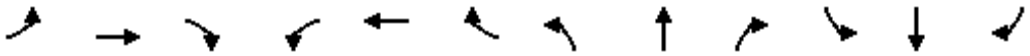
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1586	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1586	
Volume (vph)	0	207	312	104	405	0	0	0	0	113	3	248
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)	0	238	359	120	466	0	0	0	0	130	3	285
RTOR Reduction (vph)	0	0	155	0	0	0	0	0	0	0	235	0
Lane Group Flow (vph)	0	238	204	120	466	0	0	0	0	130	53	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		66.3	66.3	17.4	88.2					20.3	20.3	
Effective Green, g (s)		66.8	66.8	17.9	88.7					20.8	20.8	
Actuated g/C Ratio		0.57	0.57	0.15	0.75					0.18	0.18	
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	
Vehicle Extension (s)		8.0	8.0	8.0	8.0					8.0	8.0	
Lane Grp Cap (vph)		2012	900	270	2672					313	281	
v/s Ratio Prot		0.07		c0.07	0.13						0.03	
v/s Ratio Perm			c0.13							c0.07		
v/c Ratio		0.12	0.23	0.44	0.17					0.42	0.19	
Uniform Delay, d1		11.7	12.6	45.3	4.1					42.9	41.2	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.1	0.6	4.9	0.1					3.8	1.4	
Delay (s)		11.8	13.1	50.2	4.2					46.7	42.6	
Level of Service		B	B	D	A					D	D	
Approach Delay (s)		12.6			13.6			0.0			43.9	
Approach LOS		B			B			A			D	

Intersection Summary			
HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



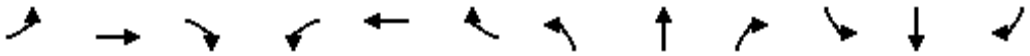
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3539	1583	1770	3539		1770	3008				
Flt Permitted		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		3539	1583	1770	3539		1770	3008				
Volume (vph)	0	211	140	26	156	0	323	0	343	0	0	0
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	0	264	175	32	195	0	404	0	429	0	0	0
RTOR Reduction (vph)	0	0	68	0	0	0	0	334	0	0	0	0
Lane Group Flow (vph)	0	264	107	32	195	0	404	95	0	0	0	0
Turn Type			Perm	Prot			Perm					
Protected Phases		2		1	6			4				
Permitted Phases			2				4					
Actuated Green, G (s)		70.2	70.2	6.8	81.5		25.0	25.0				
Effective Green, g (s)		70.7	70.7	7.3	82.0		25.5	25.5				
Actuated g/C Ratio		0.61	0.61	0.06	0.71		0.22	0.22				
Clearance Time (s)		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				
Lane Grp Cap (vph)		2166	969	112	2513		391	664				
v/s Ratio Prot		c0.07		c0.02	0.06			0.03				
v/s Ratio Perm			0.07				c0.23					
v/c Ratio		0.12	0.11	0.29	0.08		1.03	0.14				
Uniform Delay, d1		9.4	9.3	51.6	5.1		45.0	36.2				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.1	0.2	1.4	0.0		54.3	0.1				
Delay (s)		9.5	9.5	53.0	5.2		99.3	36.3				
Level of Service		A	A	D	A		F	D				
Approach Delay (s)		9.5			11.9			66.9			0.0	
Approach LOS		A			B			E			A	

Intersection Summary			
HCM Average Control Delay	41.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



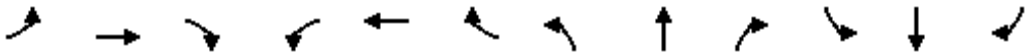
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.96		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1843		1770	1785		1770	3491		1770	3485	
Flt Permitted	0.65	1.00		0.69	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1208	1843		1292	1785		1770	3491		1770	3485	
Volume (vph)	47	86	7	63	98	38	4	462	46	35	462	53
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)	50	91	7	67	104	40	4	491	49	37	491	56
RTOR Reduction (vph)	0	1	0	0	8	0	0	5	0	0	6	0
Lane Group Flow (vph)	50	97	0	67	136	0	4	535	0	37	541	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.1	66.1		66.1	66.1		24.0	45.8		5.9	27.7	
Effective Green, g (s)	67.6	67.6		67.6	67.6		24.5	47.3		6.4	29.2	
Actuated g/C Ratio	0.51	0.51		0.51	0.51		0.18	0.35		0.05	0.22	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	613	935		655	905		325	1239		85	763	
v/s Ratio Prot		0.05			c0.08		0.00	c0.15		c0.02	c0.16	
v/s Ratio Perm	0.04			0.05								
v/c Ratio	0.08	0.10		0.10	0.15		0.01	0.43		0.44	0.71	
Uniform Delay, d1	16.9	17.1		17.1	17.5		44.5	32.8		61.7	48.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2		0.1	0.1		0.1	0.3		1.3	3.2	
Delay (s)	17.2	17.3		17.2	17.6		44.6	33.1		63.0	51.4	
Level of Service	B	B		B	B		D	C		E	D	
Approach Delay (s)		17.3			17.5			33.2			52.1	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM Average Control Delay	36.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	133.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.1%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3349		1770	3444		1770	3472		1770	3431	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3349		1770	3444		1770	3472		1770	3431	
Volume (vph)	150	290	162	126	294	64	156	518	75	51	520	133
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)	156	302	169	131	306	67	162	540	78	53	542	139
RTOR Reduction (vph)	0	112	0	0	27	0	0	11	0	0	26	0
Lane Group Flow (vph)	156	359	0	131	346	0	162	607	0	53	655	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	9.6	15.4		7.9	13.7		11.6	34.5		5.2	28.1	
Effective Green, g (s)	8.6	14.4		6.9	12.7		10.6	33.5		4.2	27.1	
Actuated g/C Ratio	0.11	0.19		0.09	0.17		0.14	0.45		0.06	0.36	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	203	643		163	583		250	1551		99	1240	
v/s Ratio Prot	c0.09	c0.11		0.07	0.10		c0.09	0.17		0.03	c0.19	
v/s Ratio Perm												
v/c Ratio	0.77	0.56		0.80	0.59		0.65	0.39		0.54	0.53	
Uniform Delay, d1	32.2	27.4		33.4	28.8		30.4	13.9		34.5	18.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.9	1.1		24.1	1.6		5.7	0.7		5.5	1.6	
Delay (s)	48.2	28.5		57.5	30.4		36.1	14.7		39.9	20.5	
Level of Service	D	C		E	C		D	B		D	C	
Approach Delay (s)		33.4			37.4			19.1			21.9	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM Average Control Delay	26.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



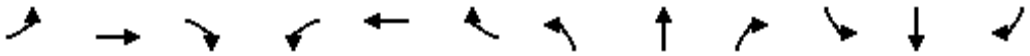
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.98		1.00	0.98			0.95			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3456		1770	3480			3316			3416	
Flt Permitted	0.95	1.00		0.95	1.00			0.87			0.87	
Satd. Flow (perm)	1770	3456		1770	3480			2917			3014	
Volume (vph)	40	348	65	54	411	51	32	42	36	33	68	17
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)	43	374	70	58	442	55	34	45	39	35	73	18
RTOR Reduction (vph)	0	16	0	0	10	0	0	27	0	0	12	0
Lane Group Flow (vph)	43	428	0	58	487	0	0	91	0	0	114	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	5.1	38.5		5.5	38.9			25.0			25.0	
Effective Green, g (s)	5.1	38.5		5.5	38.9			25.0			25.0	
Actuated g/C Ratio	0.06	0.48		0.07	0.48			0.31			0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	111	1643		120	1671			900			930	
v/s Ratio Prot	0.02	0.12		c0.03	c0.14							
v/s Ratio Perm								0.03			c0.04	
v/c Ratio	0.39	0.26		0.48	0.29			0.10			0.12	
Uniform Delay, d1	36.4	12.7		36.4	12.7			20.0			20.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.2	0.4		3.0	0.4			0.2			0.3	
Delay (s)	38.7	13.1		39.4	13.2			20.2			20.4	
Level of Service	D	B		D	B			C			C	
Approach Delay (s)		15.4			15.9			20.2			20.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	20	70	677	91	151	638
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	22	77	744	100	166	701
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.94					
vC, conflicting volume	1476	422			844	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1443	422			844	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	76	87			79	
cM capacity (veh/h)	91	580			788	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	99	496	348	400	467
Volume Left	22	0	0	166	0
Volume Right	77	0	100	0	0
cSH	265	1700	1700	788	1700
Volume to Capacity	0.37	0.29	0.20	0.21	0.27
Queue Length 95th (ft)	41	0	0	20	0
Control Delay (s)	26.5	0.0	0.0	6.0	0.0
Lane LOS	D			A	
Approach Delay (s)	26.5	0.0		2.8	
Approach LOS	D				

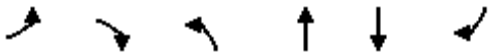
Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	22	121	65	27	76	26	34	11	26	19	18	18
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	32	178	96	40	112	38	50	16	38	28	26	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	150			274			540	520	226	547	549	131
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	150			274			540	520	226	547	549	131
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			88	96	95	93	94	97
cM capacity (veh/h)	1431			1290			401	436	814	398	420	919

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	306	190	104	81
Volume Left	32	40	50	28
Volume Right	96	38	38	26
cSH	1431	1290	501	499
Volume to Capacity	0.02	0.03	0.21	0.16
Queue Length 95th (ft)	2	2	19	14
Control Delay (s)	1.0	1.9	14.1	13.6
Lane LOS	A	A	B	B
Approach Delay (s)	1.0	1.9	14.1	13.6
Approach LOS			B	B

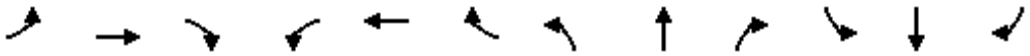
Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	26.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	43	80	56	82	182	53
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	57	105	74	108	239	70

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	162	182	309
Volume Left (vph)	57	74	0
Volume Right (vph)	105	0	70
Hadj (s)	-0.29	0.12	-0.10
Departure Headway (s)	4.7	4.8	4.4
Degree Utilization, x	0.21	0.24	0.38
Capacity (veh/h)	695	718	779
Control Delay (s)	9.0	9.3	10.1
Approach Delay (s)	9.0	9.3	10.1
Approach LOS	A	A	B

Intersection Summary			
Delay	9.6		
HCM Level of Service	A		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		



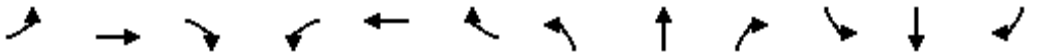
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3275		1770	1863	1583	1770	3440		1770	3418	
Flt Permitted	0.74	0.82		0.54	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1255	2736		998	1863	1583	1770	3440		1770	3418	
Volume (vph)	187	104	19	172	23	114	47	591	136	135	411	122
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)	210	117	21	193	26	128	53	664	153	152	462	137
RTOR Reduction (vph)	0	7	0	0	0	99	0	17	0	0	22	0
Lane Group Flow (vph)	105	236	0	193	26	29	53	800	0	152	577	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	22.4	22.4		22.4	22.4	22.4	6.5	54.3		11.3	59.1	
Effective Green, g (s)	22.4	22.4		22.4	22.4	22.4	6.5	54.3		11.3	59.1	
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.22	0.06	0.54		0.11	0.59	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	281	613		224	417	355	115	1868		200	2020	
v/s Ratio Prot					0.01		0.03	c0.23		c0.09	0.17	
v/s Ratio Perm	0.08	0.09		c0.19		0.02						
v/c Ratio	0.37	0.39		0.86	0.06	0.08	0.46	0.43		0.76	0.29	
Uniform Delay, d1	32.9	33.0		37.3	30.5	30.7	45.1	13.6		43.0	10.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.4		27.1	0.1	0.1	1.1	0.7		14.1	0.1	
Delay (s)	33.7	33.4		64.4	30.6	30.8	46.1	14.3		57.1	10.1	
Level of Service	C	C		E	C	C	D	B		E	B	
Approach Delay (s)		33.5			49.4			16.3			19.7	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	260	2	4	332	2	4
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	286	2	4	365	2	4

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	190	97	126	243	7
Volume Left (vph)	0	0	4	0	2
Volume Right (vph)	0	2	0	0	4
Hadj (s)	0.03	0.02	0.05	0.03	-0.30
Departure Headway (s)	4.8	4.8	4.8	4.8	4.9
Degree Utilization, x	0.26	0.13	0.17	0.32	0.01
Capacity (veh/h)	735	731	735	744	654
Control Delay (s)	8.3	7.3	7.5	8.8	8.0
Approach Delay (s)	8.0		8.4		8.0
Approach LOS	A		A		A

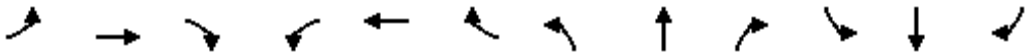
Intersection Summary				
Delay	8.2			
HCM Level of Service	A			
Intersection Capacity Utilization	22.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	55	179	3	2	157	120	6	3	4	119	6	101
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)	60	195	3	2	171	130	7	3	4	129	7	110

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	157	101	303	14	136	110
Volume Left (vph)	60	0	2	7	129	0
Volume Right (vph)	0	3	130	4	0	110
Hadj (s)	0.22	0.01	-0.22	-0.06	0.51	-0.67
Departure Headway (s)	5.9	5.6	5.4	6.4	6.5	5.3
Degree Utilization, x	0.26	0.16	0.45	0.03	0.25	0.16
Capacity (veh/h)	585	609	646	492	517	628
Control Delay (s)	9.7	8.5	12.8	9.5	10.4	8.2
Approach Delay (s)	9.2		12.8	9.5	9.4	
Approach LOS	A		B	A	A	

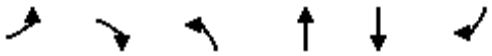
Intersection Summary				
Delay	10.6			
HCM Level of Service	B			
Intersection Capacity Utilization	45.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	29	254	1	7	350	22	1	4	2	28	6	43
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	39	339	1	9	467	29	1	5	3	37	8	57

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	379	505	9	103
Volume Left (vph)	39	9	1	37
Volume Right (vph)	1	29	3	57
Hadj (s)	0.05	0.00	-0.11	-0.23
Departure Headway (s)	4.9	4.7	6.1	5.7
Degree Utilization, x	0.52	0.66	0.02	0.16
Capacity (veh/h)	707	747	487	546
Control Delay (s)	13.0	16.4	9.2	9.9
Approach Delay (s)	13.0	16.4	9.2	9.9
Approach LOS	B	C	A	A

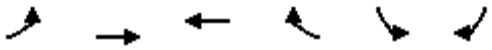
Intersection Summary			
Delay	14.4		
HCM Level of Service	B		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	9	275	373	123	182	16
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	11	327	444	146	217	19
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1188	118	236			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1188	118	236			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	64	67			
cM capacity (veh/h)	121	912	1329			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	338	493	98	144	91
Volume Left	11	444	0	0	0
Volume Right	327	0	0	0	19
cSH	755	1329	1700	1700	1700
Volume to Capacity	0.45	0.33	0.06	0.08	0.05
Queue Length 95th (ft)	58	37	0	0	0
Control Delay (s)	13.6	8.5	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	13.6	7.1		0.0	
Approach LOS	B				

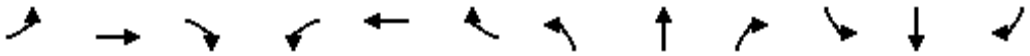
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	53	260	295	432	448	44
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	56	277	314	460	477	47

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	149	184	314	460	477	47
Volume Left (vph)	56	0	0	0	477	0
Volume Right (vph)	0	0	0	460	0	47
Hadj (s)	0.22	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	7.8	7.6	7.1	6.4	7.8	6.6
Degree Utilization, x	0.32	0.39	0.62	0.82	1.04	0.09
Capacity (veh/h)	450	463	499	552	463	524
Control Delay (s)	13.3	14.3	20.0	31.4	79.6	9.1
Approach Delay (s)	13.8		26.8		73.3	
Approach LOS	B		D		F	

Intersection Summary			
Delay	39.1		
HCM Level of Service	E		
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

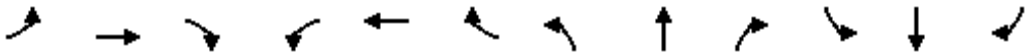


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1590	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1590	
Volume (vph)	0	355	378	290	454	0	0	0	0	170	7	264
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)	0	359	382	293	459	0	0	0	0	172	7	267
RTOR Reduction (vph)	0	0	180	0	0	0	0	0	0	0	229	0
Lane Group Flow (vph)	0	359	202	293	459	0	0	0	0	172	45	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		56.8	56.8	23.1	84.4					15.1	15.1	
Effective Green, g (s)		57.3	57.3	23.6	84.9					15.6	15.6	
Actuated g/C Ratio		0.53	0.53	0.22	0.78					0.14	0.14	
Clearance Time (s)		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	
Lane Grp Cap (vph)		1869	836	385	2769					254	229	
v/s Ratio Prot		0.10		c0.17	0.13						0.03	
v/s Ratio Perm			c0.13							c0.10		
v/c Ratio		0.19	0.24	0.76	0.17					0.68	0.20	
Uniform Delay, d1		13.4	13.8	39.8	2.9					44.1	40.9	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.2	0.7	8.6	0.1					7.0	0.4	
Delay (s)		13.7	14.5	48.4	3.1					51.0	41.4	
Level of Service		B	B	D	A					D	D	
Approach Delay (s)		14.1			20.7			0.0			45.1	
Approach LOS		B			C			A			D	

Intersection Summary			
HCM Average Control Delay	23.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	12.0
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3539	1583	1770	3539		1770	1583				
Flt Permitted		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		3539	1583	1770	3539		1770	1583				
Volume (vph)	0	338	202	121	449	0	271	0	421	0	0	0
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)	0	356	213	127	473	0	285	0	443	0	0	0
RTOR Reduction (vph)	0	0	92	0	0	0	0	350	0	0	0	0
Lane Group Flow (vph)	0	356	121	127	473	0	285	93	0	0	0	0
Turn Type			Perm	Prot			custom					
Protected Phases		2		1	6							
Permitted Phases			2				4	4				
Actuated Green, G (s)		65.0	65.0	13.2	82.7		23.8	23.8				
Effective Green, g (s)		65.5	65.5	13.7	83.2		24.3	24.3				
Actuated g/C Ratio		0.57	0.57	0.12	0.72		0.21	0.21				
Clearance Time (s)		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				
Lane Grp Cap (vph)		2007	898	210	2549		372	333				
v/s Ratio Prot		0.10		c0.07	c0.13							
v/s Ratio Perm			0.08				c0.16	0.06				
v/c Ratio		0.18	0.13	0.60	0.19		0.77	0.28				
Uniform Delay, d1		12.0	11.7	48.3	5.2		42.9	38.3				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.2	0.3	4.9	0.2		9.1	0.5				
Delay (s)		12.2	12.0	53.2	5.4		52.0	38.7				
Level of Service		B	B	D	A		D	D				
Approach Delay (s)		12.2			15.5			43.9			0.0	
Approach LOS		B			B			D			A	

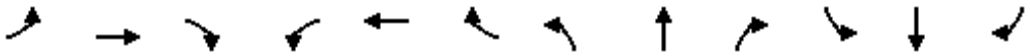
Intersection Summary			
HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3516		1770	1728		1770	3487		1770	3485	
Flt Permitted	0.59	1.00		0.65	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1095	3516		1214	1728		1770	3487		1770	3485	
Volume (vph)	72	149	7	63	109	101	8	746	82	62	519	59
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)	73	151	7	64	110	102	8	754	83	63	524	60
RTOR Reduction (vph)	0	2	0	0	17	0	0	5	0	0	5	0
Lane Group Flow (vph)	73	156	0	64	195	0	8	832	0	63	579	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.9	66.9		66.9	66.9		1.1	39.2		7.3	45.4	
Effective Green, g (s)	68.4	68.4		68.4	68.4		1.6	40.7		7.8	46.9	
Actuated g/C Ratio	0.53	0.53		0.53	0.53		0.01	0.32		0.06	0.36	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	581	1866		644	917		22	1101		107	1268	
v/s Ratio Prot		0.04			c0.11		0.00	c0.24		c0.04	0.17	
v/s Ratio Perm	0.07			0.05								
v/c Ratio	0.13	0.08		0.10	0.21		0.36	0.76		0.59	0.46	
Uniform Delay, d1	15.2	14.9		15.0	16.0		63.1	39.6		59.0	31.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.1		0.1	0.1		3.7	3.2		5.2	0.4	
Delay (s)	15.7	14.9		15.1	16.1		66.8	42.8		64.2	31.6	
Level of Service	B	B		B	B		E	D		E	C	
Approach Delay (s)		15.2			15.9			43.0			34.8	
Approach LOS		B			B			D			C	

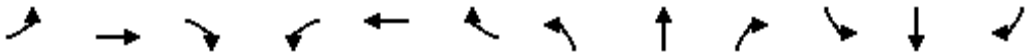
Intersection Summary			
HCM Average Control Delay	33.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	128.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX C- HORIZON 1 (2010) LOS RESULTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3322		1770	3408		1770	3432		1770	3465	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3322		1770	3408		1770	3432		1770	3465	
Volume (vph)	102	281	195	119	127	42	84	247	63	62	539	87
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)	107	296	205	125	134	44	88	260	66	65	567	92
RTOR Reduction (vph)	0	174	0	0	37	0	0	20	0	0	13	0
Lane Group Flow (vph)	107	327	0	125	141	0	88	306	0	65	646	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.6	12.5		7.8	12.7		7.8	37.1		5.6	34.9	
Effective Green, g (s)	6.6	11.5		6.8	11.7		6.8	36.1		4.6	33.9	
Actuated g/C Ratio	0.09	0.15		0.09	0.16		0.09	0.48		0.06	0.45	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	156	509		160	532		160	1652		109	1566	
v/s Ratio Prot	0.06	c0.10		c0.07	0.04		c0.05	0.09		0.04	c0.19	
v/s Ratio Perm												
v/c Ratio	0.69	0.64		0.78	0.26		0.55	0.19		0.60	0.41	
Uniform Delay, d1	33.2	29.8		33.4	27.9		32.6	11.1		34.3	13.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.8	2.8		21.5	0.3		4.0	0.2		8.5	0.8	
Delay (s)	45.0	32.6		54.9	28.1		36.7	11.3		42.8	14.6	
Level of Service	D	C		D	C		D	B		D	B	
Approach Delay (s)		34.8			39.2			16.7			17.2	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.99		1.00	0.97			0.92			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3506		1770	3416			3245			3372	
Flt Permitted	0.95	1.00		0.95	1.00			0.91			0.86	
Satd. Flow (perm)	1770	3506		1770	3416			2968			2944	
Volume (vph)	40	372	25	200	286	86	18	48	70	48	110	50
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)	42	392	26	211	301	91	19	51	74	51	116	53
RTOR Reduction (vph)	0	6	0	0	28	0	0	51	0	0	37	0
Lane Group Flow (vph)	42	412	0	211	364	0	0	93	0	0	183	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	5.0	31.6		13.4	40.0			25.0			25.0	
Effective Green, g (s)	5.0	31.6		13.4	40.0			25.0			25.0	
Actuated g/C Ratio	0.06	0.39		0.16	0.49			0.30			0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	108	1351		289	1666			905			898	
v/s Ratio Prot	0.02	c0.12		c0.12	0.11							
v/s Ratio Perm								0.03			c0.06	
v/c Ratio	0.39	0.31		0.73	0.22			0.10			0.20	
Uniform Delay, d1	37.0	17.6		32.6	12.0			20.4			21.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.3	0.6		9.1	0.3			0.2			0.5	
Delay (s)	39.3	18.1		41.7	12.3			20.7			21.6	
Level of Service	D	B		D	B			C			C	
Approach Delay (s)		20.1			22.6			20.7			21.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	24	52	335	78	223	605
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	25	55	353	82	235	637
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.96					
vC, conflicting volume	1182	217			435	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1147	217			435	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	93			79	
cM capacity (veh/h)	146	787			1121	

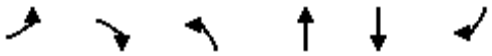
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	80	235	200	447	425
Volume Left	25	0	0	235	0
Volume Right	55	0	82	0	0
cSH	330	1700	1700	1121	1700
Volume to Capacity	0.24	0.14	0.12	0.21	0.25
Queue Length 95th (ft)	23	0	0	20	0
Control Delay (s)	19.4	0.0	0.0	5.8	0.0
Lane LOS	C			A	
Approach Delay (s)	19.4	0.0		3.0	
Approach LOS	C				

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	49.5%	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		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	22	113	33	31	60	15	20	7	20	32	32	28
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	23	119	35	33	63	16	21	7	21	34	34	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	79			154			365	327	136	344	336	71
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	79			154			365	327	136	344	336	71
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			96	99	98	94	94	97
cM capacity (veh/h)	1519			1427			531	569	912	574	562	991

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	177	112	49	97
Volume Left	23	33	21	34
Volume Right	35	16	21	29
cSH	1519	1427	654	653
Volume to Capacity	0.02	0.02	0.08	0.15
Queue Length 95th (ft)	1	2	6	13
Control Delay (s)	1.1	2.3	11.0	11.5
Lane LOS	A	A	B	B
Approach Delay (s)	1.1	2.3	11.0	11.5
Approach LOS			B	B

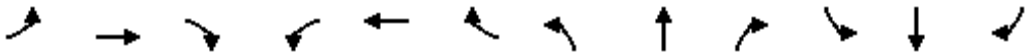
Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	30	68	27	85	223	80
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	32	72	28	89	235	84

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	103	118	319
Volume Left (vph)	32	28	0
Volume Right (vph)	72	0	84
Hadj (s)	-0.32	0.08	-0.12
Departure Headway (s)	4.5	4.6	4.2
Degree Utilization, x	0.13	0.15	0.37
Capacity (veh/h)	724	756	837
Control Delay (s)	8.2	8.4	9.6
Approach Delay (s)	8.2	8.4	9.6
Approach LOS	A	A	A

Intersection Summary			
Delay	9.0		
HCM Level of Service	A		
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	0.99		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3235		1770	1863	1583	1770	3387		1770	3429	
Flt Permitted	0.69	0.88		0.62	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1170	2883		1159	1863	1583	1770	3387		1770	3429	
Volume (vph)	94	95	41	104	90	19	28	292	117	117	298	78
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)	99	100	43	109	95	20	29	307	123	123	314	82
RTOR Reduction (vph)	0	33	0	0	0	17	0	32	0	0	15	0
Lane Group Flow (vph)	63	146	0	109	95	3	29	398	0	123	381	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	13.4	13.4		13.4	13.4	13.4	2.7	53.0		8.6	58.9	
Effective Green, g (s)	13.4	13.4		13.4	13.4	13.4	2.7	53.0		8.6	58.9	
Actuated g/C Ratio	0.15	0.15		0.15	0.15	0.15	0.03	0.61		0.10	0.68	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	180	444		179	287	244	55	2063		175	2321	
v/s Ratio Prot					0.05		0.02	c0.12		c0.07	0.11	
v/s Ratio Perm	0.05	0.05		c0.09		0.00						
v/c Ratio	0.35	0.33		0.61	0.33	0.01	0.53	0.19		0.70	0.16	
Uniform Delay, d1	32.9	32.8		34.4	32.8	31.2	41.5	7.5		38.0	5.1	
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	0.4		5.8	0.7	0.0	4.2	0.2		12.1	0.0	
Delay (s)	34.1	33.2		40.1	33.5	31.2	45.7	7.7		50.0	5.1	
Level of Service	C	C		D	C	C	D	A		D	A	
Approach Delay (s)		33.5			36.5			10.1			15.8	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	186	4	1	320	2	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	196	4	1	337	2	5

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	131	69	113	225	7
Volume Left (vph)	0	0	1	0	2
Volume Right (vph)	0	4	0	0	5
Hadj (s)	0.03	-0.01	0.04	0.03	-0.34
Departure Headway (s)	4.8	4.8	4.7	4.7	4.7
Degree Utilization, x	0.17	0.09	0.15	0.29	0.01
Capacity (veh/h)	740	740	759	755	699
Control Delay (s)	7.6	7.0	7.3	8.4	7.7
Approach Delay (s)	7.4		8.1		7.7
Approach LOS	A		A		A

Intersection Summary			
Delay	7.8		
HCM Level of Service	A		
Intersection Capacity Utilization	19.5%	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)	74	104	4	0	225	86	14	14	4	79	11	134
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	78	109	4	0	237	91	15	15	4	83	12	141

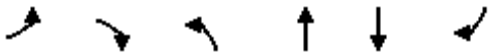
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	133	59	327	34	95	141
Volume Left (vph)	78	0	0	15	83	0
Volume Right (vph)	0	4	91	4	0	141
Hadj (s)	0.33	-0.02	-0.13	0.05	0.47	-0.67
Departure Headway (s)	6.0	5.7	5.4	6.4	6.4	5.3
Degree Utilization, x	0.22	0.09	0.49	0.06	0.17	0.21
Capacity (veh/h)	566	601	643	507	521	631
Control Delay (s)	9.5	8.0	13.5	9.8	9.6	8.5
Approach Delay (s)	9.0		13.5	9.8	8.9	
Approach LOS	A		B	A	A	

Intersection Summary				
Delay	10.9			
HCM Level of Service	B			
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)	22	105	3	1	352	33	2	4	2	30	5	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	23	111	3	1	371	35	2	4	2	32	5	20

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	137	406	8	57
Volume Left (vph)	23	1	2	32
Volume Right (vph)	3	35	2	20
Hadj (s)	0.05	-0.02	-0.07	-0.07
Departure Headway (s)	4.5	4.2	5.1	5.0
Degree Utilization, x	0.17	0.47	0.01	0.08
Capacity (veh/h)	766	835	623	639
Control Delay (s)	8.5	11.0	8.2	8.5
Approach Delay (s)	8.5	11.0	8.2	8.5
Approach LOS	A	B	A	A

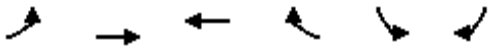
Intersection Summary			
Delay	10.1		
HCM Level of Service	B		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	6	132	371	94	10	173
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	6	139	391	99	11	182
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	932	96	193			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	932	96	193			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	85	72			
cM capacity (veh/h)	190	941	1378			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	145	424	66	7	186
Volume Left	6	391	0	0	0
Volume Right	139	0	0	0	182
cSH	803	1378	1700	1700	1700
Volume to Capacity	0.18	0.28	0.04	0.00	0.11
Queue Length 95th (ft)	16	29	0	0	0
Control Delay (s)	10.5	8.2	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.5	7.1		0.0	
Approach LOS	B				

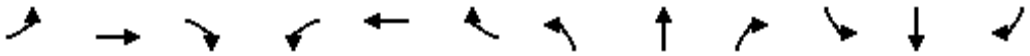
Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	62	193	174	404	318	41
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	65	203	183	425	335	43

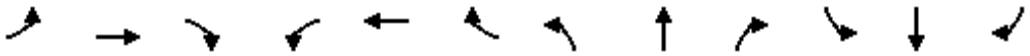
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	133	135	183	425	335	43
Volume Left (vph)	65	0	0	0	335	0
Volume Right (vph)	0	0	0	425	0	43
Hadj (s)	0.28	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	7.1	6.8	6.4	5.7	7.2	6.0
Degree Utilization, x	0.26	0.26	0.33	0.67	0.67	0.07
Capacity (veh/h)	481	500	541	610	479	563
Control Delay (s)	11.3	10.9	11.3	18.3	22.5	8.3
Approach Delay (s)	11.1		16.2		20.9	
Approach LOS	B		C		C	

Intersection Summary			
Delay	16.5		
HCM Level of Service	C		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		



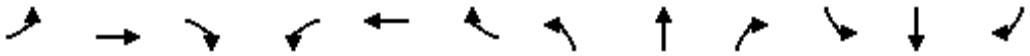
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1587	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1587	
Volume (vph)	0	180	309	108	457	0	0	0	0	118	3	221
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)	0	189	325	114	481	0	0	0	0	124	3	233
RTOR Reduction (vph)	0	0	136	0	0	0	0	0	0	0	194	0
Lane Group Flow (vph)	0	189	189	114	481	0	0	0	0	124	42	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		67.9	67.9	17.0	89.4					19.1	19.1	
Effective Green, g (s)		68.4	68.4	17.5	89.9					19.6	19.6	
Actuated g/C Ratio		0.58	0.58	0.15	0.77					0.17	0.17	
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	
Vehicle Extension (s)		8.0	8.0	8.0	8.0					8.0	8.0	
Lane Grp Cap (vph)		2060	922	264	2708					295	265	
v/s Ratio Prot		0.05		c0.06	0.14						0.03	
v/s Ratio Perm			c0.12							c0.07		
v/c Ratio		0.09	0.21	0.43	0.18					0.42	0.16	
Uniform Delay, d1		10.8	11.7	45.5	3.8					43.9	41.9	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.1	0.5	4.8	0.1					4.1	1.2	
Delay (s)		10.9	12.2	50.3	3.9					48.0	43.1	
Level of Service		B	B	D	A					D	D	
Approach Delay (s)		11.7			12.8			0.0			44.8	
Approach LOS		B			B			A			D	

Intersection Summary				
HCM Average Control Delay	20.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.28			
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	50.5%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



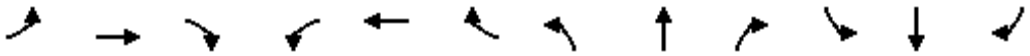
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3534	1583	1770	3539		1770	3008				
Flt Permitted		0.95	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		3358	1583	1770	3539		1770	3008				
Volume (vph)	7	220	102	27	168	0	241	0	357	0	0	0
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)	7	232	107	28	177	0	254	0	376	0	0	0
RTOR Reduction (vph)	0	0	38	0	0	0	0	307	0	0	0	0
Lane Group Flow (vph)	0	239	69	28	177	0	254	69	0	0	0	0
Turn Type			Perm	Prot			Perm					
Protected Phases		2		1	6			4				
Permitted Phases			2				4					
Actuated Green, G (s)		74.4	74.4	6.8	85.7		20.8	20.8				
Effective Green, g (s)		74.9	74.9	7.3	86.2		21.3	21.3				
Actuated g/C Ratio		0.65	0.65	0.06	0.75		0.18	0.18				
Clearance Time (s)		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				
Lane Grp Cap (vph)		2178	1027	112	2641		326	555				
v/s Ratio Prot				c0.02	0.05			0.02				
v/s Ratio Perm		c0.07	0.04				c0.14					
v/c Ratio		0.11	0.07	0.25	0.07		0.78	0.12				
Uniform Delay, d1		7.7	7.5	51.5	3.9		44.9	39.3				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.1	0.1	1.2	0.0		11.2	0.1				
Delay (s)		7.8	7.6	52.7	3.9		56.0	39.4				
Level of Service		A	A	D	A		E	D				
Approach Delay (s)		7.7			10.6			46.1			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM Average Control Delay	28.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



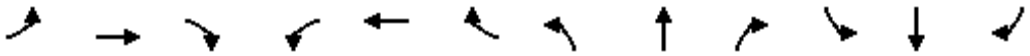
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.96		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1843		1770	1784		1770	3492		1770	3484	
Flt Permitted	0.64	1.00		0.69	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1196	1843		1288	1784		1770	3492		1770	3484	
Volume (vph)	55	89	7	66	102	40	4	492	48	20	483	56
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)	58	94	7	69	107	42	4	518	51	21	508	59
RTOR Reduction (vph)	0	1	0	0	8	0	0	4	0	0	7	0
Lane Group Flow (vph)	58	100	0	69	141	0	4	565	0	21	560	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.1	66.1		66.1	66.1		24.0	49.5		3.9	29.4	
Effective Green, g (s)	67.6	67.6		67.6	67.6		24.5	51.0		4.4	30.9	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.18	0.38		0.03	0.23	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	599	923		645	893		321	1319		58	797	
v/s Ratio Prot		0.05			c0.08		0.00	c0.16		c0.01	c0.16	
v/s Ratio Perm	0.05			0.05								
v/c Ratio	0.10	0.11		0.11	0.16		0.01	0.43		0.36	0.70	
Uniform Delay, d1	17.7	17.8		17.8	18.3		45.3	31.2		63.9	47.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2		0.1	0.1		0.1	0.3		1.4	3.0	
Delay (s)	18.0	18.0		17.9	18.4		45.4	31.5		65.3	50.9	
Level of Service	B	B		B	B		D	C		E	D	
Approach Delay (s)		18.0			18.2			31.6			51.4	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM Average Control Delay	35.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3347		1770	3444		1770	3492		1770	3432	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3347		1770	3444		1770	3492		1770	3432	
Volume (vph)	156	302	172	188	306	67	164	541	53	53	545	138
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)	162	315	179	196	319	70	171	564	55	55	568	144
RTOR Reduction (vph)	0	119	0	0	27	0	0	7	0	0	25	0
Lane Group Flow (vph)	162	375	0	196	362	0	171	612	0	55	687	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	9.6	13.4		10.0	13.8		11.9	34.3		5.3	27.7	
Effective Green, g (s)	8.6	12.4		9.0	12.8		10.9	33.3		4.3	26.7	
Actuated g/C Ratio	0.11	0.17		0.12	0.17		0.15	0.44		0.06	0.36	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	203	553		212	588		257	1550		101	1222	
v/s Ratio Prot	0.09	c0.11		c0.11	0.11		c0.10	0.18		0.03	c0.20	
v/s Ratio Perm												
v/c Ratio	0.80	0.68		0.92	0.62		0.67	0.39		0.54	0.56	
Uniform Delay, d1	32.4	29.4		32.7	28.8		30.3	14.1		34.4	19.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.3	3.3		41.1	1.9		6.4	0.8		5.9	1.9	
Delay (s)	51.6	32.7		73.7	30.7		36.7	14.8		40.3	21.3	
Level of Service	D	C		E	C		D	B		D	C	
Approach Delay (s)		37.4			45.1			19.5			22.7	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.98		1.00	0.99			0.92			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3454		1770	3487			3238			3418	
Flt Permitted	0.95	1.00		0.95	1.00			0.88			0.86	
Satd. Flow (perm)	1770	3454		1770	3487			2892			2983	
Volume (vph)	42	362	69	127	490	53	33	46	80	34	75	18
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)	44	381	73	134	516	56	35	48	84	36	79	19
RTOR Reduction (vph)	0	18	0	0	8	0	0	58	0	0	13	0
Lane Group Flow (vph)	44	436	0	134	564	0	0	109	0	0	121	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	5.1	34.5		9.5	38.9			25.0			25.0	
Effective Green, g (s)	5.1	34.5		9.5	38.9			25.0			25.0	
Actuated g/C Ratio	0.06	0.43		0.12	0.48			0.31			0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	111	1471		208	1675			893			921	
v/s Ratio Prot	0.02	0.13		c0.08	c0.16							
v/s Ratio Perm								0.04			c0.04	
v/c Ratio	0.40	0.30		0.64	0.34			0.12			0.13	
Uniform Delay, d1	36.5	15.3		34.1	13.0			20.1			20.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.3	0.5		6.7	0.5			0.3			0.3	
Delay (s)	38.8	15.8		40.8	13.6			20.4			20.5	
Level of Service	D	B		D	B			C			C	
Approach Delay (s)		17.8			18.8			20.4			20.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	24	78	707	98	158	727
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	25	82	744	103	166	765
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.93					
vC, conflicting volume	1511	424			847	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1475	424			847	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	71	86			79	
cM capacity (veh/h)	86	579			786	

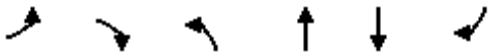
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	107	496	351	421	510
Volume Left	25	0	0	166	0
Volume Right	82	0	103	0	0
cSH	247	1700	1700	786	1700
Volume to Capacity	0.44	0.29	0.21	0.21	0.30
Queue Length 95th (ft)	52	0	0	20	0
Control Delay (s)	30.4	0.0	0.0	5.9	0.0
Lane LOS	D			A	
Approach Delay (s)	30.4	0.0		2.7	
Approach LOS	D				

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	63.5%	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		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	30	129	69	31	81	27	36	11	29	20	19	24
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	32	136	73	33	85	28	38	12	31	21	20	25
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	114			208			435	414	172	436	436	99
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114			208			435	414	172	436	436	99
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			92	98	96	96	96	97
cM capacity (veh/h)	1476			1362			484	505	872	486	491	956

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	240	146	80	66
Volume Left	32	33	38	21
Volume Right	73	28	31	25
cSH	1476	1362	587	600
Volume to Capacity	0.02	0.02	0.14	0.11
Queue Length 95th (ft)	2	2	12	9
Control Delay (s)	1.1	1.9	12.1	11.7
Lane LOS	A	A	B	B
Approach Delay (s)	1.1	1.9	12.1	11.7
Approach LOS			B	B

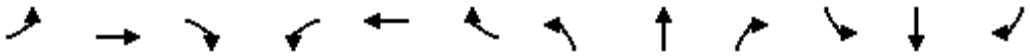
Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	53	77	39	121	240	78
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	56	81	41	127	253	82

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	137	168	335
Volume Left (vph)	56	41	0
Volume Right (vph)	81	0	82
Hadj (s)	-0.24	0.08	-0.11
Departure Headway (s)	4.8	4.7	4.3
Degree Utilization, x	0.18	0.22	0.40
Capacity (veh/h)	684	731	799
Control Delay (s)	8.9	9.0	10.2
Approach Delay (s)	8.9	9.0	10.2
Approach LOS	A	A	B

Intersection Summary			
Delay	9.6		
HCM Level of Service	A		
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		



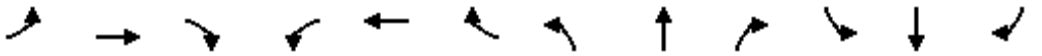
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3276		1770	1863	1583	1770	3435		1770	3424	
Flt Permitted	0.74	0.82		0.54	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1254	2739		1009	1863	1583	1770	3435		1770	3424	
Volume (vph)	195	111	20	190	26	123	49	617	151	132	460	127
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)	205	117	21	200	27	129	52	649	159	139	484	134
RTOR Reduction (vph)	0	7	0	0	0	99	0	19	0	0	20	0
Lane Group Flow (vph)	103	233	0	200	27	30	52	789	0	139	598	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	22.9	22.9		22.9	22.9	22.9	6.4	54.3		10.8	58.7	
Effective Green, g (s)	22.9	22.9		22.9	22.9	22.9	6.4	54.3		10.8	58.7	
Actuated g/C Ratio	0.23	0.23		0.23	0.23	0.23	0.06	0.54		0.11	0.59	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	287	627		231	427	363	113	1865		191	2010	
v/s Ratio Prot					0.01		0.03	c0.23		c0.08	0.17	
v/s Ratio Perm	0.08	0.09		c0.20		0.02						
v/c Ratio	0.36	0.37		0.87	0.06	0.08	0.46	0.42		0.73	0.30	
Uniform Delay, d1	32.4	32.5		37.1	30.2	30.3	45.1	13.6		43.2	10.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.4		27.0	0.1	0.1	1.1	0.7		11.1	0.1	
Delay (s)	33.2	32.9		64.0	30.2	30.4	46.2	14.3		54.3	10.4	
Level of Service	C	C		E	C	C	D	B		D	B	
Approach Delay (s)		32.9			49.3			16.2			18.5	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	265	2	4	333	2	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	279	2	4	351	2	4

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	186	95	121	234	6
Volume Left (vph)	0	0	4	0	2
Volume Right (vph)	0	2	0	0	4
Hadj (s)	0.03	0.02	0.05	0.03	-0.30
Departure Headway (s)	4.8	4.8	4.8	4.8	4.9
Degree Utilization, x	0.25	0.13	0.16	0.31	0.01
Capacity (veh/h)	737	734	736	745	662
Control Delay (s)	8.2	7.3	7.5	8.7	8.0
Approach Delay (s)	7.9		8.3		8.0
Approach LOS	A		A		A

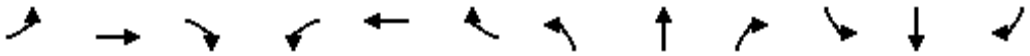
Intersection Summary			
Delay	8.1		
HCM Level of Service	A		
Intersection Capacity Utilization	22.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	60	207	3	2	170	67	6	3	4	129	6	109
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	218	3	2	179	71	6	3	4	136	6	115

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	172	112	252	14	142	115
Volume Left (vph)	63	0	2	6	136	0
Volume Right (vph)	0	3	71	4	0	115
Hadj (s)	0.22	0.01	-0.13	-0.06	0.51	-0.67
Departure Headway (s)	5.8	5.6	5.5	6.3	6.5	5.3
Degree Utilization, x	0.28	0.17	0.39	0.02	0.26	0.17
Capacity (veh/h)	590	613	626	509	523	637
Control Delay (s)	9.8	8.6	12.0	9.5	10.5	8.1
Approach Delay (s)	9.4		12.0	9.5	9.4	
Approach LOS	A		B	A	A	

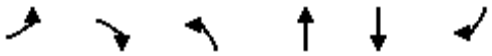
Intersection Summary				
Delay	10.2			
HCM Level of Service	B			
Intersection Capacity Utilization	44.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	30	218	1	7	313	23	1	4	2	29	6	45
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	32	229	1	7	329	24	1	4	2	31	6	47

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	262	361	7	84
Volume Left (vph)	32	7	1	31
Volume Right (vph)	1	24	2	47
Hadj (s)	0.06	0.00	-0.11	-0.23
Departure Headway (s)	4.6	4.4	5.3	5.1
Degree Utilization, x	0.33	0.45	0.01	0.12
Capacity (veh/h)	759	786	575	629
Control Delay (s)	9.9	11.0	8.4	8.8
Approach Delay (s)	9.9	11.0	8.4	8.8
Approach LOS	A	B	A	A

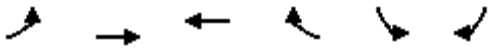
Intersection Summary			
Delay	10.3		
HCM Level of Service	B		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	10	240	336	90	95	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	253	354	95	100	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	865	60	120			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	865	60	120			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	75	76			
cM capacity (veh/h)	222	993	1466			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	263	385	63	67	53
Volume Left	11	354	0	0	0
Volume Right	253	0	0	0	20
cSH	872	1466	1700	1700	1700
Volume to Capacity	0.30	0.24	0.04	0.04	0.03
Queue Length 95th (ft)	32	24	0	0	0
Control Delay (s)	10.9	7.7	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.9	6.6		0.0	
Approach LOS	B				

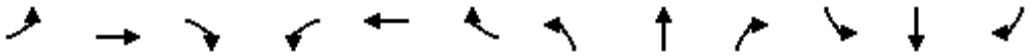
Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	82	243	276	333	397	46
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	86	256	291	351	418	48

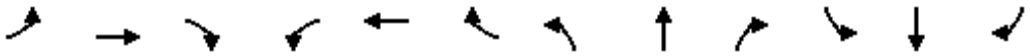
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	172	171	291	351	418	48
Volume Left (vph)	86	0	0	0	418	0
Volume Right (vph)	0	0	0	351	0	48
Hadj (s)	0.29	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	7.7	7.4	7.0	6.3	7.6	6.4
Degree Utilization, x	0.37	0.35	0.57	0.62	0.88	0.09
Capacity (veh/h)	449	465	497	547	460	539
Control Delay (s)	13.8	13.2	17.7	17.7	43.9	8.8
Approach Delay (s)	13.5		17.7		40.3	
Approach LOS	B		C		E	

Intersection Summary			
Delay	24.0		
HCM Level of Service	C		
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		



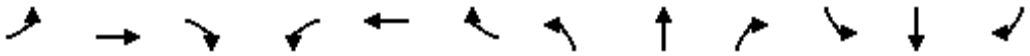
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1592	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1592	
Volume (vph)	0	257	337	302	496	0	0	0	0	177	7	228
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)	0	260	340	305	501	0	0	0	0	179	7	230
RTOR Reduction (vph)	0	0	165	0	0	0	0	0	0	0	196	0
Lane Group Flow (vph)	0	260	175	305	501	0	0	0	0	179	41	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		55.3	55.3	24.2	84.0					15.5	15.5	
Effective Green, g (s)		55.8	55.8	24.7	84.5					16.0	16.0	
Actuated g/C Ratio		0.51	0.51	0.23	0.78					0.15	0.15	
Clearance Time (s)		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	
Lane Grp Cap (vph)		1820	814	403	2756					261	235	
v/s Ratio Prot		0.07		c0.17	0.14						0.03	
v/s Ratio Perm			c0.11							c0.10		
v/c Ratio		0.14	0.21	0.76	0.18					0.69	0.17	
Uniform Delay, d1		13.8	14.4	39.1	3.1					43.9	40.5	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.2	0.6	7.9	0.1					7.3	0.4	
Delay (s)		14.0	15.0	47.0	3.2					51.1	40.8	
Level of Service		B	B	D	A					D	D	
Approach Delay (s)		14.6			19.8			0.0			45.3	
Approach LOS		B			B			A			D	

Intersection Summary			
HCM Average Control Delay	23.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.1%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3533	1583	1770	3539		1770	1583				
Flt Permitted		0.93	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		3309	1583	1770	3539		1770	1583				
Volume (vph)	12	354	84	126	471	0	177	0	438	0	0	0
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)	13	373	88	133	496	0	186	0	461	0	0	0
RTOR Reduction (vph)	0	0	33	0	0	0	0	390	0	0	0	0
Lane Group Flow (vph)	0	386	55	133	496	0	186	71	0	0	0	0
Turn Type			Perm	Prot			custom					
Protected Phases		2		1	6							
Permitted Phases			2				4	4				
Actuated Green, G (s)		71.2	71.2	13.6	89.3		17.2	17.2				
Effective Green, g (s)		71.7	71.7	14.1	89.8		17.7	17.7				
Actuated g/C Ratio		0.62	0.62	0.12	0.78		0.15	0.15				
Clearance Time (s)		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				
Lane Grp Cap (vph)		2054	983	216	2752		271	243				
v/s Ratio Prot				c0.08	0.14							
v/s Ratio Perm		c0.12	0.03				c0.11	0.04				
v/c Ratio		0.19	0.06	0.62	0.18		0.69	0.29				
Uniform Delay, d1		9.4	8.6	48.1	3.3		46.3	43.3				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.2	0.1	5.1	0.1		7.0	0.7				
Delay (s)		9.6	8.7	53.3	3.5		53.3	44.0				
Level of Service		A	A	D	A		D	D				
Approach Delay (s)		9.4			14.0			46.7			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

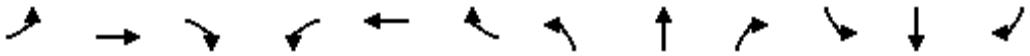


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3517		1770	1728		1770	3487		1770	3484	
Flt Permitted	0.57	1.00		0.65	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1063	3517		1207	1728		1770	3487		1770	3484	
Volume (vph)	79	155	7	66	113	105	8	784	85	96	545	63
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)	80	157	7	67	114	106	8	792	86	97	551	64
RTOR Reduction (vph)	0	2	0	0	19	0	0	5	0	0	5	0
Lane Group Flow (vph)	80	162	0	67	201	0	8	873	0	97	610	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.5	66.5		66.5	66.5		1.1	43.2		11.0	53.1	
Effective Green, g (s)	68.0	68.0		68.0	68.0		1.6	44.7		11.5	54.6	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.01	0.33		0.08	0.40	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	531	1756		603	863		21	1144		149	1397	
v/s Ratio Prot		0.05			c0.12		0.00	c0.25		c0.05	0.17	
v/s Ratio Perm	0.08			0.06								
v/c Ratio	0.15	0.09		0.11	0.23		0.38	0.76		0.65	0.44	
Uniform Delay, d1	18.5	17.9		18.1	19.3		66.8	41.0		60.4	29.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.1		0.1	0.2		4.2	3.3		7.5	0.3	
Delay (s)	19.1	18.0		18.2	19.5		71.0	44.3		67.9	29.9	
Level of Service	B	B		B	B		E	D		E	C	
Approach Delay (s)		18.4			19.2			44.5			35.1	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	34.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	136.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3321		1770	3408		1770	3432		1770	3465	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3321		1770	3408		1770	3432		1770	3465	
Volume (vph)	102	280	196	119	127	42	84	247	63	62	540	87
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)	107	295	206	125	134	44	88	260	66	65	568	92
RTOR Reduction (vph)	0	174	0	0	37	0	0	20	0	0	13	0
Lane Group Flow (vph)	107	327	0	125	141	0	88	306	0	65	647	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.6	12.5		7.8	12.7		7.8	37.1		5.6	34.9	
Effective Green, g (s)	6.6	11.5		6.8	11.7		6.8	36.1		4.6	33.9	
Actuated g/C Ratio	0.09	0.15		0.09	0.16		0.09	0.48		0.06	0.45	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	156	509		160	532		160	1652		109	1566	
v/s Ratio Prot	0.06	c0.10		c0.07	0.04		c0.05	0.09		0.04	c0.19	
v/s Ratio Perm												
v/c Ratio	0.69	0.64		0.78	0.26		0.55	0.19		0.60	0.41	
Uniform Delay, d1	33.2	29.8		33.4	27.9		32.6	11.1		34.3	13.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.8	2.8		21.5	0.3		4.0	0.2		8.5	0.8	
Delay (s)	45.0	32.6		54.9	28.1		36.7	11.3		42.8	14.7	
Level of Service	D	C		D	C		D	B		D	B	
Approach Delay (s)		34.8			39.2			16.7			17.2	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	25.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.99		1.00	0.97			0.92			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3507		1770	3416			3248			3372	
Flt Permitted	0.95	1.00		0.95	1.00			0.91			0.86	
Satd. Flow (perm)	1770	3507		1770	3416			2969			2945	
Volume (vph)	40	372	24	192	286	86	18	48	68	48	110	50
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)	42	392	25	202	301	91	19	51	72	51	116	53
RTOR Reduction (vph)	0	5	0	0	28	0	0	50	0	0	37	0
Lane Group Flow (vph)	42	412	0	202	364	0	0	92	0	0	183	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	5.0	31.9		13.1	40.0			25.0			25.0	
Effective Green, g (s)	5.0	31.9		13.1	40.0			25.0			25.0	
Actuated g/C Ratio	0.06	0.39		0.16	0.49			0.30			0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	108	1364		283	1666			905			898	
v/s Ratio Prot	0.02	c0.12		c0.11	0.11							
v/s Ratio Perm								0.03			c0.06	
v/c Ratio	0.39	0.30		0.71	0.22			0.10			0.20	
Uniform Delay, d1	37.0	17.3		32.7	12.0			20.4			21.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.3	0.6		8.3	0.3			0.2			0.5	
Delay (s)	39.3	17.9		40.9	12.3			20.7			21.6	
Level of Service	D	B		D	B			C			C	
Approach Delay (s)		19.9			22.1			20.7			21.6	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	23	51	335	74	221	608
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	24	54	353	78	233	640
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.96					
vC, conflicting volume	1177	215			431	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1142	215			431	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	93			79	
cM capacity (veh/h)	148	789			1125	

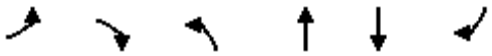
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	78	235	195	446	427
Volume Left	24	0	0	233	0
Volume Right	54	0	78	0	0
cSH	336	1700	1700	1125	1700
Volume to Capacity	0.23	0.14	0.11	0.21	0.25
Queue Length 95th (ft)	22	0	0	19	0
Control Delay (s)	18.9	0.0	0.0	5.7	0.0
Lane LOS	C			A	
Approach Delay (s)	18.9	0.0		2.9	
Approach LOS	C				

Intersection Summary				
Average Delay	2.9			
Intersection Capacity Utilization	49.3%	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		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	22	111	30	24	59	15	20	7	18	32	32	28
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	23	117	32	25	62	16	21	7	19	34	34	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	78			148			346	307	133	322	315	70
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	78			148			346	307	133	322	315	70
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			96	99	98	94	94	97
cM capacity (veh/h)	1521			1433			550	587	917	597	581	993

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	172	103	47	97
Volume Left	23	25	21	34
Volume Right	32	16	19	29
cSH	1521	1433	663	672
Volume to Capacity	0.02	0.02	0.07	0.14
Queue Length 95th (ft)	1	1	6	13
Control Delay (s)	1.1	2.0	10.8	11.3
Lane LOS	A	A	B	B
Approach Delay (s)	1.1	2.0	10.8	11.3
Approach LOS			B	B

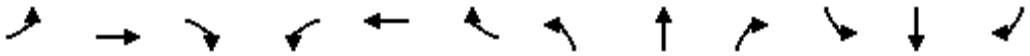
Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	29	67	24	85	222	75
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	31	71	25	89	234	79

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	101	115	313
Volume Left (vph)	31	25	0
Volume Right (vph)	71	0	79
Hadj (s)	-0.32	0.08	-0.12
Departure Headway (s)	4.5	4.5	4.2
Degree Utilization, x	0.13	0.14	0.36
Capacity (veh/h)	728	759	838
Control Delay (s)	8.2	8.3	9.5
Approach Delay (s)	8.2	8.3	9.5
Approach LOS	A	A	A

Intersection Summary			
Delay	9.0		
HCM Level of Service	A		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	0.99		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3236		1770	1863	1583	1770	3383		1770	3429	
Flt Permitted	0.69	0.88		0.62	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1171	2891		1159	1863	1583	1770	3383		1770	3429	
Volume (vph)	93	96	41	105	90	18	28	288	120	120	297	78
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)	98	101	43	111	95	19	29	303	126	126	313	82
RTOR Reduction (vph)	0	33	0	0	0	16	0	34	0	0	15	0
Lane Group Flow (vph)	63	146	0	111	95	3	29	395	0	126	380	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	13.5	13.5		13.5	13.5	13.5	2.7	52.9		8.6	58.8	
Effective Green, g (s)	13.5	13.5		13.5	13.5	13.5	2.7	52.9		8.6	58.8	
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.03	0.61		0.10	0.68	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	182	449		180	289	246	55	2057		175	2318	
v/s Ratio Prot					0.05		0.02	c0.12		c0.07	0.11	
v/s Ratio Perm	0.05	0.05		c0.10		0.00						
v/c Ratio	0.35	0.33		0.62	0.33	0.01	0.53	0.19		0.72	0.16	
Uniform Delay, d1	32.8	32.7		34.3	32.7	31.1	41.5	7.6		38.0	5.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.4		6.2	0.7	0.0	4.2	0.2		13.3	0.0	
Delay (s)	34.0	33.1		40.5	33.4	31.1	45.7	7.8		51.3	5.2	
Level of Service	C	C		D	C	C	D	A		D	A	
Approach Delay (s)		33.3			36.7			10.2			16.3	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	199	4	1	292	2	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	209	4	1	307	2	5

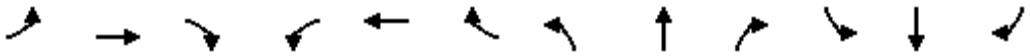
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	140	74	104	205	7
Volume Left (vph)	0	0	1	0	2
Volume Right (vph)	0	4	0	0	5
Hadj (s)	0.03	-0.01	0.04	0.03	-0.34
Departure Headway (s)	4.8	4.7	4.7	4.7	4.7
Degree Utilization, x	0.19	0.10	0.14	0.27	0.01
Capacity (veh/h)	744	744	757	753	703
Control Delay (s)	7.7	7.1	7.2	8.2	7.7
Approach Delay (s)	7.5		7.9		7.7
Approach LOS	A		A		A

Intersection Summary			
Delay	7.7		
HCM Level of Service	A		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	73	108	4	0	243	75	14	14	4	76	11	134
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	77	114	4	0	256	79	15	15	4	80	12	141

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	134	61	335	34	92	141
Volume Left (vph)	77	0	0	15	80	0
Volume Right (vph)	0	4	79	4	0	141
Hadj (s)	0.32	-0.01	-0.11	0.05	0.47	-0.67
Departure Headway (s)	6.0	5.7	5.4	6.4	6.5	5.3
Degree Utilization, x	0.22	0.10	0.50	0.06	0.16	0.21
Capacity (veh/h)	567	601	641	494	518	627
Control Delay (s)	9.5	8.1	13.8	9.8	9.5	8.5
Approach Delay (s)	9.1		13.8	9.8	8.9	
Approach LOS	A		B	A	A	

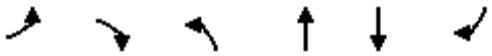
Intersection Summary				
Delay	11.1			
HCM Level of Service	B			
Intersection Capacity Utilization	41.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	22	107	3	1	359	33	2	4	2	30	5	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	23	113	3	1	378	35	2	4	2	32	5	20

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	139	414	8	57
Volume Left (vph)	23	1	2	32
Volume Right (vph)	3	35	2	20
Hadj (s)	0.05	-0.02	-0.07	-0.07
Departure Headway (s)	4.5	4.2	5.1	5.1
Degree Utilization, x	0.18	0.48	0.01	0.08
Capacity (veh/h)	765	834	619	635
Control Delay (s)	8.5	11.1	8.2	8.5
Approach Delay (s)	8.5	11.1	8.2	8.5
Approach LOS	A	B	A	A

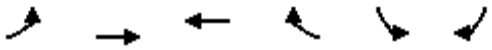
Intersection Summary			
Delay	10.2		
HCM Level of Service	B		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	7	134	376	94	10	175
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	7	141	396	99	11	184
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	944	97	195			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	944	97	195			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	85	71			
cM capacity (veh/h)	186	940	1376			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	148	429	66	7	188
Volume Left	7	396	0	0	0
Volume Right	141	0	0	0	184
cSH	782	1376	1700	1700	1700
Volume to Capacity	0.19	0.29	0.04	0.00	0.11
Queue Length 95th (ft)	17	30	0	0	0
Control Delay (s)	10.7	8.2	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.7	7.1		0.0	
Approach LOS	B				

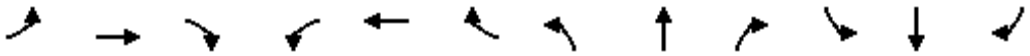
Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	62	193	174	409	320	41
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	65	203	183	431	337	43

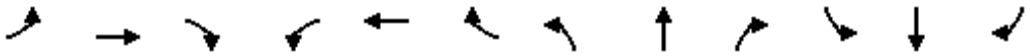
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	133	135	183	431	337	43
Volume Left (vph)	65	0	0	0	337	0
Volume Right (vph)	0	0	0	431	0	43
Hadj (s)	0.28	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	7.1	6.8	6.4	5.7	7.2	6.0
Degree Utilization, x	0.26	0.26	0.33	0.68	0.68	0.07
Capacity (veh/h)	480	498	540	610	479	561
Control Delay (s)	11.4	11.0	11.3	18.8	22.8	8.3
Approach Delay (s)	11.2		16.5		21.2	
Approach LOS	B		C		C	

Intersection Summary			
Delay	16.8		
HCM Level of Service	C		
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		



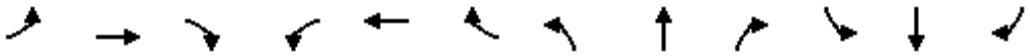
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1587	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1587	
Volume (vph)	0	181	309	108	457	0	0	0	0	118	3	226
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)	0	191	325	114	481	0	0	0	0	124	3	238
RTOR Reduction (vph)	0	0	137	0	0	0	0	0	0	0	197	0
Lane Group Flow (vph)	0	191	188	114	481	0	0	0	0	124	44	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		67.5	67.5	17.0	89.0					19.5	19.5	
Effective Green, g (s)		68.0	68.0	17.5	89.5					20.0	20.0	
Actuated g/C Ratio		0.58	0.58	0.15	0.76					0.17	0.17	
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	
Vehicle Extension (s)		8.0	8.0	8.0	8.0					8.0	8.0	
Lane Grp Cap (vph)		2048	916	264	2696					301	270	
v/s Ratio Prot		0.05		c0.06	0.14						0.03	
v/s Ratio Perm			c0.12							c0.07		
v/c Ratio		0.09	0.21	0.43	0.18					0.41	0.16	
Uniform Delay, d1		11.0	11.8	45.5	3.9					43.5	41.6	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.1	0.5	4.8	0.1					3.9	1.2	
Delay (s)		11.1	12.3	50.3	4.0					47.4	42.8	
Level of Service		B	B	D	A					D	D	
Approach Delay (s)		11.9			12.9			0.0			44.4	
Approach LOS		B			B			A			D	

Intersection Summary				
HCM Average Control Delay	20.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.28			
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	12.0	
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3533	1583	1770	3539		1770	3008				
Flt Permitted		0.95	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		3353	1583	1770	3539		1770	3008				
Volume (vph)	8	220	102	27	168	0	241	0	357	0	0	0
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)	8	232	107	28	177	0	254	0	376	0	0	0
RTOR Reduction (vph)	0	0	38	0	0	0	0	307	0	0	0	0
Lane Group Flow (vph)	0	240	69	28	177	0	254	69	0	0	0	0
Turn Type			Perm	Prot			Perm					
Protected Phases		2		1	6			4				
Permitted Phases			2				4					
Actuated Green, G (s)		74.4	74.4	6.8	85.7		20.8	20.8				
Effective Green, g (s)		74.9	74.9	7.3	86.2		21.3	21.3				
Actuated g/C Ratio		0.65	0.65	0.06	0.75		0.18	0.18				
Clearance Time (s)		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				
Lane Grp Cap (vph)		2174	1027	112	2641		326	555				
v/s Ratio Prot				c0.02	0.05			0.02				
v/s Ratio Perm		c0.07	0.04				c0.14					
v/c Ratio		0.11	0.07	0.25	0.07		0.78	0.12				
Uniform Delay, d1		7.7	7.5	51.5	3.9		44.9	39.3				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.1	0.1	1.2	0.0		11.2	0.1				
Delay (s)		7.8	7.6	52.7	3.9		56.0	39.4				
Level of Service		A	A	D	A		E	D				
Approach Delay (s)		7.7			10.6			46.1			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM Average Control Delay	28.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

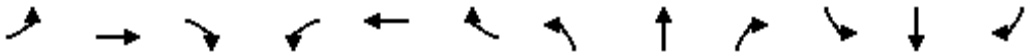


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.96		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1843		1770	1784		1770	3492		1770	3484	
Flt Permitted	0.64	1.00		0.69	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1196	1843		1288	1784		1770	3492		1770	3484	
Volume (vph)	55	89	7	66	102	40	4	492	48	20	483	56
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)	58	94	7	69	107	42	4	518	51	21	508	59
RTOR Reduction (vph)	0	1	0	0	8	0	0	4	0	0	7	0
Lane Group Flow (vph)	58	100	0	69	141	0	4	565	0	21	560	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.1	66.1		66.1	66.1		24.0	49.5		3.9	29.4	
Effective Green, g (s)	67.6	67.6		67.6	67.6		24.5	51.0		4.4	30.9	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.18	0.38		0.03	0.23	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	599	923		645	893		321	1319		58	797	
v/s Ratio Prot		0.05			c0.08		0.00	c0.16		c0.01	c0.16	
v/s Ratio Perm	0.05			0.05								
v/c Ratio	0.10	0.11		0.11	0.16		0.01	0.43		0.36	0.70	
Uniform Delay, d1	17.7	17.8		17.8	18.3		45.3	31.2		63.9	47.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2		0.1	0.1		0.1	0.3		1.4	3.0	
Delay (s)	18.0	18.0		17.9	18.4		45.4	31.5		65.3	50.9	
Level of Service	B	B		B	B		D	C		E	D	
Approach Delay (s)		18.0			18.2			31.6			51.4	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM Average Control Delay	35.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3347		1770	3444		1770	3492		1770	3432	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3347		1770	3444		1770	3492		1770	3432	
Volume (vph)	156	302	172	188	306	67	164	541	53	53	545	138
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)	162	315	179	196	319	70	171	564	55	55	568	144
RTOR Reduction (vph)	0	119	0	0	27	0	0	7	0	0	25	0
Lane Group Flow (vph)	162	375	0	196	362	0	171	612	0	55	687	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	9.6	13.4		10.0	13.8		11.9	34.3		5.3	27.7	
Effective Green, g (s)	8.6	12.4		9.0	12.8		10.9	33.3		4.3	26.7	
Actuated g/C Ratio	0.11	0.17		0.12	0.17		0.15	0.44		0.06	0.36	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	203	553		212	588		257	1550		101	1222	
v/s Ratio Prot	0.09	c0.11		c0.11	0.11		c0.10	0.18		0.03	c0.20	
v/s Ratio Perm												
v/c Ratio	0.80	0.68		0.92	0.62		0.67	0.39		0.54	0.56	
Uniform Delay, d1	32.4	29.4		32.7	28.8		30.3	14.1		34.4	19.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.3	3.3		41.1	1.9		6.4	0.8		5.9	1.9	
Delay (s)	51.6	32.7		73.7	30.7		36.7	14.8		40.3	21.3	
Level of Service	D	C		E	C		D	B		D	C	
Approach Delay (s)		37.4			45.1			19.5			22.7	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



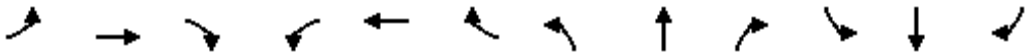
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.98		1.00	0.99			0.93			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3455		1770	3487			3241			3418	
Flt Permitted	0.95	1.00		0.95	1.00			0.88			0.86	
Satd. Flow (perm)	1770	3455		1770	3487			2893			2984	
Volume (vph)	42	362	68	123	490	53	33	46	78	34	75	18
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)	44	381	72	129	516	56	35	48	82	36	79	19
RTOR Reduction (vph)	0	18	0	0	8	0	0	57	0	0	13	0
Lane Group Flow (vph)	44	435	0	129	564	0	0	108	0	0	121	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	5.1	34.6		9.4	38.9			25.0			25.0	
Effective Green, g (s)	5.1	34.6		9.4	38.9			25.0			25.0	
Actuated g/C Ratio	0.06	0.43		0.12	0.48			0.31			0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	111	1476		205	1675			893			921	
v/s Ratio Prot	0.02	0.13		c0.07	c0.16							
v/s Ratio Perm								0.04			c0.04	
v/c Ratio	0.40	0.29		0.63	0.34			0.12			0.13	
Uniform Delay, d1	36.5	15.2		34.1	13.0			20.1			20.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.3	0.5		5.9	0.5			0.3			0.3	
Delay (s)	38.8	15.7		40.1	13.6			20.4			20.5	
Level of Service	D	B		D	B			C			C	
Approach Delay (s)		17.8			18.5			20.4			20.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	22	77	708	96	157	728
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	23	81	745	101	165	766
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.93					
vC, conflicting volume	1509	423			846	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1473	423			846	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	86			79	
cM capacity (veh/h)	86	579			786	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	104	497	349	421	511
Volume Left	23	0	0	165	0
Volume Right	81	0	101	0	0
cSH	255	1700	1700	786	1700
Volume to Capacity	0.41	0.29	0.21	0.21	0.30
Queue Length 95th (ft)	47	0	0	20	0
Control Delay (s)	28.5	0.0	0.0	5.9	0.0
Lane LOS	D			A	
Approach Delay (s)	28.5	0.0		2.6	
Approach LOS	D				

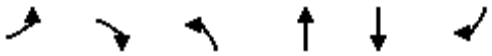
Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	30	127	68	28	80	27	35	11	27	20	19	24
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	32	134	72	29	84	28	37	12	28	21	20	25
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	113			205			425	404	169	424	426	98
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	113			205			425	404	169	424	426	98
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			93	98	97	96	96	97
cM capacity (veh/h)	1477			1366			493	513	874	497	498	957

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	237	142	77	66
Volume Left	32	29	37	21
Volume Right	72	28	28	25
cSH	1477	1366	592	609
Volume to Capacity	0.02	0.02	0.13	0.11
Queue Length 95th (ft)	2	2	11	9
Control Delay (s)	1.2	1.7	12.0	11.6
Lane LOS	A	A	B	B
Approach Delay (s)	1.2	1.7	12.0	11.6
Approach LOS			B	B

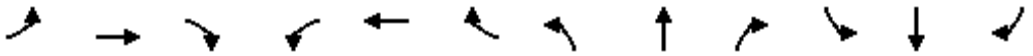
Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	52	76	37	121	239	76
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	55	80	39	127	252	80

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	135	166	332
Volume Left (vph)	55	39	0
Volume Right (vph)	80	0	80
Hadj (s)	-0.24	0.08	-0.11
Departure Headway (s)	4.8	4.7	4.3
Degree Utilization, x	0.18	0.22	0.40
Capacity (veh/h)	687	733	800
Control Delay (s)	8.8	9.0	10.2
Approach Delay (s)	8.8	9.0	10.2
Approach LOS	A	A	B

Intersection Summary			
Delay	9.6		
HCM Level of Service	A		
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		



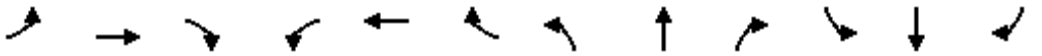
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3277		1770	1863	1583	1770	3434		1770	3424	
Flt Permitted	0.74	0.82		0.54	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1254	2741		1008	1863	1583	1770	3434		1770	3424	
Volume (vph)	194	112	20	190	26	123	49	616	152	133	459	127
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)	204	118	21	200	27	129	52	648	160	140	483	134
RTOR Reduction (vph)	0	7	0	0	0	99	0	19	0	0	20	0
Lane Group Flow (vph)	102	234	0	200	27	30	52	789	0	140	597	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	23.0	23.0		23.0	23.0	23.0	6.4	54.2		10.8	58.6	
Effective Green, g (s)	23.0	23.0		23.0	23.0	23.0	6.4	54.2		10.8	58.6	
Actuated g/C Ratio	0.23	0.23		0.23	0.23	0.23	0.06	0.54		0.11	0.59	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	288	630		232	428	364	113	1861		191	2006	
v/s Ratio Prot					0.01		0.03	c0.23		c0.08	0.17	
v/s Ratio Perm	0.08	0.09		c0.20		0.02						
v/c Ratio	0.35	0.37		0.86	0.06	0.08	0.46	0.42		0.73	0.30	
Uniform Delay, d1	32.3	32.4		37.0	30.1	30.2	45.1	13.6		43.2	10.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.4		26.4	0.1	0.1	1.1	0.7		11.8	0.1	
Delay (s)	33.0	32.8		63.4	30.1	30.3	46.2	14.3		55.0	10.5	
Level of Service	C	C		E	C	C	D	B		D	B	
Approach Delay (s)		32.9			48.9			16.3			18.7	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	267	2	4	324	2	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	281	2	4	341	2	4

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	187	96	118	227	6
Volume Left (vph)	0	0	4	0	2
Volume Right (vph)	0	2	0	0	4
Hadj (s)	0.03	0.02	0.05	0.03	-0.30
Departure Headway (s)	4.8	4.8	4.8	4.8	4.9
Degree Utilization, x	0.25	0.13	0.16	0.30	0.01
Capacity (veh/h)	739	735	735	744	664
Control Delay (s)	8.2	7.3	7.5	8.6	7.9
Approach Delay (s)	7.9		8.2		7.9
Approach LOS	A		A		A

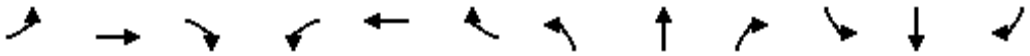
Intersection Summary			
Delay	8.1		
HCM Level of Service	A		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	60	211	3	2	178	62	6	3	4	126	6	109
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	222	3	2	187	65	6	3	4	133	6	115

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	174	114	255	14	139	115
Volume Left (vph)	63	0	2	6	133	0
Volume Right (vph)	0	3	65	4	0	115
Hadj (s)	0.22	0.01	-0.12	-0.06	0.51	-0.67
Departure Headway (s)	5.8	5.6	5.5	6.3	6.5	5.3
Degree Utilization, x	0.28	0.18	0.39	0.02	0.25	0.17
Capacity (veh/h)	591	614	625	508	521	634
Control Delay (s)	9.9	8.6	12.1	9.5	10.4	8.2
Approach Delay (s)	9.4		12.1	9.5	9.4	
Approach LOS	A		B	A	A	

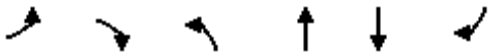
Intersection Summary				
Delay	10.2			
HCM Level of Service	B			
Intersection Capacity Utilization	44.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	30	219	1	7	316	23	1	4	2	29	6	45
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)	33	238	1	8	343	25	1	4	2	32	7	49

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	272	376	8	87
Volume Left (vph)	33	8	1	32
Volume Right (vph)	1	25	2	49
Hadj (s)	0.06	0.00	-0.11	-0.23
Departure Headway (s)	4.6	4.5	5.4	5.1
Degree Utilization, x	0.35	0.47	0.01	0.12
Capacity (veh/h)	754	782	565	620
Control Delay (s)	10.1	11.3	8.5	8.9
Approach Delay (s)	10.1	11.3	8.5	8.9
Approach LOS	B	B	A	A

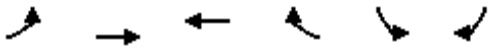
Intersection Summary			
Delay	10.5		
HCM Level of Service	B		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	10	240	338	90	95	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	253	356	95	100	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	869	61	121			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	869	61	121			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	75	76			
cM capacity (veh/h)	220	992	1464			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	263	387	63	67	54
Volume Left	11	356	0	0	0
Volume Right	253	0	0	0	21
cSH	870	1464	1700	1700	1700
Volume to Capacity	0.30	0.24	0.04	0.04	0.03
Queue Length 95th (ft)	32	24	0	0	0
Control Delay (s)	10.9	7.7	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.9	6.7		0.0	
Approach LOS	B				

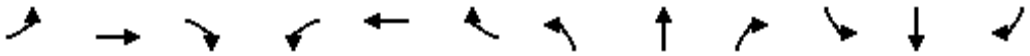
Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	82	243	276	335	397	46
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	86	256	291	353	418	48

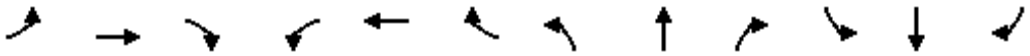
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	172	171	291	353	418	48
Volume Left (vph)	86	0	0	0	418	0
Volume Right (vph)	0	0	0	353	0	48
Hadj (s)	0.29	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	7.7	7.4	7.0	6.3	7.6	6.4
Degree Utilization, x	0.37	0.35	0.57	0.62	0.88	0.09
Capacity (veh/h)	449	465	497	547	460	539
Control Delay (s)	13.8	13.2	17.7	17.9	44.0	8.8
Approach Delay (s)	13.5		17.8		40.3	
Approach LOS	B		C		E	

Intersection Summary			
Delay	24.0		
HCM Level of Service	C		
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		



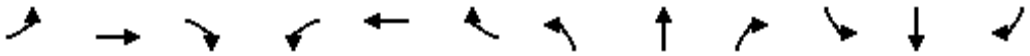
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1592	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1592	
Volume (vph)	0	258	337	302	495	0	0	0	0	177	7	230
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)	0	261	340	305	500	0	0	0	0	179	7	232
RTOR Reduction (vph)	0	0	165	0	0	0	0	0	0	0	198	0
Lane Group Flow (vph)	0	261	175	305	500	0	0	0	0	179	41	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		55.3	55.3	24.2	84.0					15.5	15.5	
Effective Green, g (s)		55.8	55.8	24.7	84.5					16.0	16.0	
Actuated g/C Ratio		0.51	0.51	0.23	0.78					0.15	0.15	
Clearance Time (s)		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	
Lane Grp Cap (vph)		1820	814	403	2756					261	235	
v/s Ratio Prot		0.07		c0.17	0.14						0.03	
v/s Ratio Perm			c0.11							c0.10		
v/c Ratio		0.14	0.21	0.76	0.18					0.69	0.18	
Uniform Delay, d1		13.8	14.4	39.1	3.1					43.9	40.5	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.2	0.6	7.9	0.1					7.3	0.4	
Delay (s)		14.0	15.0	47.0	3.2					51.1	40.8	
Level of Service		B	B	D	A					D	D	
Approach Delay (s)		14.6			19.8			0.0			45.2	
Approach LOS		B			B			A			D	

Intersection Summary			
HCM Average Control Delay	23.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.2%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3533	1583	1770	3539		1770	1583				
Flt Permitted		0.93	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		3301	1583	1770	3539		1770	1583				
Volume (vph)	13	354	84	126	471	0	177	0	438	0	0	0
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)	14	373	88	133	496	0	186	0	461	0	0	0
RTOR Reduction (vph)	0	0	33	0	0	0	0	390	0	0	0	0
Lane Group Flow (vph)	0	387	55	133	496	0	186	71	0	0	0	0
Turn Type			Perm	Prot			custom					
Protected Phases		2		1	6							
Permitted Phases			2				4	4				
Actuated Green, G (s)		71.2	71.2	13.6	89.3		17.2	17.2				
Effective Green, g (s)		71.7	71.7	14.1	89.8		17.7	17.7				
Actuated g/C Ratio		0.62	0.62	0.12	0.78		0.15	0.15				
Clearance Time (s)		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				
Lane Grp Cap (vph)		2049	983	216	2752		271	243				
v/s Ratio Prot				c0.08	0.14							
v/s Ratio Perm		c0.12	0.03				c0.11	0.04				
v/c Ratio		0.19	0.06	0.62	0.18		0.69	0.29				
Uniform Delay, d1		9.4	8.6	48.1	3.3		46.3	43.3				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.2	0.1	5.1	0.1		7.0	0.7				
Delay (s)		9.6	8.7	53.3	3.5		53.3	44.0				
Level of Service		A	A	D	A		D	D				
Approach Delay (s)		9.4			14.0			46.7			0.0	
Approach LOS		A			B			D			A	

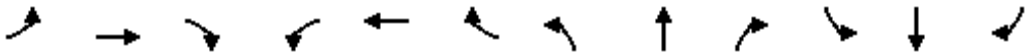
Intersection Summary			
HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3517		1770	1728		1770	3487		1770	3484	
Flt Permitted	0.57	1.00		0.65	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1063	3517		1207	1728		1770	3487		1770	3484	
Volume (vph)	79	155	7	66	113	105	8	784	85	96	544	63
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)	80	157	7	67	114	106	8	792	86	97	549	64
RTOR Reduction (vph)	0	2	0	0	19	0	0	5	0	0	5	0
Lane Group Flow (vph)	80	162	0	67	201	0	8	873	0	97	608	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.5	66.5		66.5	66.5		1.1	43.2		11.0	53.1	
Effective Green, g (s)	68.0	68.0		68.0	68.0		1.6	44.7		11.5	54.6	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.01	0.33		0.08	0.40	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	531	1756		603	863		21	1144		149	1397	
v/s Ratio Prot		0.05			c0.12		0.00	c0.25		c0.05	0.17	
v/s Ratio Perm	0.08			0.06								
v/c Ratio	0.15	0.09		0.11	0.23		0.38	0.76		0.65	0.43	
Uniform Delay, d1	18.5	17.9		18.1	19.3		66.8	41.0		60.4	29.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.1		0.1	0.2		4.2	3.3		7.5	0.3	
Delay (s)	19.1	18.0		18.2	19.5		71.0	44.3		67.9	29.9	
Level of Service	B	B		B	B		E	D		E	C	
Approach Delay (s)		18.4			19.2			44.5			35.1	
Approach LOS		B			B			D			D	

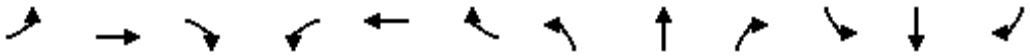
Intersection Summary			
HCM Average Control Delay	34.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	136.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX D- HORIZON 2 (2020) LOS RESULTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3319		1770	3408		1770	3432		1770	3465	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3319		1770	3408		1770	3432		1770	3465	
Volume (vph)	124	344	244	145	156	51	105	304	77	77	664	107
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)	131	362	257	153	164	54	111	320	81	81	699	113
RTOR Reduction (vph)	0	185	0	0	43	0	0	24	0	0	14	0
Lane Group Flow (vph)	131	434	0	153	175	0	111	377	0	81	798	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.9	15.3		9.5	16.9		8.6	30.7		7.5	29.6	
Effective Green, g (s)	6.9	14.3		8.5	15.9		7.6	29.7		6.5	28.6	
Actuated g/C Ratio	0.09	0.19		0.11	0.21		0.10	0.40		0.09	0.38	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	163	633		201	722		179	1359		153	1321	
v/s Ratio Prot	0.07	c0.13		c0.09	0.05		c0.06	0.11		0.05	c0.23	
v/s Ratio Perm												
v/c Ratio	0.80	0.69		0.76	0.24		0.62	0.28		0.53	0.60	
Uniform Delay, d1	33.4	28.3		32.3	24.6		32.3	15.4		32.8	18.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.1	3.1		15.6	0.2		6.5	0.5		3.3	2.1	
Delay (s)	57.5	31.3		47.8	24.7		38.8	15.9		36.1	20.7	
Level of Service	E	C		D	C		D	B		D	C	
Approach Delay (s)		35.9			34.3			20.9			22.1	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



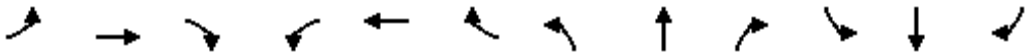
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.99		1.00	0.97			0.92			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3504		1770	3416			3243			3377	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.85	
Satd. Flow (perm)	1770	3504		1770	3416			2928			2905	
Volume (vph)	48	455	32	255	350	105	23	60	88	58	141	61
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	479	34	268	368	111	24	63	93	61	148	64
RTOR Reduction (vph)	0	6	0	0	28	0	0	65	0	0	35	0
Lane Group Flow (vph)	51	507	0	268	451	0	0	115	0	0	238	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	5.3	30.5		14.5	39.7			25.0			25.0	
Effective Green, g (s)	5.3	30.5		14.5	39.7			25.0			25.0	
Actuated g/C Ratio	0.06	0.37		0.18	0.48			0.30			0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	114	1303		313	1654			893			886	
v/s Ratio Prot	0.03	c0.14		c0.15	0.13							
v/s Ratio Perm								0.04			c0.08	
v/c Ratio	0.45	0.39		0.86	0.27			0.13			0.27	
Uniform Delay, d1	36.9	18.9		32.7	12.6			20.6			21.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.8	0.9		19.9	0.4			0.3			0.7	
Delay (s)	39.7	19.8		52.6	13.0			20.9			22.3	
Level of Service	D	B		D	B			C			C	
Approach Delay (s)		21.6			27.2			20.9			22.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	31	63	410	102	276	748
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	33	66	432	107	291	787
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.88					
vC, conflicting volume	1460	269			539	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1387	269			539	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	61	91			72	
cM capacity (veh/h)	85	728			1026	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	99	288	251	553	525
Volume Left	33	0	0	291	0
Volume Right	66	0	107	0	0
cSH	207	1700	1700	1026	1700
Volume to Capacity	0.48	0.17	0.15	0.28	0.31
Queue Length 95th (ft)	58	0	0	29	0
Control Delay (s)	37.2	0.0	0.0	6.8	0.0
Lane LOS	E			A	
Approach Delay (s)	37.2	0.0		3.5	
Approach LOS	E				

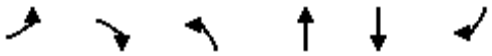
Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	58.9%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	27	145	43	43	77	18	25	9	26	39	40	34
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	153	45	45	81	19	26	9	27	41	42	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	100			198			470	423	175	445	436	91
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	100			198			470	423	175	445	436	91
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			94	98	97	91	91	96
cM capacity (veh/h)	1493			1375			436	496	868	480	488	967

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	226	145	63	119
Volume Left	28	45	26	41
Volume Right	45	19	27	36
cSH	1493	1375	569	569
Volume to Capacity	0.02	0.03	0.11	0.21
Queue Length 95th (ft)	1	3	9	20
Control Delay (s)	1.1	2.6	12.1	13.0
Lane LOS	A	A	B	B
Approach Delay (s)	1.1	2.6	12.1	13.0
Approach LOS			B	B

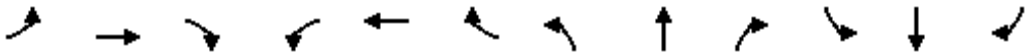
Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	39	84	35	107	284	104
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	41	88	37	113	299	109

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	129	149	408
Volume Left (vph)	41	37	0
Volume Right (vph)	88	0	109
Hadj (s)	-0.31	0.08	-0.13
Departure Headway (s)	4.8	4.8	4.3
Degree Utilization, x	0.17	0.20	0.49
Capacity (veh/h)	672	721	814
Control Delay (s)	8.8	8.9	11.3
Approach Delay (s)	8.8	8.9	11.3
Approach LOS	A	A	B

Intersection Summary			
Delay	10.3		
HCM Level of Service	B		
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		



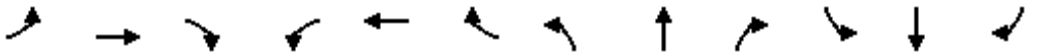
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.95		1.00	0.97	
Flt Protected	0.95	0.99		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3238		1770	1863	1583	1770	3377		1770	3429	
Flt Permitted	0.64	0.87		0.55	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1077	2850		1024	1863	1583	1770	3377		1770	3429	
Volume (vph)	117	121	50	130	111	28	34	362	159	153	365	96
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)	123	127	53	137	117	29	36	381	167	161	384	101
RTOR Reduction (vph)	0	30	0	0	0	24	0	42	0	0	16	0
Lane Group Flow (vph)	76	197	0	137	117	5	36	506	0	161	469	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	15.9	15.9		15.9	15.9	15.9	4.2	50.0		11.1	56.9	
Effective Green, g (s)	15.9	15.9		15.9	15.9	15.9	4.2	50.0		11.1	56.9	
Actuated g/C Ratio	0.18	0.18		0.18	0.18	0.18	0.05	0.56		0.12	0.64	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	192	509		183	333	283	84	1897		221	2192	
v/s Ratio Prot					0.06		0.02	c0.15		c0.09	0.14	
v/s Ratio Perm	0.07	0.07		c0.13		0.00						
v/c Ratio	0.40	0.39		0.75	0.35	0.02	0.43	0.27		0.73	0.21	
Uniform Delay, d1	32.3	32.2		34.7	32.0	30.1	41.2	10.1		37.5	6.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.5		15.4	0.6	0.0	1.3	0.3		11.4	0.0	
Delay (s)	33.6	32.7		50.0	32.7	30.1	42.5	10.4		48.9	6.8	
Level of Service	C	C		D	C	C	D	B		D	A	
Approach Delay (s)		33.0			40.8			12.4			17.2	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	254	5	1	418	3	6
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	267	5	1	440	3	6

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	178	94	148	293	9
Volume Left (vph)	0	0	1	0	3
Volume Right (vph)	0	5	0	0	6
Hadj (s)	0.03	-0.01	0.04	0.03	-0.30
Departure Headway (s)	4.9	4.9	4.8	4.8	5.0
Degree Utilization, x	0.24	0.13	0.20	0.39	0.01
Capacity (veh/h)	723	723	737	745	641
Control Delay (s)	8.3	7.4	7.7	9.6	8.1
Approach Delay (s)	8.0		8.9		8.1
Approach LOS	A		A		A

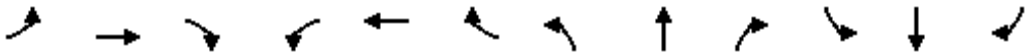
Intersection Summary			
Delay	8.6		
HCM Level of Service	A		
Intersection Capacity Utilization	22.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	96	139	5	0	330	126	17	17	5	102	14	170
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	101	146	5	0	347	133	18	18	5	107	15	179

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	174	78	480	41	122	179
Volume Left (vph)	101	0	0	18	107	0
Volume Right (vph)	0	5	133	5	0	179
Hadj (s)	0.32	-0.01	-0.13	0.04	0.47	-0.67
Departure Headway (s)	6.6	6.3	5.8	7.3	7.2	6.0
Degree Utilization, x	0.32	0.14	0.78	0.08	0.24	0.30
Capacity (veh/h)	514	541	605	442	468	557
Control Delay (s)	11.5	9.0	26.1	11.0	11.2	10.3
Approach Delay (s)	10.7		26.1	11.0	10.7	
Approach LOS	B		D	B	B	

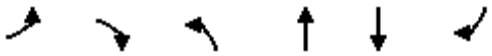
Intersection Summary				
Delay	17.6			
HCM Level of Service	C			
Intersection Capacity Utilization	53.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	27	147	4	1	508	41	3	5	3	37	6	23
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	155	4	1	535	43	3	5	3	39	6	24

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	187	579	12	69
Volume Left (vph)	28	1	3	39
Volume Right (vph)	4	43	3	24
Hadj (s)	0.05	-0.01	-0.08	-0.06
Departure Headway (s)	4.8	4.3	5.7	5.6
Degree Utilization, x	0.25	0.70	0.02	0.11
Capacity (veh/h)	720	813	556	577
Control Delay (s)	9.4	16.8	8.8	9.2
Approach Delay (s)	9.4	16.8	8.8	9.2
Approach LOS	A	C	A	A

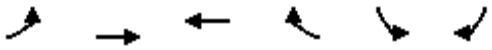
Intersection Summary			
Delay	14.4		
HCM Level of Service	B		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	9	180	530	114	13	212
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	9	189	558	120	14	223
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1301	118	237			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1301	118	237			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	79	58			
cM capacity (veh/h)	88	911	1327			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	199	598	80	9	228
Volume Left	9	558	0	0	0
Volume Right	189	0	0	0	223
cSH	631	1327	1700	1700	1700
Volume to Capacity	0.32	0.42	0.05	0.01	0.13
Queue Length 95th (ft)	34	53	0	0	0
Control Delay (s)	13.3	9.3	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	13.3	8.2		0.0	
Approach LOS	B				

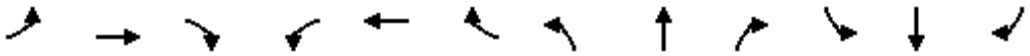
Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	76	236	212	570	407	50
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	80	248	223	600	428	53

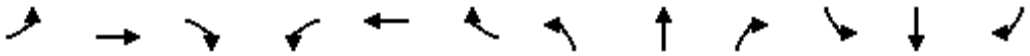
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	163	166	223	600	428	53
Volume Left (vph)	80	0	0	0	428	0
Volume Right (vph)	0	0	0	600	0	53
Hadj (s)	0.28	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	7.9	7.6	7.2	6.4	7.8	6.6
Degree Utilization, x	0.36	0.35	0.44	1.07	0.93	0.10
Capacity (veh/h)	445	460	492	564	452	530
Control Delay (s)	13.9	13.5	14.5	82.9	53.6	9.2
Approach Delay (s)	13.7		64.3		48.7	
Approach LOS	B		F		E	

Intersection Summary			
Delay	49.6		
HCM Level of Service	E		
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		



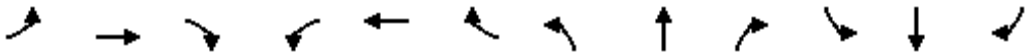
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1587	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1587	
Volume (vph)	0	230	384	132	600	0	0	0	0	144	4	304
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)	0	242	404	139	632	0	0	0	0	152	4	320
RTOR Reduction (vph)	0	0	186	0	0	0	0	0	0	0	243	0
Lane Group Flow (vph)	0	242	218	139	632	0	0	0	0	152	81	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		63.0	63.0	18.5	86.0					22.5	22.5	
Effective Green, g (s)		63.5	63.5	19.0	86.5					23.0	23.0	
Actuated g/C Ratio		0.54	0.54	0.16	0.74					0.20	0.20	
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	
Vehicle Extension (s)		8.0	8.0	8.0	8.0					8.0	8.0	
Lane Grp Cap (vph)		1913	855	286	2605					346	311	
v/s Ratio Prot		0.07		c0.08	0.18						0.05	
v/s Ratio Perm			c0.14							c0.09		
v/c Ratio		0.13	0.26	0.49	0.24					0.44	0.26	
Uniform Delay, d1		13.3	14.4	44.8	5.0					41.6	40.0	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.1	0.7	5.5	0.2					3.8	1.9	
Delay (s)		13.5	15.1	50.3	5.2					45.4	42.0	
Level of Service		B	B	D	A					D	D	
Approach Delay (s)		14.5			13.3			0.0			43.0	
Approach LOS		B			B			A			D	

Intersection Summary				
HCM Average Control Delay	21.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.34			
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	60.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



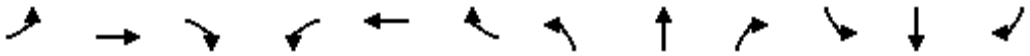
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3529	1583	1770	3539		1770	3008				
Flt Permitted		0.93	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		3305	1583	1770	3539		1770	3008				
Volume (vph)	16	271	124	33	212	0	330	0	436	0	0	0
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)	17	285	131	35	223	0	347	0	459	0	0	0
RTOR Reduction (vph)	0	0	52	0	0	0	0	361	0	0	0	0
Lane Group Flow (vph)	0	302	79	35	223	0	347	98	0	0	0	0
Turn Type			Perm	Prot			Perm					
Protected Phases		2		1	6			4				
Permitted Phases			2				4					
Actuated Green, G (s)		69.5	69.5	8.3	82.3		24.2	24.2				
Effective Green, g (s)		70.0	70.0	8.8	82.8		24.7	24.7				
Actuated g/C Ratio		0.61	0.61	0.08	0.72		0.21	0.21				
Clearance Time (s)		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				
Lane Grp Cap (vph)		2003	959	135	2537		379	643				
v/s Ratio Prot				c0.02	0.06			0.03				
v/s Ratio Perm		c0.09	0.05				c0.20					
v/c Ratio		0.15	0.08	0.26	0.09		0.92	0.15				
Uniform Delay, d1		9.9	9.4	50.3	4.9		44.4	36.9				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.2	0.2	1.0	0.0		26.1	0.1				
Delay (s)		10.0	9.6	51.3	5.0		70.5	37.0				
Level of Service		B	A	D	A		E	D				
Approach Delay (s)		9.9			11.2			51.4			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM Average Control Delay	32.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



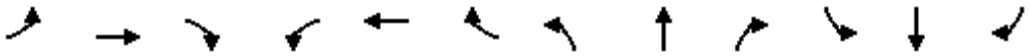
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.96		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1842		1770	1784		1770	3494		1770	3483	
Flt Permitted	0.60	1.00		0.66	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1120	1842		1234	1784		1770	3494		1770	3483	
Volume (vph)	75	109	9	80	124	48	5	616	58	24	594	70
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)	79	115	9	84	131	51	5	648	61	25	625	74
RTOR Reduction (vph)	0	2	0	0	8	0	0	4	0	0	7	0
Lane Group Flow (vph)	79	122	0	84	174	0	5	705	0	25	692	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.1	66.1		66.1	66.1		24.0	55.9		4.2	36.1	
Effective Green, g (s)	67.6	67.6		67.6	67.6		24.5	57.4		4.7	37.6	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.17	0.41		0.03	0.27	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	534	879		589	851		306	1415		59	924	
v/s Ratio Prot		0.07			c0.10		0.00	c0.20		c0.01	c0.20	
v/s Ratio Perm	0.07			0.07								
v/c Ratio	0.15	0.14		0.14	0.20		0.02	0.50		0.42	0.75	
Uniform Delay, d1	20.8	20.8		20.8	21.5		48.6	31.4		67.2	47.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.3		0.1	0.1		0.1	0.4		1.8	3.6	
Delay (s)	21.4	21.1		20.9	21.6		48.7	31.8		69.0	51.3	
Level of Service	C	C		C	C		D	C		E	D	
Approach Delay (s)		21.2			21.4			31.9			51.9	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	36.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	141.7	Sum of lost time (s)	16.0
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.97		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3344		1770	3444		1770	3492		1770	3432	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3344		1770	3444		1770	3492		1770	3432	
Volume (vph)	191	369	215	230	374	82	203	663	65	66	669	169
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)	199	384	224	240	390	85	211	691	68	69	697	176
RTOR Reduction (vph)	0	121	0	0	27	0	0	8	0	0	27	0
Lane Group Flow (vph)	199	487	0	240	448	0	211	751	0	69	846	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.0	15.7		10.0	15.7		13.0	31.6		5.7	24.3	
Effective Green, g (s)	9.0	14.7		9.0	14.7		12.0	30.6		4.7	23.3	
Actuated g/C Ratio	0.12	0.20		0.12	0.20		0.16	0.41		0.06	0.31	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	212	655		212	675		283	1425		111	1066	
v/s Ratio Prot	0.11	c0.15		c0.14	0.13		c0.12	0.22		0.04	c0.25	
v/s Ratio Perm												
v/c Ratio	0.94	0.74		1.13	0.66		0.75	0.53		0.62	0.79	
Uniform Delay, d1	32.7	28.4		33.0	27.9		30.0	16.7		34.3	23.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	44.3	4.6		101.9	2.5		10.2	1.4		10.3	6.1	
Delay (s)	77.0	33.0		134.9	30.3		40.2	18.1		44.6	29.7	
Level of Service	E	C		F	C		D	B		D	C	
Approach Delay (s)		43.8			65.4			23.0			30.8	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM Average Control Delay	38.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.98		1.00	0.99			0.93			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3454		1770	3488			3241			3422	
Flt Permitted	0.95	1.00		0.95	1.00			0.87			0.85	
Satd. Flow (perm)	1770	3454		1770	3488			2851			2930	
Volume (vph)	51	443	85	161	599	65	42	59	100	42	96	22
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)	54	466	89	169	631	68	44	62	105	44	101	23
RTOR Reduction (vph)	0	19	0	0	8	0	0	73	0	0	16	0
Lane Group Flow (vph)	54	536	0	169	691	0	0	138	0	0	152	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	5.4	32.1		11.9	38.6			25.0			25.0	
Effective Green, g (s)	5.4	32.1		11.9	38.6			25.0			25.0	
Actuated g/C Ratio	0.07	0.40		0.15	0.48			0.31			0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	118	1369		260	1662			880			904	
v/s Ratio Prot	0.03	0.16		c0.10	c0.20							
v/s Ratio Perm								0.05			c0.05	
v/c Ratio	0.46	0.39		0.65	0.42			0.16			0.17	
Uniform Delay, d1	36.4	17.5		32.6	13.8			20.3			20.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.8	0.8		5.7	0.8			0.4			0.4	
Delay (s)	39.2	18.3		38.3	14.6			20.7			20.8	
Level of Service	D	B		D	B			C			C	
Approach Delay (s)		20.2			19.2			20.7			20.8	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	31	96	869	123	195	896
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	104	945	134	212	974
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.85					
vC, conflicting volume	1922	539			1078	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1908	539			1078	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	1	79			67	
cM capacity (veh/h)	34	487			642	

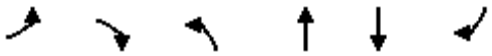
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	138	630	449	537	649
Volume Left	34	0	0	212	0
Volume Right	104	0	134	0	0
cSH	115	1700	1700	642	1700
Volume to Capacity	1.20	0.37	0.26	0.33	0.38
Queue Length 95th (ft)	220	0	0	36	0
Control Delay (s)	219.6	0.0	0.0	8.6	0.0
Lane LOS	F			A	
Approach Delay (s)	219.6	0.0		3.9	
Approach LOS	F				

Intersection Summary			
Average Delay	14.5		
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	37	161	87	42	101	33	45	14	37	24	24	29
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)	40	175	95	46	110	36	49	15	40	26	26	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	146			270			566	540	222	570	569	128
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	146			270			566	540	222	570	569	128
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			87	96	95	93	94	97
cM capacity (veh/h)	1436			1294			380	421	817	381	405	922

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	310	191	104	84
Volume Left	40	46	49	26
Volume Right	95	36	40	32
cSH	1436	1294	488	501
Volume to Capacity	0.03	0.04	0.21	0.17
Queue Length 95th (ft)	2	3	20	15
Control Delay (s)	1.2	2.1	14.4	13.6
Lane LOS	A	A	B	B
Approach Delay (s)	1.2	2.1	14.4	13.6
Approach LOS			B	B

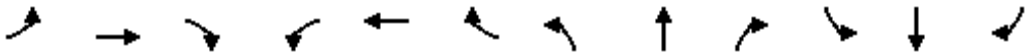
Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	67	96	50	152	301	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	73	104	54	165	327	108

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	177	220	435
Volume Left (vph)	73	54	0
Volume Right (vph)	104	0	108
Hadj (s)	-0.24	0.08	-0.11
Departure Headway (s)	5.2	5.0	4.6
Degree Utilization, x	0.25	0.30	0.55
Capacity (veh/h)	628	686	762
Control Delay (s)	9.9	10.2	13.0
Approach Delay (s)	9.9	10.2	13.0
Approach LOS	A	B	B

Intersection Summary			
Delay	11.6		
HCM Level of Service	B		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		



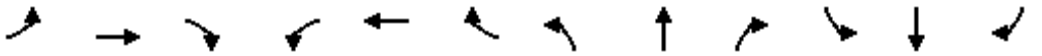
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3279		1770	1863	1583	1770	3429		1770	3424	
Flt Permitted	0.73	0.81		0.50	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1244	2724		926	1863	1583	1770	3429		1770	3424	
Volume (vph)	239	141	24	240	34	156	60	756	199	170	563	156
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)	252	148	25	253	36	164	63	796	209	179	593	164
RTOR Reduction (vph)	0	6	0	0	0	118	0	23	0	0	23	0
Lane Group Flow (vph)	126	293	0	253	36	46	63	982	0	179	734	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	28.0	28.0		28.0	28.0	28.0	7.0	48.4		11.6	53.0	
Effective Green, g (s)	28.0	28.0		28.0	28.0	28.0	7.0	48.4		11.6	53.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28	0.28	0.07	0.48		0.12	0.53	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	348	763		259	522	443	124	1660		205	1815	
v/s Ratio Prot					0.02		0.04	c0.29		c0.10	0.21	
v/s Ratio Perm	0.10	0.11		c0.27		0.03						
v/c Ratio	0.36	0.38		0.98	0.07	0.10	0.51	0.59		0.87	0.40	
Uniform Delay, d1	28.8	29.0		35.7	26.4	26.7	44.8	18.7		43.5	14.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.3		49.0	0.1	0.1	1.2	1.6		30.3	0.1	
Delay (s)	29.5	29.4		84.6	26.5	26.8	46.0	20.2		73.7	14.2	
Level of Service	C	C		F	C	C	D	C		E	B	
Approach Delay (s)		29.4			59.1			21.7			25.6	
Approach LOS		C			E			C			C	

Intersection Summary			
HCM Average Control Delay	30.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	354	3	5	434	3	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	385	3	5	472	3	5

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	257	132	163	314	9
Volume Left (vph)	0	0	5	0	3
Volume Right (vph)	0	3	0	0	5
Hadj (s)	0.03	0.02	0.05	0.03	-0.27
Departure Headway (s)	4.9	4.9	4.9	4.9	5.4
Degree Utilization, x	0.35	0.18	0.22	0.43	0.01
Capacity (veh/h)	718	713	718	729	601
Control Delay (s)	9.4	7.8	8.1	10.2	8.4
Approach Delay (s)	8.9		9.5		8.4
Approach LOS	A		A		A

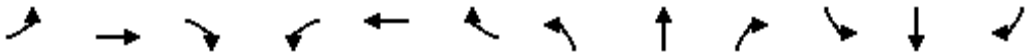
Intersection Summary			
Delay	9.2		
HCM Level of Service	A		
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	79	283	4	3	262	94	8	4	5	164	8	139
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)	86	308	4	3	285	102	9	4	5	178	9	151

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	240	158	390	18	187	151
Volume Left (vph)	86	0	3	9	178	0
Volume Right (vph)	0	4	102	5	0	151
Hadj (s)	0.21	0.01	-0.12	-0.05	0.51	-0.67
Departure Headway (s)	6.4	6.2	6.1	7.5	7.2	6.0
Degree Utilization, x	0.43	0.27	0.66	0.04	0.38	0.25
Capacity (veh/h)	535	552	578	406	469	559
Control Delay (s)	13.0	10.4	19.9	10.8	13.3	9.9
Approach Delay (s)	12.0		19.9	10.8	11.8	
Approach LOS	B		C	B	B	

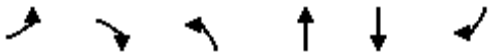
Intersection Summary				
Delay	14.6			
HCM Level of Service	B			
Intersection Capacity Utilization	56.1%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	37	304	1	9	449	28	1	5	3	36	8	55
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)	40	330	1	10	488	30	1	5	3	39	9	60

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	372	528	10	108
Volume Left (vph)	40	10	1	39
Volume Right (vph)	1	30	3	60
Hadj (s)	0.05	0.00	-0.14	-0.23
Departure Headway (s)	5.0	4.7	6.1	5.8
Degree Utilization, x	0.51	0.69	0.02	0.17
Capacity (veh/h)	699	746	489	542
Control Delay (s)	13.0	17.8	9.2	10.0
Approach Delay (s)	13.0	17.8	9.2	10.0
Approach LOS	B	C	A	B

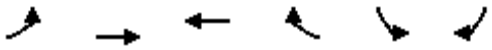
Intersection Summary			
Delay	15.1		
HCM Level of Service	C		
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	13	329	475	110	116	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	358	516	120	126	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1232	76	152			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1232	76	152			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	87	63	64			
cM capacity (veh/h)	108	970	1426			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	372	556	80	84	68
Volume Left	14	516	0	0	0
Volume Right	358	0	0	0	26
cSH	744	1426	1700	1700	1700
Volume to Capacity	0.50	0.36	0.05	0.05	0.04
Queue Length 95th (ft)	71	42	0	0	0
Control Delay (s)	14.6	8.5	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	14.6	7.5		0.0	
Approach LOS	B				

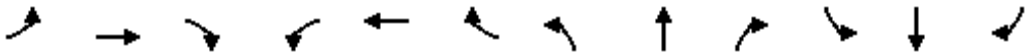
Intersection Summary				
Average Delay	8.8			
Intersection Capacity Utilization	61.4%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	100	297	337	471	520	56
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	106	316	359	501	553	60

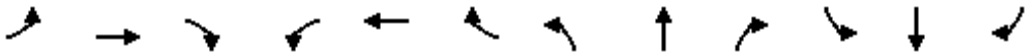
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	212	211	359	501	553	60
Volume Left (vph)	106	0	0	0	553	0
Volume Right (vph)	0	0	0	501	0	60
Hadj (s)	0.29	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	8.0	7.8	7.3	6.6	8.2	7.0
Degree Utilization, x	0.47	0.45	0.73	0.92	1.26	0.12
Capacity (veh/h)	441	457	479	532	446	500
Control Delay (s)	16.7	15.8	26.3	46.1	158.1	9.7
Approach Delay (s)	16.3		37.9		143.7	
Approach LOS	C		E		F	

Intersection Summary			
Delay	67.3		
HCM Level of Service	F		
Intersection Capacity Utilization	67.7%	ICU Level of Service	C
Analysis Period (min)	15		



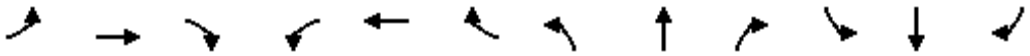
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1591	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1591	
Volume (vph)	0	335	427	368	639	0	0	0	0	216	9	309
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)	0	338	431	372	645	0	0	0	0	218	9	312
RTOR Reduction (vph)	0	0	241	0	0	0	0	0	0	0	228	0
Lane Group Flow (vph)	0	338	190	372	645	0	0	0	0	218	93	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		47.4	47.4	29.6	81.5					18.0	18.0	
Effective Green, g (s)		47.9	47.9	30.1	82.0					18.5	18.5	
Actuated g/C Ratio		0.44	0.44	0.28	0.76					0.17	0.17	
Clearance Time (s)		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	
Lane Grp Cap (vph)		1562	699	491	2675					302	271	
v/s Ratio Prot		0.10		c0.21	0.18						0.06	
v/s Ratio Perm			c0.12							c0.12		
v/c Ratio		0.22	0.27	0.76	0.24					0.72	0.34	
Uniform Delay, d1		18.7	19.2	35.9	4.0					42.6	39.6	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.3	1.0	6.6	0.2					8.2	0.8	
Delay (s)		19.0	20.2	42.5	4.2					50.8	40.4	
Level of Service		B	C	D	A					D	D	
Approach Delay (s)		19.7			18.2			0.0			44.6	
Approach LOS		B			B			A			D	

Intersection Summary				
HCM Average Control Delay	24.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	76.4%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				



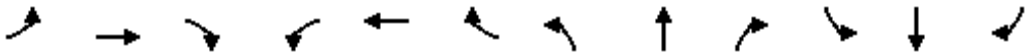
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3527	1583	1770	3539		1770	1583				
Flt Permitted		0.88	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		3112	1583	1770	3539		1770	1583				
Volume (vph)	32	435	103	154	580	0	244	0	535	0	0	0
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)	34	458	108	162	611	0	257	0	563	0	0	0
RTOR Reduction (vph)	0	0	47	0	0	0	0	435	0	0	0	0
Lane Group Flow (vph)	0	492	61	162	611	0	257	128	0	0	0	0
Turn Type			Perm	Prot			custom					
Protected Phases		2		1	6							
Permitted Phases			2				4	4				
Actuated Green, G (s)		64.5	64.5	15.3	84.3		22.2	22.2				
Effective Green, g (s)		65.0	65.0	15.8	84.8		22.7	22.7				
Actuated g/C Ratio		0.56	0.56	0.14	0.73		0.20	0.20				
Clearance Time (s)		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				
Lane Grp Cap (vph)		1751	891	242	2598		348	311				
v/s Ratio Prot				c0.09	0.17							
v/s Ratio Perm		c0.16	0.04				c0.15	0.08				
v/c Ratio		0.28	0.07	0.67	0.24		0.74	0.41				
Uniform Delay, d1		13.1	11.5	47.4	4.9		43.6	40.6				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.4	0.1	6.9	0.2		8.0	0.9				
Delay (s)		13.5	11.6	54.2	5.1		51.6	41.5				
Level of Service		B	B	D	A		D	D				
Approach Delay (s)		13.2			15.4			44.6			0.0	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



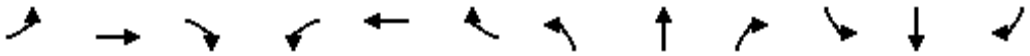
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3515		1770	1728		1770	3488		1770	3482	
Flt Permitted	0.51	1.00		0.62	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	948	3515		1151	1728		1770	3488		1770	3482	
Volume (vph)	102	189	9	80	138	128	10	968	104	117	671	81
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)	103	191	9	81	139	129	10	978	105	118	678	82
RTOR Reduction (vph)	0	2	0	0	20	0	0	5	0	0	5	0
Lane Group Flow (vph)	103	198	0	81	248	0	10	1078	0	118	755	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.2	66.2		66.2	66.2		2.3	51.0		13.3	62.0	
Effective Green, g (s)	67.7	67.7		67.7	67.7		2.8	52.5		13.8	63.5	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.02	0.36		0.09	0.43	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	440	1630		534	801		34	1254		167	1514	
v/s Ratio Prot		0.06			c0.14		0.01	c0.31		c0.07	0.22	
v/s Ratio Perm	0.11			0.07								
v/c Ratio	0.23	0.12		0.15	0.31		0.29	0.86		0.71	0.50	
Uniform Delay, d1	23.6	22.2		22.6	24.5		70.6	43.3		64.1	29.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.2		0.2	0.3		1.8	6.3		10.6	0.4	
Delay (s)	24.8	22.4		22.7	24.8		72.4	49.6		74.7	30.1	
Level of Service	C	C		C	C		E	D		E	C	
Approach Delay (s)		23.2			24.3			49.9			36.1	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	38.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	146.0	Sum of lost time (s)	12.0
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3318		1770	3407		1770	3432		1770	3465	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3318		1770	3407		1770	3432		1770	3465	
Volume (vph)	124	343	245	145	155	51	105	304	77	76	665	107
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)	131	361	258	153	163	54	111	320	81	80	700	113
RTOR Reduction (vph)	0	186	0	0	43	0	0	24	0	0	14	0
Lane Group Flow (vph)	131	433	0	153	174	0	111	377	0	80	799	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.9	15.3		9.5	16.9		8.6	30.7		7.5	29.6	
Effective Green, g (s)	6.9	14.3		8.5	15.9		7.6	29.7		6.5	28.6	
Actuated g/C Ratio	0.09	0.19		0.11	0.21		0.10	0.40		0.09	0.38	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	163	633		201	722		179	1359		153	1321	
v/s Ratio Prot	0.07	c0.13		c0.09	0.05		c0.06	0.11		0.05	c0.23	
v/s Ratio Perm												
v/c Ratio	0.80	0.68		0.76	0.24		0.62	0.28		0.52	0.60	
Uniform Delay, d1	33.4	28.2		32.3	24.5		32.3	15.4		32.8	18.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.1	3.1		15.6	0.2		6.5	0.5		3.2	2.1	
Delay (s)	57.5	31.3		47.8	24.7		38.8	15.9		36.0	20.7	
Level of Service	E	C		D	C		D	B		D	C	
Approach Delay (s)		35.9			34.3			20.9			22.1	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.99		1.00	0.97			0.93			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3506		1770	3416			3251			3377	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.85	
Satd. Flow (perm)	1770	3506		1770	3416			2931			2910	
Volume (vph)	48	455	30	233	349	105	23	60	83	58	141	61
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	479	32	245	367	111	24	63	87	61	148	64
RTOR Reduction (vph)	0	6	0	0	28	0	0	60	0	0	35	0
Lane Group Flow (vph)	51	505	0	245	450	0	0	114	0	0	238	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	5.3	30.9		14.1	39.7			25.0			25.0	
Effective Green, g (s)	5.3	30.9		14.1	39.7			25.0			25.0	
Actuated g/C Ratio	0.06	0.38		0.17	0.48			0.30			0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	114	1321		304	1654			894			887	
v/s Ratio Prot	0.03	c0.14		c0.14	0.13							
v/s Ratio Perm								0.04			c0.08	
v/c Ratio	0.45	0.38		0.81	0.27			0.13			0.27	
Uniform Delay, d1	36.9	18.6		32.6	12.6			20.6			21.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.8	0.8		14.4	0.4			0.3			0.7	
Delay (s)	39.7	19.4		47.0	13.0			20.9			22.3	
Level of Service	D	B		D	B			C			C	
Approach Delay (s)		21.3			24.5			20.9			22.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	27	62	412	86	268	758
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	65	434	91	282	798
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.88					
vC, conflicting volume	1442	262			524	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1366	262			524	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	68	91			73	
cM capacity (veh/h)	89	736			1039	

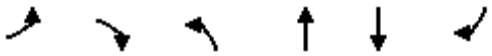
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	94	289	235	548	532
Volume Left	28	0	0	282	0
Volume Right	65	0	91	0	0
cSH	229	1700	1700	1039	1700
Volume to Capacity	0.41	0.17	0.14	0.27	0.31
Queue Length 95th (ft)	47	0	0	28	0
Control Delay (s)	31.2	0.0	0.0	6.5	0.0
Lane LOS	D			A	
Approach Delay (s)	31.2	0.0		3.3	
Approach LOS	D				

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	58.2%	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		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	27	133	37	31	48	18	24	9	22	39	39	34
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	140	39	33	51	19	25	9	23	41	41	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	69			179			398	351	159	369	361	60
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	69			179			398	351	159	369	361	60
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			95	98	97	92	92	96
cM capacity (veh/h)	1531			1397			495	550	886	546	543	1005

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	207	102	58	118
Volume Left	28	33	25	41
Volume Right	39	19	23	36
cSH	1531	1397	613	633
Volume to Capacity	0.02	0.02	0.09	0.19
Queue Length 95th (ft)	1	2	8	17
Control Delay (s)	1.1	2.6	11.5	12.0
Lane LOS	A	A	B	B
Approach Delay (s)	1.1	2.6	11.5	12.0
Approach LOS			B	B

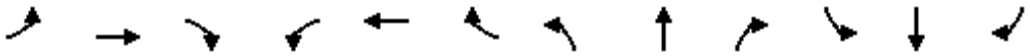
Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	34	77	12	108	285	83
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	36	81	13	114	300	87

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	117	126	387
Volume Left (vph)	36	13	0
Volume Right (vph)	81	0	87
Hadj (s)	-0.32	0.05	-0.10
Departure Headway (s)	4.7	4.7	4.2
Degree Utilization, x	0.15	0.16	0.46
Capacity (veh/h)	692	737	823
Control Delay (s)	8.6	8.6	10.8
Approach Delay (s)	8.6	8.6	10.8
Approach LOS	A	A	B

Intersection Summary			
Delay	9.9		
HCM Level of Service	A		
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		



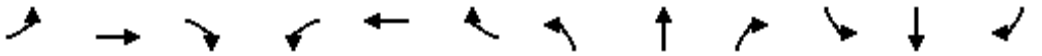
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.95		1.00	0.97	
Flt Protected	0.95	0.99		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3241		1770	1863	1583	1770	3365		1770	3429	
Flt Permitted	0.63	0.88		0.55	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1072	2883		1023	1863	1583	1770	3365		1770	3429	
Volume (vph)	112	125	50	133	112	24	34	349	171	163	362	95
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)	118	132	53	140	118	25	36	367	180	172	381	100
RTOR Reduction (vph)	0	30	0	0	0	21	0	51	0	0	16	0
Lane Group Flow (vph)	76	197	0	140	118	4	36	496	0	172	465	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	16.1	16.1		16.1	16.1	16.1	4.2	50.0		11.4	57.2	
Effective Green, g (s)	16.1	16.1		16.1	16.1	16.1	4.2	50.0		11.4	57.2	
Actuated g/C Ratio	0.18	0.18		0.18	0.18	0.18	0.05	0.56		0.13	0.64	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	193	519		184	335	285	83	1880		225	2191	
v/s Ratio Prot					0.06		0.02	c0.15		c0.10	0.14	
v/s Ratio Perm	0.07	0.07		c0.14		0.00						
v/c Ratio	0.39	0.38		0.76	0.35	0.02	0.43	0.26		0.76	0.21	
Uniform Delay, d1	32.4	32.3		34.9	32.1	30.2	41.5	10.2		37.8	6.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.5		16.8	0.6	0.0	1.3	0.3		14.3	0.0	
Delay (s)	33.7	32.8		51.7	32.8	30.2	42.8	10.6		52.0	6.8	
Level of Service	C	C		D	C	C	D	B		D	A	
Approach Delay (s)		33.0			41.9			12.6			18.7	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	292	5	1	369	3	6
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	307	5	1	388	3	6

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	205	108	131	259	9
Volume Left (vph)	0	0	1	0	3
Volume Right (vph)	0	5	0	0	6
Hadj (s)	0.03	0.00	0.04	0.03	-0.30
Departure Headway (s)	4.9	4.8	4.8	4.8	5.0
Degree Utilization, x	0.28	0.14	0.17	0.35	0.01
Capacity (veh/h)	730	729	731	739	642
Control Delay (s)	8.5	7.4	7.6	9.1	8.1
Approach Delay (s)	8.1		8.6		8.1
Approach LOS	A		A		A

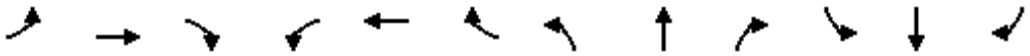
Intersection Summary			
Delay	8.4		
HCM Level of Service	A		
Intersection Capacity Utilization	20.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	93	153	5	0	394	87	17	17	5	91	14	171
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	98	161	5	0	415	92	18	18	5	96	15	180

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	178	86	506	41	111	180
Volume Left (vph)	98	0	0	18	96	0
Volume Right (vph)	0	5	92	5	0	180
Hadj (s)	0.31	-0.01	-0.07	0.04	0.47	-0.67
Departure Headway (s)	6.6	6.3	5.9	7.5	7.3	6.1
Degree Utilization, x	0.33	0.15	0.83	0.09	0.22	0.31
Capacity (veh/h)	514	539	601	441	460	544
Control Delay (s)	11.6	9.2	30.9	11.2	11.1	10.6
Approach Delay (s)	10.8		30.9	11.2	10.8	
Approach LOS	B		D	B	B	

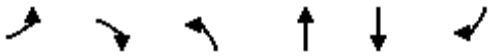
Intersection Summary				
Delay	20.0			
HCM Level of Service	C			
Intersection Capacity Utilization	53.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	27	150	4	1	531	41	3	5	3	37	6	23
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	158	4	1	559	43	3	5	3	39	6	24

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	191	603	12	69
Volume Left (vph)	28	1	3	39
Volume Right (vph)	4	43	3	24
Hadj (s)	0.05	-0.01	-0.08	-0.06
Departure Headway (s)	4.8	4.4	5.8	5.6
Degree Utilization, x	0.26	0.73	0.02	0.11
Capacity (veh/h)	716	812	555	569
Control Delay (s)	9.5	18.2	8.9	9.3
Approach Delay (s)	9.5	18.2	8.9	9.3
Approach LOS	A	C	A	A

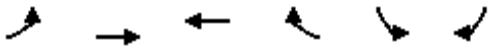
Intersection Summary			
Delay	15.5		
HCM Level of Service	C		
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	10	182	547	114	13	218
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	192	576	120	14	229
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1340	122	243			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1340	122	243			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	87	79	56			
cM capacity (veh/h)	81	907	1320			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	202	616	80	9	234
Volume Left	11	576	0	0	0
Volume Right	192	0	0	0	229
cSH	593	1320	1700	1700	1700
Volume to Capacity	0.34	0.44	0.05	0.01	0.14
Queue Length 95th (ft)	38	57	0	0	0
Control Delay (s)	14.2	9.5	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	14.2	8.4		0.0	
Approach LOS	B				

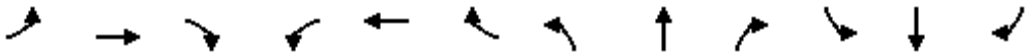
Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	76	236	212	587	409	50
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	80	248	223	618	431	53

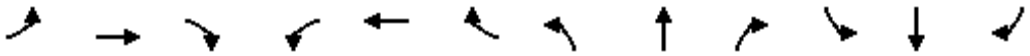
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	163	166	223	618	431	53
Volume Left (vph)	80	0	0	0	431	0
Volume Right (vph)	0	0	0	618	0	53
Hadj (s)	0.28	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	7.9	7.6	7.1	6.4	7.8	6.6
Degree Utilization, x	0.36	0.35	0.44	1.10	0.94	0.10
Capacity (veh/h)	444	459	492	568	453	529
Control Delay (s)	13.9	13.5	14.5	92.8	54.2	9.1
Approach Delay (s)	13.7		72.0		49.3	
Approach LOS	B		F		E	

Intersection Summary			
Delay	53.8		
HCM Level of Service	F		
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		



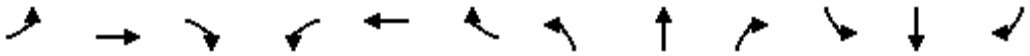
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1587	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1587	
Volume (vph)	0	232	384	132	600	0	0	0	0	144	4	322
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)	0	244	404	139	632	0	0	0	0	152	4	339
RTOR Reduction (vph)	0	0	187	0	0	0	0	0	0	0	242	0
Lane Group Flow (vph)	0	244	217	139	632	0	0	0	0	152	101	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		62.6	62.6	18.5	85.6					22.9	22.9	
Effective Green, g (s)		63.1	63.1	19.0	86.1					23.4	23.4	
Actuated g/C Ratio		0.54	0.54	0.16	0.73					0.20	0.20	
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	
Vehicle Extension (s)		8.0	8.0	8.0	8.0					8.0	8.0	
Lane Grp Cap (vph)		1901	850	286	2593					352	316	
v/s Ratio Prot		0.07		c0.08	0.18						0.06	
v/s Ratio Perm			c0.14							c0.09		
v/c Ratio		0.13	0.26	0.49	0.24					0.43	0.32	
Uniform Delay, d1		13.5	14.6	44.8	5.1					41.2	40.2	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.1	0.7	5.5	0.2					3.6	2.5	
Delay (s)		13.7	15.3	50.3	5.3					44.8	42.7	
Level of Service		B	B	D	A					D	D	
Approach Delay (s)		14.7			13.4			0.0			43.4	
Approach LOS		B			B			A			D	

Intersection Summary				
HCM Average Control Delay	21.6	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.34			
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	61.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



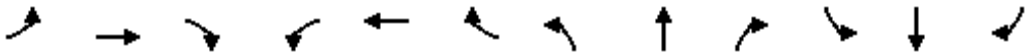
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3528	1583	1770	3539		1770	3008				
Flt Permitted		0.93	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		3286	1583	1770	3539		1770	3008				
Volume (vph)	19	271	124	33	212	0	330	0	436	0	0	0
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)	20	285	131	35	223	0	347	0	459	0	0	0
RTOR Reduction (vph)	0	0	52	0	0	0	0	361	0	0	0	0
Lane Group Flow (vph)	0	305	79	35	223	0	347	98	0	0	0	0
Turn Type			Perm	Prot			Perm					
Protected Phases		2		1	6			4				
Permitted Phases			2				4					
Actuated Green, G (s)		69.5	69.5	8.3	82.3		24.2	24.2				
Effective Green, g (s)		70.0	70.0	8.8	82.8		24.7	24.7				
Actuated g/C Ratio		0.61	0.61	0.08	0.72		0.21	0.21				
Clearance Time (s)		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				
Lane Grp Cap (vph)		1992	959	135	2537		379	643				
v/s Ratio Prot				c0.02	0.06			0.03				
v/s Ratio Perm		c0.09	0.05				c0.20					
v/c Ratio		0.15	0.08	0.26	0.09		0.92	0.15				
Uniform Delay, d1		9.9	9.4	50.3	4.9		44.4	36.9				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.2	0.2	1.0	0.0		26.1	0.1				
Delay (s)		10.0	9.6	51.3	5.0		70.5	37.0				
Level of Service		B	A	D	A		E	D				
Approach Delay (s)		9.9			11.2			51.4			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM Average Control Delay	32.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



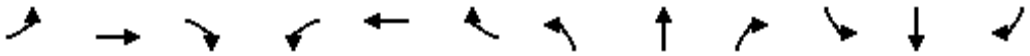
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.96		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1842		1770	1784		1770	3494		1770	3483	
Flt Permitted	0.60	1.00		0.66	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1120	1842		1234	1784		1770	3494		1770	3483	
Volume (vph)	74	109	9	80	124	48	5	616	58	24	593	70
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)	78	115	9	84	131	51	5	648	61	25	624	74
RTOR Reduction (vph)	0	2	0	0	8	0	0	4	0	0	7	0
Lane Group Flow (vph)	78	122	0	84	174	0	5	705	0	25	691	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.1	66.1		66.1	66.1		24.0	55.8		4.2	36.0	
Effective Green, g (s)	67.6	67.6		67.6	67.6		24.5	57.3		4.7	37.5	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.17	0.40		0.03	0.26	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	535	879		589	852		306	1414		59	922	
v/s Ratio Prot		0.07			c0.10		0.00	c0.20		c0.01	c0.20	
v/s Ratio Perm	0.07			0.07								
v/c Ratio	0.15	0.14		0.14	0.20		0.02	0.50		0.42	0.75	
Uniform Delay, d1	20.8	20.7		20.7	21.4		48.6	31.4		67.1	47.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.3		0.1	0.1		0.1	0.4		1.8	3.6	
Delay (s)	21.4	21.0		20.9	21.6		48.7	31.8		68.9	51.4	
Level of Service	C	C		C	C		D	C		E	D	
Approach Delay (s)		21.2			21.3			31.9			52.0	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	36.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	141.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



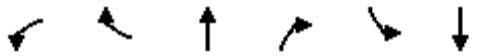
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.97		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3343		1770	3445		1770	3492		1770	3432	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3343		1770	3445		1770	3492		1770	3432	
Volume (vph)	191	369	216	230	373	81	203	663	65	66	670	169
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)	199	384	225	240	389	84	211	691	68	69	698	176
RTOR Reduction (vph)	0	121	0	0	27	0	0	8	0	0	27	0
Lane Group Flow (vph)	199	488	0	240	446	0	211	751	0	69	847	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.0	15.7		10.0	15.7		13.0	31.6		5.7	24.3	
Effective Green, g (s)	9.0	14.7		9.0	14.7		12.0	30.6		4.7	23.3	
Actuated g/C Ratio	0.12	0.20		0.12	0.20		0.16	0.41		0.06	0.31	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	212	655		212	675		283	1425		111	1066	
v/s Ratio Prot	0.11	c0.15		c0.14	0.13		c0.12	0.22		0.04	c0.25	
v/s Ratio Perm												
v/c Ratio	0.94	0.74		1.13	0.66		0.75	0.53		0.62	0.79	
Uniform Delay, d1	32.7	28.4		33.0	27.9		30.0	16.7		34.3	23.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	44.3	4.6		101.9	2.4		10.2	1.4		10.3	6.1	
Delay (s)	77.0	33.0		134.9	30.3		40.2	18.1		44.6	29.8	
Level of Service	E	C		F	C		D	B		D	C	
Approach Delay (s)		43.8			65.5			23.0			30.9	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM Average Control Delay	38.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.98		1.00	0.99			0.93			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3455		1770	3487			3249			3422	
Flt Permitted	0.95	1.00		0.95	1.00			0.87			0.85	
Satd. Flow (perm)	1770	3455		1770	3487			2852			2935	
Volume (vph)	51	442	84	148	598	65	42	59	93	42	96	22
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)	54	465	88	156	629	68	44	62	98	44	101	23
RTOR Reduction (vph)	0	19	0	0	8	0	0	68	0	0	16	0
Lane Group Flow (vph)	54	534	0	156	689	0	0	136	0	0	152	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	5.4	32.4		11.6	38.6			25.0			25.0	
Effective Green, g (s)	5.4	32.4		11.6	38.6			25.0			25.0	
Actuated g/C Ratio	0.07	0.40		0.14	0.48			0.31			0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	118	1382		253	1662			880			906	
v/s Ratio Prot	0.03	0.15		c0.09	c0.20							
v/s Ratio Perm								0.05			c0.05	
v/c Ratio	0.46	0.39		0.62	0.41			0.15			0.17	
Uniform Delay, d1	36.4	17.2		32.6	13.8			20.3			20.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.8	0.8		4.4	0.8			0.4			0.4	
Delay (s)	39.2	18.1		37.0	14.6			20.7			20.8	
Level of Service	D	B		D	B			C			C	
Approach Delay (s)		19.9			18.7			20.7			20.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	25	93	872	112	190	901
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	26	98	918	118	200	948
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.85					
vC, conflicting volume	1851	518			1036	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1825	518			1036	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	35	81			70	
cM capacity (veh/h)	41	503			667	

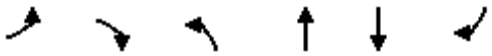
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	124	612	424	516	632
Volume Left	26	0	0	200	0
Volume Right	98	0	118	0	0
cSH	148	1700	1700	667	1700
Volume to Capacity	0.84	0.36	0.25	0.30	0.37
Queue Length 95th (ft)	138	0	0	31	0
Control Delay (s)	95.9	0.0	0.0	7.8	0.0
Lane LOS	F			A	
Approach Delay (s)	95.9	0.0		3.5	
Approach LOS	F				

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	37	144	83	35	75	33	43	14	34	24	23	29
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	39	152	87	37	79	35	45	15	36	25	24	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	114			239			486	461	195	486	487	96
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114			239			486	461	195	486	487	96
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			97			90	97	96	94	95	97
cM capacity (veh/h)	1476			1328			438	471	846	441	455	960

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	278	151	96	80
Volume Left	39	37	45	25
Volume Right	87	35	36	31
cSH	1476	1328	542	562
Volume to Capacity	0.03	0.03	0.18	0.14
Queue Length 95th (ft)	2	2	16	12
Control Delay (s)	1.3	2.1	13.1	12.5
Lane LOS	A	A	B	B
Approach Delay (s)	1.3	2.1	13.1	12.5
Approach LOS			B	B

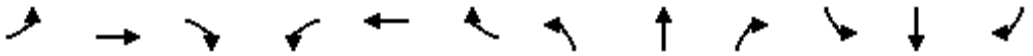
Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	60	84	30	154	304	86
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	88	32	162	320	91

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	152	194	411
Volume Left (vph)	63	32	0
Volume Right (vph)	88	0	91
Hadj (s)	-0.23	0.07	-0.10
Departure Headway (s)	5.0	4.8	4.5
Degree Utilization, x	0.21	0.26	0.51
Capacity (veh/h)	644	708	782
Control Delay (s)	9.4	9.5	11.9
Approach Delay (s)	9.4	9.5	11.9
Approach LOS	A	A	B

Intersection Summary			
Delay	10.8		
HCM Level of Service	B		
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		



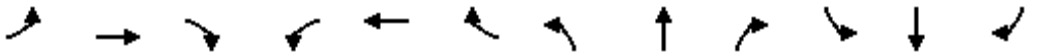
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3280		1770	1863	1583	1770	3424		1770	3424	
Flt Permitted	0.73	0.82		0.50	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1242	2730		924	1863	1583	1770	3424		1770	3424	
Volume (vph)	236	143	24	244	35	157	60	748	207	175	558	154
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)	248	151	25	257	37	165	63	787	218	184	587	162
RTOR Reduction (vph)	0	6	0	0	0	119	0	25	0	0	23	0
Lane Group Flow (vph)	124	294	0	257	37	46	63	980	0	184	726	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	28.0	28.0		28.0	28.0	28.0	7.0	48.3		11.7	53.0	
Effective Green, g (s)	28.0	28.0		28.0	28.0	28.0	7.0	48.3		11.7	53.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28	0.28	0.07	0.48		0.12	0.53	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	348	764		259	522	443	124	1654		207	1815	
v/s Ratio Prot					0.02		0.04	c0.29		c0.10	0.21	
v/s Ratio Perm	0.10	0.11		c0.28		0.03						
v/c Ratio	0.36	0.38		0.99	0.07	0.10	0.51	0.59		0.89	0.40	
Uniform Delay, d1	28.8	29.0		35.9	26.4	26.7	44.8	18.7		43.5	14.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.3		53.5	0.1	0.1	1.2	1.6		32.9	0.1	
Delay (s)	29.4	29.4		89.4	26.5	26.8	46.0	20.3		76.4	14.2	
Level of Service	C	C		F	C	C	D	C		E	B	
Approach Delay (s)		29.4			61.9			21.8			26.4	
Approach LOS		C			E			C			C	

Intersection Summary			
HCM Average Control Delay	30.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	367	3	5	419	3	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	386	3	5	441	3	5

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	258	132	152	294	8
Volume Left (vph)	0	0	5	0	3
Volume Right (vph)	0	3	0	0	5
Hadj (s)	0.03	0.02	0.05	0.03	-0.27
Departure Headway (s)	4.9	4.9	4.9	4.9	5.3
Degree Utilization, x	0.35	0.18	0.21	0.40	0.01
Capacity (veh/h)	722	718	718	728	607
Control Delay (s)	9.4	7.8	8.0	9.8	8.4
Approach Delay (s)	8.8		9.2		8.4
Approach LOS	A		A		A

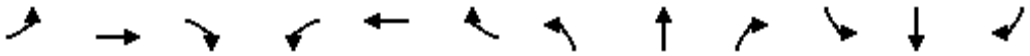
Intersection Summary			
Delay	9.0		
HCM Level of Service	A		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	79	305	4	3	300	69	8	4	5	149	8	140
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	83	321	4	3	316	73	8	4	5	157	8	147

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	244	165	392	18	165	147
Volume Left (vph)	83	0	3	8	157	0
Volume Right (vph)	0	4	73	5	0	147
Hadj (s)	0.20	0.02	-0.08	-0.05	0.51	-0.67
Departure Headway (s)	6.3	6.2	6.0	7.4	7.2	6.0
Degree Utilization, x	0.43	0.28	0.66	0.04	0.33	0.25
Capacity (veh/h)	544	562	581	410	467	557
Control Delay (s)	12.8	10.3	19.8	10.7	12.6	9.8
Approach Delay (s)	11.8		19.8	10.7	11.3	
Approach LOS	B		C	B	B	

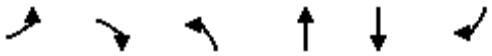
Intersection Summary				
Delay	14.4			
HCM Level of Service	B			
Intersection Capacity Utilization	56.3%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	37	312	1	9	463	28	1	5	3	36	8	55
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	39	328	1	9	487	29	1	5	3	38	8	58

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	368	526	9	104
Volume Left (vph)	39	9	1	38
Volume Right (vph)	1	29	3	58
Hadj (s)	0.05	0.00	-0.14	-0.23
Departure Headway (s)	4.9	4.7	6.1	5.8
Degree Utilization, x	0.50	0.69	0.02	0.17
Capacity (veh/h)	701	749	492	543
Control Delay (s)	12.8	17.5	9.2	9.9
Approach Delay (s)	12.8	17.5	9.2	9.9
Approach LOS	B	C	A	A

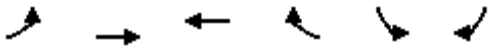
Intersection Summary			
Delay	14.9		
HCM Level of Service	B		
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	15	334	485	110	116	28
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	352	511	116	122	29
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1216	76	152			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1216	76	152			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	86	64	64			
cM capacity (veh/h)	111	970	1427			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	367	549	77	81	70
Volume Left	16	511	0	0	0
Volume Right	352	0	0	0	29
cSH	729	1427	1700	1700	1700
Volume to Capacity	0.50	0.36	0.05	0.05	0.04
Queue Length 95th (ft)	72	41	0	0	0
Control Delay (s)	14.9	8.5	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	14.9	7.5		0.0	
Approach LOS	B				

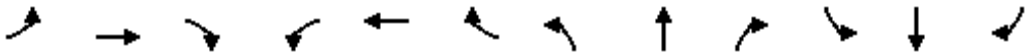
Intersection Summary			
Average Delay	8.9		
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	100	297	337	481	525	56
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	105	313	355	506	553	59

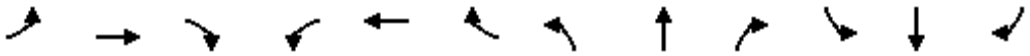
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	209	208	355	506	553	59
Volume Left (vph)	105	0	0	0	553	0
Volume Right (vph)	0	0	0	506	0	59
Hadj (s)	0.29	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	8.0	7.8	7.3	6.6	8.2	7.0
Degree Utilization, x	0.47	0.45	0.72	0.93	1.26	0.11
Capacity (veh/h)	441	457	479	534	446	501
Control Delay (s)	16.6	15.7	25.7	47.7	157.1	9.7
Approach Delay (s)	16.2		38.6		142.9	
Approach LOS	C		E		F	

Intersection Summary			
Delay	67.4		
HCM Level of Service	F		
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		



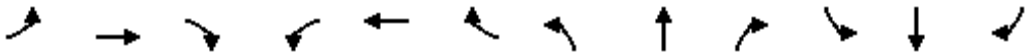
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1591	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1591	
Volume (vph)	0	340	427	368	640	0	0	0	0	216	9	319
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)	0	343	431	372	646	0	0	0	0	218	9	322
RTOR Reduction (vph)	0	0	241	0	0	0	0	0	0	0	227	0
Lane Group Flow (vph)	0	343	190	372	646	0	0	0	0	218	104	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		47.4	47.4	29.6	81.5					18.0	18.0	
Effective Green, g (s)		47.9	47.9	30.1	82.0					18.5	18.5	
Actuated g/C Ratio		0.44	0.44	0.28	0.76					0.17	0.17	
Clearance Time (s)		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	
Lane Grp Cap (vph)		1562	699	491	2675					302	271	
v/s Ratio Prot		0.10		c0.21	0.18						0.07	
v/s Ratio Perm			c0.12							c0.12		
v/c Ratio		0.22	0.27	0.76	0.24					0.72	0.38	
Uniform Delay, d1		18.7	19.2	35.9	4.0					42.6	39.9	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.3	1.0	6.6	0.2					8.2	0.9	
Delay (s)		19.1	20.2	42.5	4.2					50.8	40.8	
Level of Service		B	C	D	A					D	D	
Approach Delay (s)		19.7			18.2			0.0			44.8	
Approach LOS		B			B			A			D	

Intersection Summary				
HCM Average Control Delay	24.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	77.0%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3525	1583	1770	3539		1770	1583				
Flt Permitted		0.87	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		3064	1583	1770	3539		1770	1583				
Volume (vph)	37	435	103	154	580	0	244	0	535	0	0	0
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)	39	458	108	162	611	0	257	0	563	0	0	0
RTOR Reduction (vph)	0	0	47	0	0	0	0	435	0	0	0	0
Lane Group Flow (vph)	0	497	61	162	611	0	257	128	0	0	0	0
Turn Type			Perm	Prot			custom					
Protected Phases		2		1	6							
Permitted Phases			2				4	4				
Actuated Green, G (s)		64.5	64.5	15.3	84.3		22.2	22.2				
Effective Green, g (s)		65.0	65.0	15.8	84.8		22.7	22.7				
Actuated g/C Ratio		0.56	0.56	0.14	0.73		0.20	0.20				
Clearance Time (s)		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				
Lane Grp Cap (vph)		1724	891	242	2598		348	311				
v/s Ratio Prot				c0.09	0.17							
v/s Ratio Perm		c0.16	0.04				c0.15	0.08				
v/c Ratio		0.29	0.07	0.67	0.24		0.74	0.41				
Uniform Delay, d1		13.2	11.5	47.4	4.9		43.6	40.5				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.4	0.1	6.9	0.2		8.0	0.9				
Delay (s)		13.6	11.6	54.2	5.1		51.6	41.4				
Level of Service		B	B	D	A		D	D				
Approach Delay (s)		13.2			15.4			44.6			0.0	
Approach LOS		B			B			D			A	

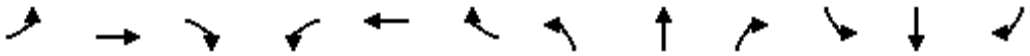
Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3515		1770	1728		1770	3488		1770	3482	
Flt Permitted	0.51	1.00		0.62	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	948	3515		1151	1728		1770	3488		1770	3482	
Volume (vph)	101	189	9	80	138	128	10	968	104	117	671	81
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)	102	191	9	81	139	129	10	978	105	118	678	82
RTOR Reduction (vph)	0	2	0	0	20	0	0	5	0	0	5	0
Lane Group Flow (vph)	102	198	0	81	248	0	10	1078	0	118	755	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.2	66.2		66.2	66.2		2.3	51.0		13.3	62.0	
Effective Green, g (s)	67.7	67.7		67.7	67.7		2.8	52.5		13.8	63.5	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.02	0.36		0.09	0.43	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	440	1630		534	801		34	1254		167	1514	
v/s Ratio Prot		0.06			c0.14		0.01	c0.31		c0.07	0.22	
v/s Ratio Perm	0.11			0.07								
v/c Ratio	0.23	0.12		0.15	0.31		0.29	0.86		0.71	0.50	
Uniform Delay, d1	23.5	22.2		22.6	24.5		70.6	43.3		64.1	29.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.2		0.2	0.3		1.8	6.3		10.6	0.4	
Delay (s)	24.8	22.4		22.7	24.8		72.4	49.6		74.7	30.1	
Level of Service	C	C		C	C		E	D		E	C	
Approach Delay (s)		23.2			24.3			49.9			36.1	
Approach LOS		C			C			D			D	

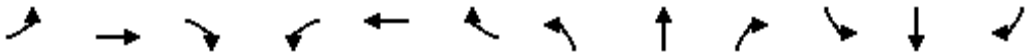
Intersection Summary			
HCM Average Control Delay	38.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	146.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX E- HORIZON 3 (2030) LOS RESULTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3318		1770	3408		1770	3431		1770	3466	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3318		1770	3408		1770	3431		1770	3466	
Volume (vph)	152	420	300	177	190	63	128	371	95	94	812	130
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)	165	457	326	192	207	68	139	403	103	102	883	141
RTOR Reduction (vph)	0	179	0	0	44	0	0	26	0	0	15	0
Lane Group Flow (vph)	165	604	0	192	231	0	139	480	0	102	1009	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	9.7	17.6		10.0	17.9		9.4	27.1		8.3	26.0	
Effective Green, g (s)	8.7	16.6		9.0	16.9		8.4	26.1		7.3	25.0	
Actuated g/C Ratio	0.12	0.22		0.12	0.23		0.11	0.35		0.10	0.33	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	205	734		212	768		198	1194		172	1155	
v/s Ratio Prot	0.09	c0.18		c0.11	0.07		c0.08	0.14		0.06	c0.29	
v/s Ratio Perm												
v/c Ratio	0.80	0.82		0.91	0.30		0.70	0.40		0.59	0.87	
Uniform Delay, d1	32.3	27.8		32.6	24.1		32.1	18.5		32.4	23.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.1	7.4		36.7	0.2		10.7	1.0		5.4	9.3	
Delay (s)	52.4	35.2		69.3	24.4		42.8	19.5		37.8	32.8	
Level of Service	D	D		E	C		D	B		D	C	
Approach Delay (s)		38.2			42.8			24.6			33.3	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	34.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.99		1.00	0.97			0.92			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3504		1770	3416			3244			3379	
Flt Permitted	0.95	1.00		0.95	1.00			0.88			0.83	
Satd. Flow (perm)	1770	3504		1770	3416			2888			2836	
Volume (vph)	59	556	40	315	427	129	27	74	108	71	174	74
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)	64	604	43	342	464	140	29	80	117	77	189	80
RTOR Reduction (vph)	0	6	0	0	28	0	0	81	0	0	35	0
Lane Group Flow (vph)	64	641	0	342	576	0	0	145	0	0	311	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	5.7	30.0		15.0	39.3			25.0			25.0	
Effective Green, g (s)	5.7	30.0		15.0	39.3			25.0			25.0	
Actuated g/C Ratio	0.07	0.37		0.18	0.48			0.30			0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	123	1282		324	1637			880			865	
v/s Ratio Prot	0.04	c0.18		c0.19	0.17							
v/s Ratio Perm								0.05			c0.11	
v/c Ratio	0.52	0.50		1.06	0.35			0.16			0.36	
Uniform Delay, d1	36.8	20.2		33.5	13.4			20.9			22.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.9	1.4		65.4	0.6			0.4			1.2	
Delay (s)	40.8	21.6		98.9	14.0			21.3			23.4	
Level of Service	D	C		F	B			C			C	
Approach Delay (s)		23.3			44.7			21.3			23.4	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	38	78	502	126	338	915
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	85	546	137	367	995
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.78					
vC, conflicting volume	1846	341			683	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1802	341			683	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	87			59	
cM capacity (veh/h)	33	655			906	

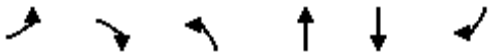
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	126	364	319	699	663
Volume Left	41	0	0	367	0
Volume Right	85	0	137	0	0
cSH	91	1700	1700	906	1700
Volume to Capacity	1.39	0.21	0.19	0.41	0.39
Queue Length 95th (ft)	236	0	0	50	0
Control Delay (s)	313.8	0.0	0.0	8.9	0.0
Lane LOS	F			A	
Approach Delay (s)	313.8	0.0		4.6	
Approach LOS	F				

Intersection Summary			
Average Delay	21.1		
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	33	179	53	54	94	22	30	11	31	48	49	42
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)	36	195	58	59	102	24	33	12	34	52	53	46
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	126			252			599	539	223	566	555	114
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	126			252			599	539	223	566	555	114
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			90	97	96	87	87	95
cM capacity (veh/h)	1460			1313			336	419	816	387	410	938

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	288	185	78	151
Volume Left	36	59	33	52
Volume Right	58	24	34	46
cSH	1460	1313	469	482
Volume to Capacity	0.02	0.04	0.17	0.31
Queue Length 95th (ft)	2	4	15	33
Control Delay (s)	1.1	2.8	14.2	15.9
Lane LOS	A	A	B	C
Approach Delay (s)	1.1	2.8	14.2	15.9
Approach LOS			B	C

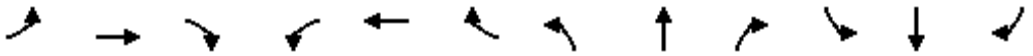
Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	46	103	44	131	351	129
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	50	112	48	142	382	140

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	162	190	522
Volume Left (vph)	50	48	0
Volume Right (vph)	112	0	140
Hadj (s)	-0.32	0.08	-0.13
Departure Headway (s)	5.2	5.0	4.5
Degree Utilization, x	0.23	0.27	0.65
Capacity (veh/h)	619	678	784
Control Delay (s)	9.8	9.8	15.3
Approach Delay (s)	9.8	9.8	15.3
Approach LOS	A	A	C

Intersection Summary			
Delay	13.1		
HCM Level of Service	B		
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.95		1.00	0.97	
Flt Protected	0.95	0.99		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3241		1770	1863	1583	1770	3376		1770	3429	
Flt Permitted	0.58	0.83		0.47	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	975	2709		881	1863	1583	1770	3376		1770	3429	
Volume (vph)	143	150	60	160	136	35	42	443	197	188	446	117
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)	155	163	65	174	148	38	46	482	214	204	485	127
RTOR Reduction (vph)	0	27	0	0	0	30	0	45	0	0	18	0
Lane Group Flow (vph)	90	266	0	174	148	8	46	651	0	204	594	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	19.8	19.8		19.8	19.8	19.8	4.7	49.8		12.0	57.1	
Effective Green, g (s)	19.8	19.8		19.8	19.8	19.8	4.7	49.8		12.0	57.1	
Actuated g/C Ratio	0.21	0.21		0.21	0.21	0.21	0.05	0.53		0.13	0.61	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	206	573		186	394	335	89	1796		227	2092	
v/s Ratio Prot					0.08		0.03	c0.19		c0.12	0.17	
v/s Ratio Perm	0.09	0.10		c0.20		0.01						
v/c Ratio	0.44	0.46		0.94	0.38	0.02	0.52	0.36		0.90	0.28	
Uniform Delay, d1	32.1	32.3		36.3	31.6	29.2	43.3	12.7		40.2	8.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.6		47.4	0.6	0.0	2.1	0.6		33.4	0.1	
Delay (s)	33.5	32.9		83.6	32.2	29.3	45.4	13.3		73.6	8.7	
Level of Service	C	C		F	C	C	D	B		E	A	
Approach Delay (s)		33.0			56.8			15.3			24.9	
Approach LOS		C			E			B			C	

Intersection Summary			
HCM Average Control Delay	28.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	93.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	316	6	2	518	3	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	343	7	2	563	3	9

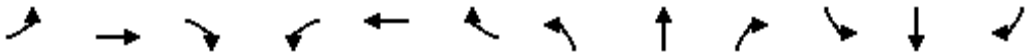
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	229	121	190	375	12
Volume Left (vph)	0	0	2	0	3
Volume Right (vph)	0	7	0	0	9
Hadj (s)	0.03	0.00	0.04	0.03	-0.35
Departure Headway (s)	5.0	5.0	4.9	4.9	5.3
Degree Utilization, x	0.32	0.17	0.26	0.51	0.02
Capacity (veh/h)	703	701	723	733	602
Control Delay (s)	9.2	7.8	8.3	11.5	8.4
Approach Delay (s)	8.7		10.4		8.4
Approach LOS	A		B		A

Intersection Summary			
Delay	9.8		
HCM Level of Service	A		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	118	173	6	0	418	160	20	20	6	125	17	209
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)	128	188	7	0	454	174	22	22	7	136	18	227

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	222	101	628	50	154	227
Volume Left (vph)	128	0	0	22	136	0
Volume Right (vph)	0	7	174	7	0	227
Hadj (s)	0.32	-0.01	-0.13	0.04	0.47	-0.67
Departure Headway (s)	7.1	6.8	6.3	8.1	7.7	6.5
Degree Utilization, x	0.44	0.19	1.10	0.11	0.33	0.41
Capacity (veh/h)	489	512	562	415	454	537
Control Delay (s)	14.5	10.2	93.7	12.2	13.2	12.9
Approach Delay (s)	13.1		93.7	12.2	13.0	
Approach LOS	B		F	B	B	

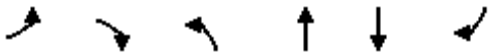
Intersection Summary			
Delay	49.7		
HCM Level of Service	E		
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	33	184	5	2	641	50	3	6	3	45	8	28
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)	36	200	5	2	697	54	3	7	3	49	9	30

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	241	753	13	88
Volume Left (vph)	36	2	3	49
Volume Right (vph)	5	54	3	30
Hadj (s)	0.05	-0.01	-0.07	-0.06
Departure Headway (s)	5.1	4.5	6.4	6.2
Degree Utilization, x	0.34	0.95	0.02	0.15
Capacity (veh/h)	690	788	533	557
Control Delay (s)	10.8	41.5	9.5	10.3
Approach Delay (s)	10.8	41.5	9.5	10.3
Approach LOS	B	E	A	B

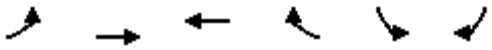
Intersection Summary			
Delay	31.9		
HCM Level of Service	D		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	10	222	667	140	16	260
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	241	725	152	17	283
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1685	150	300			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1685	150	300			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	72	42			
cM capacity (veh/h)	36	870	1258			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	252	776	101	12	288
Volume Left	11	725	0	0	0
Volume Right	241	0	0	0	283
cSH	435	1258	1700	1700	1700
Volume to Capacity	0.58	0.58	0.06	0.01	0.17
Queue Length 95th (ft)	89	96	0	0	0
Control Delay (s)	24.1	11.4	0.0	0.0	0.0
Lane LOS	C	B			
Approach Delay (s)	24.1	10.1		0.0	
Approach LOS	C				

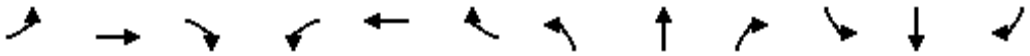
Intersection Summary			
Average Delay	10.4		
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	93	288	259	716	500	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	101	313	282	778	543	65

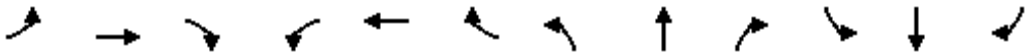
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	205	209	282	778	543	65
Volume Left (vph)	101	0	0	0	543	0
Volume Right (vph)	0	0	0	778	0	65
Hadj (s)	0.28	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	8.0	7.8	7.3	6.6	8.1	6.9
Degree Utilization, x	0.46	0.45	0.57	1.43	1.22	0.12
Capacity (veh/h)	443	458	487	548	452	510
Control Delay (s)	16.4	15.8	18.4	222.2	141.5	9.7
Approach Delay (s)	16.1		168.0		127.4	
Approach LOS	C		F		F	

Intersection Summary			
Delay	125.9		
HCM Level of Service	F		
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		



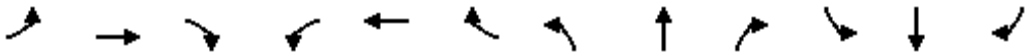
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1587	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1587	
Volume (vph)	0	282	472	161	744	0	0	0	0	175	5	382
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)	0	307	513	175	809	0	0	0	0	190	5	415
RTOR Reduction (vph)	0	0	272	0	0	0	0	0	0	0	157	0
Lane Group Flow (vph)	0	307	241	175	809	0	0	0	0	190	263	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		54.8	54.8	20.7	80.0					28.5	28.5	
Effective Green, g (s)		55.3	55.3	21.2	80.5					29.0	29.0	
Actuated g/C Ratio		0.47	0.47	0.18	0.69					0.25	0.25	
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	
Vehicle Extension (s)		8.0	8.0	8.0	8.0					8.0	8.0	
Lane Grp Cap (vph)		1666	745	319	2425					437	392	
v/s Ratio Prot		0.09		c0.10	c0.23						c0.17	
v/s Ratio Perm			0.15							0.11		
v/c Ratio		0.18	0.32	0.55	0.33					0.43	0.67	
Uniform Delay, d1		18.0	19.4	43.8	7.6					37.3	40.0	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.2	1.2	6.2	0.4					2.9	8.9	
Delay (s)		18.3	20.6	50.0	7.9					40.3	48.8	
Level of Service		B	C	D	A					D	D	
Approach Delay (s)		19.7			15.4			0.0			46.2	
Approach LOS		B			B			A			D	

Intersection Summary			
HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



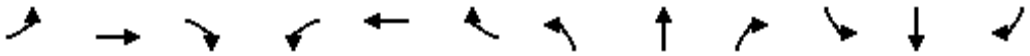
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3528	1583	1770	3539		1770	3008				
Flt Permitted		0.92	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		3266	1583	1770	3539		1770	3008				
Volume (vph)	22	331	152	40	261	0	412	0	532	0	0	0
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)	24	360	165	43	284	0	448	0	578	0	0	0
RTOR Reduction (vph)	0	0	66	0	0	0	0	450	0	0	0	0
Lane Group Flow (vph)	0	384	99	43	284	0	448	128	0	0	0	0
Turn Type			Perm	Prot			Perm					
Protected Phases		2		1	6			4				
Permitted Phases			2				4					
Actuated Green, G (s)		68.5	68.5	8.5	81.5		25.0	25.0				
Effective Green, g (s)		69.0	69.0	9.0	82.0		25.5	25.5				
Actuated g/C Ratio		0.60	0.60	0.08	0.71		0.22	0.22				
Clearance Time (s)		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				
Lane Grp Cap (vph)		1951	946	138	2513		391	664				
v/s Ratio Prot				c0.02	0.08			0.04				
v/s Ratio Perm		c0.12	0.06				c0.25					
v/c Ratio		0.20	0.10	0.31	0.11		1.15	0.19				
Uniform Delay, d1		10.6	10.0	50.3	5.3		45.0	36.6				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.2	0.2	1.3	0.0		91.5	0.1				
Delay (s)		10.8	10.2	51.6	5.3		136.5	36.8				
Level of Service		B	B	D	A		F	D				
Approach Delay (s)		10.6			11.4			80.3			0.0	
Approach LOS		B			B			F			A	

Intersection Summary			
HCM Average Control Delay	48.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



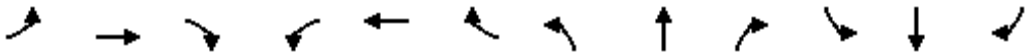
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.96		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1841		1770	1785		1770	3493		1770	3483	
Flt Permitted	0.55	1.00		0.62	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1019	1841		1163	1785		1770	3493		1770	3483	
Volume (vph)	93	133	11	98	152	59	6	755	71	29	725	86
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)	99	141	12	104	162	63	6	803	76	31	771	91
RTOR Reduction (vph)	0	2	0	0	9	0	0	4	0	0	6	0
Lane Group Flow (vph)	99	151	0	104	216	0	6	875	0	31	856	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.1	66.1		66.1	66.1		24.0	63.8		4.5	44.3	
Effective Green, g (s)	67.6	67.6		67.6	67.6		24.5	65.3		5.0	45.8	
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.16	0.44		0.03	0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	460	830		524	805		289	1522		59	1064	
v/s Ratio Prot		0.08			c0.12		0.00	c0.25		c0.02	c0.25	
v/s Ratio Perm	0.10			0.09								
v/c Ratio	0.22	0.18		0.20	0.27		0.02	0.57		0.53	0.80	
Uniform Delay, d1	25.0	24.6		24.8	25.7		52.6	31.9		71.3	47.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.5		0.2	0.2		0.1	0.6		3.8	4.7	
Delay (s)	26.1	25.1		25.0	25.9		52.8	32.5		75.1	52.7	
Level of Service	C	C		C	C		D	C		E	D	
Approach Delay (s)		25.5			25.6			32.6			53.5	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	38.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	149.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.7%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.97		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3343		1770	3444		1770	3492		1770	3432	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3343		1770	3444		1770	3492		1770	3432	
Volume (vph)	233	451	264	281	457	100	249	810	79	80	819	206
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)	243	470	275	293	476	104	259	844	82	83	853	215
RTOR Reduction (vph)	0	117	0	0	26	0	0	8	0	0	28	0
Lane Group Flow (vph)	243	628	0	293	554	0	259	918	0	83	1040	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.0	18.0		10.0	18.0		13.8	27.4		7.6	21.2	
Effective Green, g (s)	9.0	17.0		9.0	17.0		12.8	26.4		6.6	20.2	
Actuated g/C Ratio	0.12	0.23		0.12	0.23		0.17	0.35		0.09	0.27	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	212	758		212	781		302	1229		156	924	
v/s Ratio Prot	0.14	c0.19		c0.17	0.16		c0.15	0.26		0.05	c0.30	
v/s Ratio Perm												
v/c Ratio	1.15	0.83		1.38	0.71		0.86	0.75		0.53	1.13	
Uniform Delay, d1	33.0	27.6		33.0	26.7		30.2	21.4		32.7	27.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	106.8	7.5		198.5	3.0		20.6	4.2		3.5	70.3	
Delay (s)	139.8	35.1		231.5	29.7		50.9	25.5		36.2	97.7	
Level of Service	F	D		F	C		D	C		D	F	
Approach Delay (s)		60.8			97.4			31.1			93.2	
Approach LOS		E			F			C			F	

Intersection Summary			
HCM Average Control Delay	68.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.8%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.98		1.00	0.99			0.93			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3453		1770	3487			3240			3424	
Flt Permitted	0.95	1.00		0.95	1.00			0.85			0.82	
Satd. Flow (perm)	1770	3453		1770	3487			2796			2853	
Volume (vph)	62	540	104	197	731	79	51	73	124	51	119	26
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)	67	581	112	212	786	85	55	78	133	55	128	28
RTOR Reduction (vph)	0	19	0	0	9	0	0	92	0	0	15	0
Lane Group Flow (vph)	67	674	0	212	862	0	0	174	0	0	196	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	7.3	31.1		12.9	36.7			25.0			25.0	
Effective Green, g (s)	7.3	31.1		12.9	36.7			25.0			25.0	
Actuated g/C Ratio	0.09	0.38		0.16	0.45			0.31			0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	160	1326		282	1580			863			881	
v/s Ratio Prot	0.04	0.20		c0.12	c0.25							
v/s Ratio Perm								0.06			c0.07	
v/c Ratio	0.42	0.51		0.75	0.55			0.20			0.22	
Uniform Delay, d1	34.8	19.1		32.5	16.1			20.6			20.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.8	1.4		10.8	1.4			0.5			0.6	
Delay (s)	36.6	20.5		43.3	17.5			21.2			21.4	
Level of Service	D	C		D	B			C			C	
Approach Delay (s)		21.9			22.5			21.2			21.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	118	1061	150	239	1095
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	128	1153	163	260	1190
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.78					
vC, conflicting volume	2349	658			1316	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2447	658			1316	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	68			50	
cM capacity (veh/h)	10	407			521	

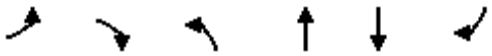
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	171	769	547	657	793
Volume Left	42	0	0	260	0
Volume Right	128	0	163	0	0
cSH	38	1700	1700	521	1700
Volume to Capacity	4.52	0.45	0.32	0.50	0.47
Queue Length 95th (ft)	Err	0	0	69	0
Control Delay (s)	Err	0.0	0.0	14.7	0.0
Lane LOS	F			B	
Approach Delay (s)	Err	0.0		6.6	
Approach LOS	F				

Intersection Summary			
Average Delay	584.3		
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	45	197	106	53	124	40	56	18	46	29	29	36
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)	49	214	115	58	135	43	61	20	50	32	32	39
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	178			329			696	663	272	701	699	157
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	178			329			696	663	272	701	699	157
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			95			79	94	93	89	91	96
cM capacity (veh/h)	1398			1230			297	351	767	297	335	889

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	378	236	130	102
Volume Left	49	58	61	32
Volume Right	115	43	50	39
cSH	1398	1230	400	418
Volume to Capacity	0.03	0.05	0.33	0.24
Queue Length 95th (ft)	3	4	35	24
Control Delay (s)	1.3	2.3	18.3	16.4
Lane LOS	A	A	C	C
Approach Delay (s)	1.3	2.3	18.3	16.4
Approach LOS			C	C

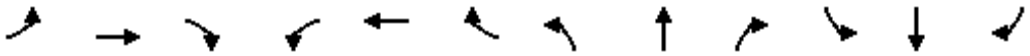
Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	82	118	62	187	370	121
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	89	128	67	203	402	132

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	217	271	534
Volume Left (vph)	89	67	0
Volume Right (vph)	128	0	132
Hadj (s)	-0.24	0.08	-0.11
Departure Headway (s)	5.6	5.3	4.8
Degree Utilization, x	0.34	0.40	0.72
Capacity (veh/h)	582	643	727
Control Delay (s)	11.5	11.9	19.1
Approach Delay (s)	11.5	11.9	19.1
Approach LOS	B	B	C

Intersection Summary			
Delay	15.6		
HCM Level of Service	C		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		



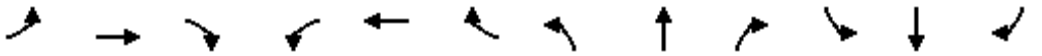
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3279		1770	1863	1583	1770	3428		1770	3424	
Flt Permitted	0.73	0.81		0.42	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1231	2712		781	1863	1583	1770	3428		1770	3424	
Volume (vph)	292	173	29	294	43	192	73	924	246	209	688	190
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)	317	188	32	320	47	209	79	1004	267	227	748	207
RTOR Reduction (vph)	0	6	0	0	0	150	0	24	0	0	23	0
Lane Group Flow (vph)	159	372	0	320	47	59	79	1247	0	227	932	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	28.0	28.0		28.0	28.0	28.0	7.6	48.0		12.0	52.4	
Effective Green, g (s)	28.0	28.0		28.0	28.0	28.0	7.6	48.0		12.0	52.4	
Actuated g/C Ratio	0.28	0.28		0.28	0.28	0.28	0.08	0.48		0.12	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	345	759		219	522	443	135	1645		212	1794	
v/s Ratio Prot					0.03		0.04	c0.36		c0.13	0.27	
v/s Ratio Perm	0.13	0.14		c0.41		0.04						
v/c Ratio	0.46	0.49		1.46	0.09	0.13	0.59	0.76		1.07	0.52	
Uniform Delay, d1	29.8	30.0		36.0	26.6	26.9	44.7	21.3		44.0	15.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.5		230.9	0.1	0.1	4.1	3.3		81.8	0.3	
Delay (s)	30.7	30.5		266.9	26.7	27.1	48.8	24.6		125.8	15.8	
Level of Service	C	C		F	C	C	D	C		F	B	
Approach Delay (s)		30.6			160.3			26.0			37.0	
Approach LOS		C			F			C			D	

Intersection Summary			
HCM Average Control Delay	51.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	439	3	6	537	3	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	477	3	7	584	3	7

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	318	162	201	389	10
Volume Left (vph)	0	0	7	0	3
Volume Right (vph)	0	3	0	0	7
Hadj (s)	0.03	0.02	0.05	0.03	-0.30
Departure Headway (s)	5.1	5.1	5.0	5.0	5.7
Degree Utilization, x	0.45	0.23	0.28	0.54	0.02
Capacity (veh/h)	699	693	703	714	568
Control Delay (s)	10.9	8.4	8.7	12.4	8.7
Approach Delay (s)	10.1		11.1		8.7
Approach LOS	B		B		A

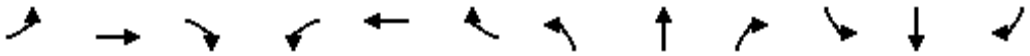
Intersection Summary			
Delay	10.6		
HCM Level of Service	B		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	97	353	5	3	335	118	9	5	6	203	9	172
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)	105	384	5	3	364	128	10	5	7	221	10	187

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	297	197	496	22	230	187
Volume Left (vph)	105	0	3	10	221	0
Volume Right (vph)	0	5	128	7	0	187
Hadj (s)	0.21	0.01	-0.12	-0.06	0.51	-0.67
Departure Headway (s)	7.1	6.9	6.6	8.6	7.9	6.7
Degree Utilization, x	0.59	0.38	0.91	0.05	0.50	0.35
Capacity (veh/h)	493	506	537	391	444	522
Control Delay (s)	18.5	12.8	44.5	12.1	17.5	12.0
Approach Delay (s)	16.2		44.5	12.1	15.0	
Approach LOS	C		E	B	C	

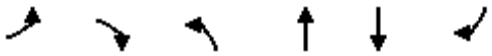
Intersection Summary				
Delay	25.6			
HCM Level of Service	D			
Intersection Capacity Utilization	66.1%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	45	382	2	11	566	34	2	6	3	43	9	67
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)	49	415	2	12	615	37	2	7	3	47	10	73

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	466	664	12	129
Volume Left (vph)	49	12	2	47
Volume Right (vph)	2	37	3	73
Hadj (s)	0.05	0.00	-0.09	-0.23
Departure Headway (s)	5.3	5.0	7.0	6.4
Degree Utilization, x	0.69	0.93	0.02	0.23
Capacity (veh/h)	657	664	462	526
Control Delay (s)	19.1	40.5	10.2	11.3
Approach Delay (s)	19.1	40.5	10.2	11.3
Approach LOS	C	E	B	B

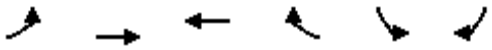
Intersection Summary			
Delay	29.4		
HCM Level of Service	D		
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	17	411	597	135	141	31
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	447	649	147	153	34
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1541	93	187			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1541	93	187			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	67	53	53			
cM capacity (veh/h)	56	945	1385			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	465	698	98	102	85
Volume Left	18	649	0	0	0
Volume Right	447	0	0	0	34
cSH	581	1385	1700	1700	1700
Volume to Capacity	0.80	0.47	0.06	0.06	0.05
Queue Length 95th (ft)	196	64	0	0	0
Control Delay (s)	31.5	9.5	0.0	0.0	0.0
Lane LOS	D	A			
Approach Delay (s)	31.5	8.3		0.0	
Approach LOS	D				

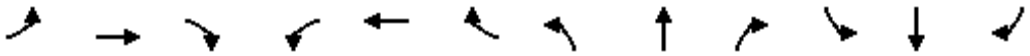
Intersection Summary			
Average Delay	14.7		
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	122	363	411	592	645	68
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	130	386	437	630	686	72

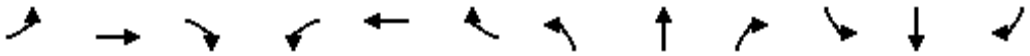
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	259	257	437	630	686	72
Volume Left (vph)	130	0	0	0	686	0
Volume Right (vph)	0	0	0	630	0	72
Hadj (s)	0.29	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	8.2	7.9	7.5	6.8	8.5	7.3
Degree Utilization, x	0.59	0.57	0.91	1.19	1.62	0.15
Capacity (veh/h)	435	442	474	535	429	477
Control Delay (s)	20.8	19.5	48.1	125.3	308.1	10.3
Approach Delay (s)	20.2		93.7		279.7	
Approach LOS	C		F		F	

Intersection Summary			
Delay	137.8		
HCM Level of Service	F		
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		



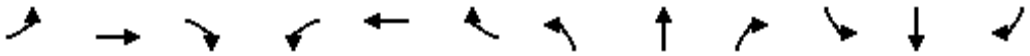
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1591	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1591	
Volume (vph)	0	414	525	450	790	0	0	0	0	264	11	385
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)	0	418	530	455	798	0	0	0	0	267	11	389
RTOR Reduction (vph)	0	0	352	0	0	0	0	0	0	0	155	0
Lane Group Flow (vph)	0	418	178	455	798	0	0	0	0	267	245	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		36.0	36.0	36.8	77.3					22.2	22.2	
Effective Green, g (s)		36.5	36.5	37.3	77.8					22.7	22.7	
Actuated g/C Ratio		0.34	0.34	0.34	0.72					0.21	0.21	
Clearance Time (s)		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	
Lane Grp Cap (vph)		1191	533	608	2538					370	333	
v/s Ratio Prot		c0.12		c0.26	0.23						c0.15	
v/s Ratio Perm			0.11							0.15		
v/c Ratio		0.35	0.33	0.75	0.31					0.72	0.74	
Uniform Delay, d1		27.1	26.9	31.5	5.6					40.0	40.1	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.8	1.7	5.0	0.3					6.8	8.2	
Delay (s)		27.9	28.6	36.5	5.9					46.8	48.3	
Level of Service		C	C	D	A					D	D	
Approach Delay (s)		28.3			17.0			0.0			47.7	
Approach LOS		C			B			A			D	

Intersection Summary					
HCM Average Control Delay	27.9	HCM Level of Service	C		
HCM Volume to Capacity ratio	0.59				
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	91.8%	ICU Level of Service	F		
Analysis Period (min)	15				
c Critical Lane Group					



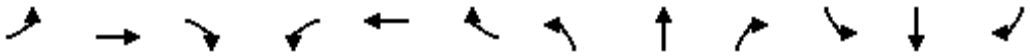
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3526	1583	1770	3539		1770	1583				
Flt Permitted		0.84	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		2985	1583	1770	3539		1770	1583				
Volume (vph)	43	532	126	188	710	0	305	0	653	0	0	0
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)	45	560	133	198	747	0	321	0	687	0	0	0
RTOR Reduction (vph)	0	0	67	0	0	0	0	377	0	0	0	0
Lane Group Flow (vph)	0	605	66	198	747	0	321	310	0	0	0	0
Turn Type			Perm	Prot			custom					
Protected Phases		2		1	6							
Permitted Phases			2				4	4				
Actuated Green, G (s)		56.5	56.5	17.8	78.8		27.7	27.7				
Effective Green, g (s)		57.0	57.0	18.3	79.3		28.2	28.2				
Actuated g/C Ratio		0.49	0.49	0.16	0.69		0.24	0.24				
Clearance Time (s)		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				
Lane Grp Cap (vph)		1473	781	280	2430		432	386				
v/s Ratio Prot				c0.11	0.21							
v/s Ratio Perm		c0.20	0.04				0.18	c0.20				
v/c Ratio		0.41	0.08	0.71	0.31		0.74	0.80				
Uniform Delay, d1		18.6	15.5	46.1	7.2		40.3	41.0				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.8	0.2	7.9	0.3		6.8	11.4				
Delay (s)		19.4	15.7	54.0	7.5		47.1	52.5				
Level of Service		B	B	D	A		D	D				
Approach Delay (s)		18.8			17.3			50.8			0.0	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM Average Control Delay	30.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



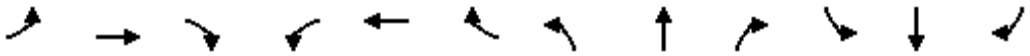
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3515		1770	1728		1770	3488		1770	3482	
Flt Permitted	0.44	1.00		0.58	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	821	3515		1079	1728		1770	3488		1770	3482	
Volume (vph)	127	231	11	98	169	157	12	1185	127	143	820	99
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)	128	233	11	99	171	159	12	1197	128	144	828	100
RTOR Reduction (vph)	0	2	0	0	20	0	0	5	0	0	5	0
Lane Group Flow (vph)	128	242	0	99	310	0	12	1320	0	144	923	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.1	66.1		66.1	66.1		2.4	52.8		15.8	66.2	
Effective Green, g (s)	67.6	67.6		67.6	67.6		2.9	54.3		16.3	67.7	
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.02	0.36		0.11	0.45	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	370	1582		486	778		34	1261		192	1569	
v/s Ratio Prot		0.07			c0.18		0.01	c0.38		c0.08	0.27	
v/s Ratio Perm	0.16			0.09								
v/c Ratio	0.35	0.15		0.20	0.40		0.35	1.05		0.75	0.59	
Uniform Delay, d1	26.9	24.4		25.0	27.7		72.7	47.9		65.0	30.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.2		0.2	0.4		2.3	38.5		13.6	0.7	
Delay (s)	29.5	24.6		25.3	28.1		75.0	86.4		78.5	31.5	
Level of Service	C	C		C	C		E	F		E	C	
Approach Delay (s)		26.3			27.4			86.3			37.8	
Approach LOS		C			C			F			D	

Intersection Summary			
HCM Average Control Delay	55.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	150.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3318		1770	3406		1770	3431		1770	3466	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3318		1770	3406		1770	3431		1770	3466	
Volume (vph)	152	424	302	177	190	64	128	371	95	98	812	130
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)	160	446	318	186	200	67	135	391	100	103	855	137
RTOR Reduction (vph)	0	180	0	0	45	0	0	26	0	0	15	0
Lane Group Flow (vph)	160	584	0	186	222	0	135	465	0	103	977	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	9.6	17.3		10.0	17.7		9.3	27.4		8.3	26.4	
Effective Green, g (s)	8.6	16.3		9.0	16.7		8.3	26.4		7.3	25.4	
Actuated g/C Ratio	0.11	0.22		0.12	0.22		0.11	0.35		0.10	0.34	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	203	721		212	758		196	1208		172	1174	
v/s Ratio Prot	0.09	c0.18		c0.11	0.07		c0.08	0.14		0.06	c0.28	
v/s Ratio Perm												
v/c Ratio	0.79	0.81		0.88	0.29		0.69	0.39		0.60	0.83	
Uniform Delay, d1	32.3	27.9		32.5	24.2		32.1	18.2		32.4	22.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.1	6.7		30.9	0.2		9.7	0.9		5.5	7.0	
Delay (s)	50.4	34.6		63.3	24.5		41.8	19.1		38.0	29.8	
Level of Service	D	C		E	C		D	B		D	C	
Approach Delay (s)		37.3			40.4			24.0			30.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	32.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.2%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.99		1.00	0.96			0.92			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3496		1770	3415			3250			3381	
Flt Permitted	0.95	1.00		0.95	1.00			0.88			0.83	
Satd. Flow (perm)	1770	3496		1770	3415			2873			2850	
Volume (vph)	59	554	49	300	423	129	29	75	105	71	180	74
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)	62	583	52	316	445	136	31	79	111	75	189	78
RTOR Reduction (vph)	0	8	0	0	29	0	0	77	0	0	33	0
Lane Group Flow (vph)	62	627	0	316	552	0	0	144	0	0	309	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	5.7	30.0		15.0	39.3			25.0			25.0	
Effective Green, g (s)	5.7	30.0		15.0	39.3			25.0			25.0	
Actuated g/C Ratio	0.07	0.37		0.18	0.48			0.30			0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	123	1279		324	1637			876			869	
v/s Ratio Prot	0.04	c0.18		c0.18	0.16							
v/s Ratio Perm								0.05			c0.11	
v/c Ratio	0.50	0.49		0.98	0.34			0.16			0.36	
Uniform Delay, d1	36.8	20.1		33.3	13.3			20.9			22.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.2	1.3		42.9	0.6			0.4			1.1	
Delay (s)	40.0	21.4		76.3	13.8			21.3			23.4	
Level of Service	D	C		E	B			C			C	
Approach Delay (s)		23.1			35.8			21.3			23.4	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	28.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	35	76	503	112	331	924
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	37	80	529	118	348	973
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.79					
vC, conflicting volume	1772	324			647	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1712	324			647	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	9	88			63	
cM capacity (veh/h)	40	672			934	

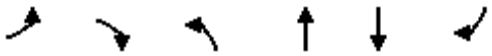
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	117	353	294	673	648
Volume Left	37	0	0	348	0
Volume Right	80	0	118	0	0
cSH	114	1700	1700	934	1700
Volume to Capacity	1.03	0.21	0.17	0.37	0.38
Queue Length 95th (ft)	171	0	0	44	0
Control Delay (s)	164.6	0.0	0.0	8.2	0.0
Lane LOS	F			A	
Approach Delay (s)	164.6	0.0		4.2	
Approach LOS	F				

Intersection Summary			
Average Delay	11.9		
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	33	193	28	0	49	22	25	10	19	48	44	42
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	35	203	29	0	52	23	26	11	20	51	46	44
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	75			233			418	362	218	376	365	63
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	75			233			418	362	218	376	365	63
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			95	98	98	91	92	96
cM capacity (veh/h)	1525			1335			479	552	822	549	550	1001

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	267	75	57	141
Volume Left	35	0	26	51
Volume Right	29	23	20	44
cSH	1525	1335	578	640
Volume to Capacity	0.02	0.00	0.10	0.22
Queue Length 95th (ft)	2	0	8	21
Control Delay (s)	1.1	0.0	11.9	12.2
Lane LOS	A		B	B
Approach Delay (s)	1.1	0.0	11.9	12.2
Approach LOS			B	B

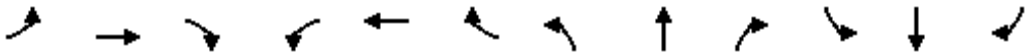
Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	37	87	0	142	401	84
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	39	92	0	149	422	88

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	131	149	511
Volume Left (vph)	39	0	0
Volume Right (vph)	92	0	88
Hadj (s)	-0.33	0.03	-0.07
Departure Headway (s)	5.1	4.8	4.4
Degree Utilization, x	0.18	0.20	0.62
Capacity (veh/h)	637	705	805
Control Delay (s)	9.2	9.1	14.2
Approach Delay (s)	9.2	9.1	14.2
Approach LOS	A	A	B

Intersection Summary			
Delay	12.4		
HCM Level of Service	B		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		



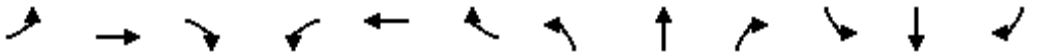
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.95		1.00	0.97	
Flt Protected	0.95	0.99		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3246		1770	1863	1583	1770	3357		1770	3429	
Flt Permitted	0.58	0.86		0.48	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	985	2806		893	1863	1583	1770	3357		1770	3429	
Volume (vph)	139	159	60	165	138	29	42	430	224	197	443	116
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)	146	167	63	174	145	31	44	453	236	207	466	122
RTOR Reduction (vph)	0	26	0	0	0	24	0	60	0	0	17	0
Lane Group Flow (vph)	89	261	0	174	145	7	44	629	0	207	571	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	19.6	19.6		19.6	19.6	19.6	4.6	49.8		12.0	57.2	
Effective Green, g (s)	19.6	19.6		19.6	19.6	19.6	4.6	49.8		12.0	57.2	
Actuated g/C Ratio	0.21	0.21		0.21	0.21	0.21	0.05	0.53		0.13	0.61	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	207	589		187	391	332	87	1790		227	2100	
v/s Ratio Prot					0.08		0.02	c0.19		c0.12	0.17	
v/s Ratio Perm	0.09	0.09		c0.19		0.00						
v/c Ratio	0.43	0.44		0.93	0.37	0.02	0.51	0.35		0.91	0.27	
Uniform Delay, d1	32.0	32.1		36.2	31.6	29.3	43.3	12.5		40.2	8.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.5		46.2	0.6	0.0	1.7	0.5		36.6	0.1	
Delay (s)	33.5	32.7		82.4	32.2	29.3	45.0	13.1		76.7	8.5	
Level of Service	C	C		F	C	C	D	B		E	A	
Approach Delay (s)		32.9			56.9			15.0			26.3	
Approach LOS		C			E			B			C	

Intersection Summary			
HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	398	6	2	359	3	8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	419	6	2	378	3	8

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	279	146	128	252	12
Volume Left (vph)	0	0	2	0	3
Volume Right (vph)	0	6	0	0	8
Hadj (s)	0.03	0.00	0.04	0.03	-0.35
Departure Headway (s)	4.9	4.8	4.9	4.9	5.2
Degree Utilization, x	0.38	0.20	0.17	0.34	0.02
Capacity (veh/h)	730	728	713	721	622
Control Delay (s)	9.6	7.8	7.8	9.2	8.3
Approach Delay (s)	9.0		8.7		8.3
Approach LOS	A		A		A

Intersection Summary			
Delay	8.9		
HCM Level of Service	A		
Intersection Capacity Utilization	21.3%	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)	135	188	6	0	479	183	20	20	6	129	17	209
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	142	198	6	0	504	193	21	21	6	136	18	220

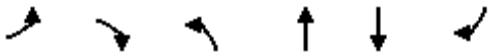
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	241	105	697	48	154	220
Volume Left (vph)	142	0	0	21	136	0
Volume Right (vph)	0	6	193	6	0	220
Hadj (s)	0.33	-0.01	-0.13	0.04	0.48	-0.67
Departure Headway (s)	7.1	6.8	6.3	8.2	7.7	6.6
Degree Utilization, x	0.48	0.20	1.23	0.11	0.33	0.40
Capacity (veh/h)	491	514	563	412	452	533
Control Delay (s)	15.3	10.3	139.3	12.2	13.3	12.8
Approach Delay (s)	13.8		139.3	12.2	13.0	
Approach LOS	B		F	B	B	

Intersection Summary			
Delay	73.2		
HCM Level of Service	F		
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
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)	33	201	5	2	725	50	3	6	3	45	8	28
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	35	212	5	2	763	53	3	6	3	47	8	29

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	252	818	13	85
Volume Left (vph)	35	2	3	47
Volume Right (vph)	5	53	3	29
Hadj (s)	0.05	0.00	-0.07	-0.06
Departure Headway (s)	5.1	4.5	6.4	6.2
Degree Utilization, x	0.36	1.03	0.02	0.15
Capacity (veh/h)	692	788	531	555
Control Delay (s)	11.0	61.3	9.5	10.2
Approach Delay (s)	11.0	61.3	9.5	10.2
Approach LOS	B	F	A	B

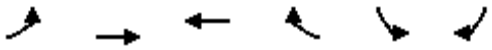
Intersection Summary			
Delay	46.1		
HCM Level of Service	E		
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	13	237	739	140	16	272
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	14	249	778	147	17	286
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1789	152	303			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1789	152	303			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	50	71	38			
cM capacity (veh/h)	27	867	1255			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	263	827	98	11	292
Volume Left	14	778	0	0	0
Volume Right	249	0	0	0	286
cSH	335	1255	1700	1700	1700
Volume to Capacity	0.79	0.62	0.06	0.01	0.17
Queue Length 95th (ft)	160	114	0	0	0
Control Delay (s)	45.8	12.2	0.0	0.0	0.0
Lane LOS	E	B			
Approach Delay (s)	45.8	10.9		0.0	
Approach LOS	E				

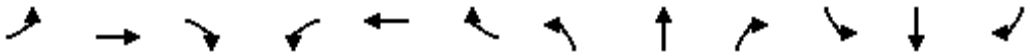
Intersection Summary			
Average Delay	14.8		
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	93	288	259	788	515	60
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	98	303	273	829	542	63

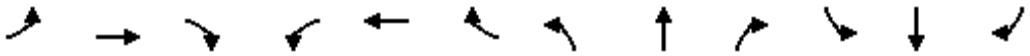
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	199	202	273	829	542	63
Volume Left (vph)	98	0	0	0	542	0
Volume Right (vph)	0	0	0	829	0	63
Hadj (s)	0.28	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	8.0	7.8	7.3	6.6	8.0	6.8
Degree Utilization, x	0.44	0.44	0.55	1.52	1.21	0.12
Capacity (veh/h)	443	459	489	550	454	513
Control Delay (s)	16.0	15.4	17.7	259.9	138.1	9.6
Approach Delay (s)	15.7		200.0		124.7	
Approach LOS	C		F		F	

Intersection Summary			
Delay	143.3		
HCM Level of Service	F		
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1586	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1586	
Volume (vph)	0	292	477	161	774	0	0	0	0	175	5	424
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)	0	307	502	169	815	0	0	0	0	184	5	446
RTOR Reduction (vph)	0	0	270	0	0	0	0	0	0	0	152	0
Lane Group Flow (vph)	0	307	232	169	815	0	0	0	0	184	299	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		53.7	53.7	20.4	78.6					29.9	29.9	
Effective Green, g (s)		54.2	54.2	20.9	79.1					30.4	30.4	
Actuated g/C Ratio		0.46	0.46	0.18	0.67					0.26	0.26	
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	
Vehicle Extension (s)		8.0	8.0	8.0	8.0					8.0	8.0	
Lane Grp Cap (vph)		1632	730	315	2382					458	410	
v/s Ratio Prot		0.09		c0.10	c0.23						c0.19	
v/s Ratio Perm			0.15							0.10		
v/c Ratio		0.19	0.32	0.54	0.34					0.40	0.73	
Uniform Delay, d1		18.7	20.0	43.9	8.2					36.0	39.8	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.3	1.1	6.0	0.4					2.5	10.9	
Delay (s)		18.9	21.1	49.9	8.5					38.5	50.7	
Level of Service		B	C	D	A					D	D	
Approach Delay (s)		20.3			15.6			0.0			47.1	
Approach LOS		C			B			A			D	

Intersection Summary			
HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

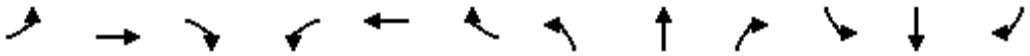


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3524	1583	1770	3539		1770	3008				
Flt Permitted		0.91	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		3212	1583	1770	3539		1770	3008				
Volume (vph)	30	332	152	40	266	0	437	0	532	0	0	0
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)	32	349	160	42	280	0	460	0	560	0	0	0
RTOR Reduction (vph)	0	0	64	0	0	0	0	436	0	0	0	0
Lane Group Flow (vph)	0	381	96	42	280	0	460	124	0	0	0	0
Turn Type			Perm	Prot			Perm					
Protected Phases		2		1	6			4				
Permitted Phases			2				4					
Actuated Green, G (s)		68.5	68.5	8.5	81.5		25.0	25.0				
Effective Green, g (s)		69.0	69.0	9.0	82.0		25.5	25.5				
Actuated g/C Ratio		0.60	0.60	0.08	0.71		0.22	0.22				
Clearance Time (s)		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				
Lane Grp Cap (vph)		1919	946	138	2513		391	664				
v/s Ratio Prot				c0.02	0.08			0.04				
v/s Ratio Perm		c0.12	0.06				c0.26					
v/c Ratio		0.20	0.10	0.30	0.11		1.18	0.19				
Uniform Delay, d1		10.6	10.0	50.3	5.3		45.0	36.6				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.2	0.2	1.3	0.0		103.1	0.1				
Delay (s)		10.9	10.2	51.5	5.3		148.1	36.7				
Level of Service		B	B	D	A		F	D				
Approach Delay (s)		10.7			11.3			86.9			0.0	
Approach LOS		B			B			F			A	

Intersection Summary			
HCM Average Control Delay	52.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

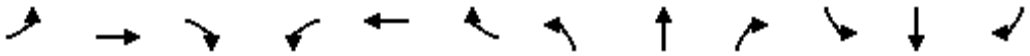
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.96		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1841		1770	1785		1770	3494		1770	3482	
Flt Permitted	0.55	1.00		0.63	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1026	1841		1165	1785		1770	3494		1770	3482	
Volume (vph)	97	133	11	98	152	59	6	765	71	29	727	87
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)	102	140	12	103	160	62	6	805	75	31	765	92
RTOR Reduction (vph)	0	2	0	0	9	0	0	4	0	0	6	0
Lane Group Flow (vph)	102	150	0	103	213	0	6	876	0	31	851	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.1	66.1		66.1	66.1		24.0	63.5		4.5	44.0	
Effective Green, g (s)	67.6	67.6		67.6	67.6		24.5	65.0		5.0	45.5	
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.16	0.43		0.03	0.30	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	464	832		526	807		290	1518		59	1059	
v/s Ratio Prot		0.08			c0.12		0.00	c0.25		c0.02	c0.24	
v/s Ratio Perm	0.10			0.09								
v/c Ratio	0.22	0.18		0.20	0.26		0.02	0.58		0.53	0.80	
Uniform Delay, d1	25.0	24.5		24.7	25.5		52.5	31.9		71.1	47.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.5		0.2	0.2		0.1	0.6		3.8	4.7	
Delay (s)	26.0	24.9		24.9	25.7		52.6	32.6		75.0	52.7	
Level of Service	C	C		C	C		D	C		E	D	
Approach Delay (s)		25.4			25.5			32.7			53.5	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	38.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	149.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.7%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.97		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3344		1770	3443		1770	3492		1770	3432	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3344		1770	3443		1770	3492		1770	3432	
Volume (vph)	233	454	265	281	459	102	250	811	79	84	819	206
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)	243	473	276	293	478	106	260	845	82	88	853	215
RTOR Reduction (vph)	0	116	0	0	26	0	0	8	0	0	29	0
Lane Group Flow (vph)	243	633	0	293	558	0	260	919	0	88	1039	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.0	18.1		10.0	18.1		13.8	27.1		7.8	21.1	
Effective Green, g (s)	9.0	17.1		9.0	17.1		12.8	26.1		6.8	20.1	
Actuated g/C Ratio	0.12	0.23		0.12	0.23		0.17	0.35		0.09	0.27	
Clearance Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	212	762		212	785		302	1215		160	920	
v/s Ratio Prot	0.14	c0.19		c0.17	0.16		c0.15	0.26		0.05	c0.30	
v/s Ratio Perm												
v/c Ratio	1.15	0.83		1.38	0.71		0.86	0.76		0.55	1.13	
Uniform Delay, d1	33.0	27.6		33.0	26.7		30.2	21.6		32.6	27.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	106.8	7.7		198.5	3.0		21.3	4.4		4.0	72.2	
Delay (s)	139.8	35.3		231.5	29.7		51.6	26.0		36.7	99.7	
Level of Service	F	D		F	C		D	C		D	F	
Approach Delay (s)		60.9			97.1			31.6			94.9	
Approach LOS		E			F			C			F	

Intersection Summary			
HCM Average Control Delay	69.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frt	1.00	0.97		1.00	0.99			0.93			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3448		1770	3487			3250			3427	
Flt Permitted	0.95	1.00		0.95	1.00			0.85			0.83	
Satd. Flow (perm)	1770	3448		1770	3487			2783			2865	
Volume (vph)	62	538	111	189	728	79	55	75	119	51	123	26
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)	65	566	117	199	766	83	58	79	125	54	129	27
RTOR Reduction (vph)	0	21	0	0	9	0	0	86	0	0	15	0
Lane Group Flow (vph)	65	662	0	199	840	0	0	176	0	0	195	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	7.1	31.4		12.6	36.9			25.0			25.0	
Effective Green, g (s)	7.1	31.4		12.6	36.9			25.0			25.0	
Actuated g/C Ratio	0.09	0.39		0.16	0.46			0.31			0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	155	1337		275	1589			859			884	
v/s Ratio Prot	0.04	0.19		c0.11	c0.24							
v/s Ratio Perm								0.06			c0.07	
v/c Ratio	0.42	0.50		0.72	0.53			0.20			0.22	
Uniform Delay, d1	35.0	18.8		32.5	15.8			20.7			20.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.8	1.3		9.1	1.3			0.5			0.6	
Delay (s)	36.8	20.1		41.6	17.1			21.2			21.4	
Level of Service	D	C		D	B			C			C	
Approach Delay (s)		21.6			21.7			21.2			21.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	32	115	1064	140	234	1101
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	34	121	1120	147	246	1159
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						791
pX, platoon unblocked	0.78					
vC, conflicting volume	2266	634			1267	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2339	634			1267	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	71			55	
cM capacity (veh/h)	13	422			544	

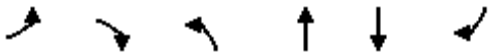
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	155	747	521	633	773
Volume Left	34	0	0	246	0
Volume Right	121	0	147	0	0
cSH	54	1700	1700	544	1700
Volume to Capacity	2.85	0.44	0.31	0.45	0.45
Queue Length 95th (ft)	404	0	0	58	0
Control Delay (s)	997.0	0.0	0.0	12.7	0.0
Lane LOS	F			B	
Approach Delay (s)	997.0	0.0		5.7	
Approach LOS	F				

Intersection Summary			
Average Delay	57.4		
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	45	193	89	16	91	40	46	15	25	29	25	36
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	47	203	94	17	96	42	48	16	26	31	26	38
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	138			297			546	516	250	529	542	117
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	138			297			546	516	250	529	542	117
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			99			88	96	97	93	94	96
cM capacity (veh/h)	1446			1264			396	442	789	418	427	935

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	344	155	91	95
Volume Left	47	17	48	31
Volume Right	94	42	26	38
cSH	1446	1264	473	541
Volume to Capacity	0.03	0.01	0.19	0.18
Queue Length 95th (ft)	3	1	18	16
Control Delay (s)	1.3	1.0	14.4	13.1
Lane LOS	A	A	B	B
Approach Delay (s)	1.3	1.0	14.4	13.1
Approach LOS			B	B

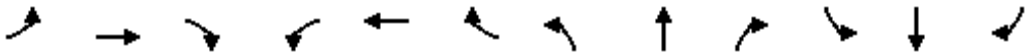
Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Yield	Stop	
Volume (vph)	66	89	13	207	406	92
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	69	94	14	218	427	97

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	163	232	524
Volume Left (vph)	69	14	0
Volume Right (vph)	94	0	97
Hadj (s)	-0.23	0.05	-0.08
Departure Headway (s)	5.4	5.0	4.6
Degree Utilization, x	0.25	0.32	0.67
Capacity (veh/h)	594	680	763
Control Delay (s)	10.2	10.4	16.4
Approach Delay (s)	10.2	10.4	16.4
Approach LOS	B	B	C

Intersection Summary			
Delay	13.8		
HCM Level of Service	B		
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		



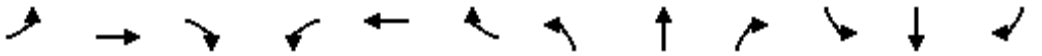
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.91	0.91		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3281		1770	1863	1583	1770	3420		1770	3424	
Flt Permitted	0.73	0.81		0.43	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1230	2718		793	1863	1583	1770	3420		1770	3424	
Volume (vph)	290	179	29	305	46	192	73	915	266	215	683	189
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)	305	188	31	321	48	202	77	963	280	226	719	199
RTOR Reduction (vph)	0	6	0	0	0	145	0	27	0	0	23	0
Lane Group Flow (vph)	153	365	0	321	48	57	77	1216	0	226	895	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	28.0	28.0		28.0	28.0	28.0	7.6	48.0		12.0	52.4	
Effective Green, g (s)	28.0	28.0		28.0	28.0	28.0	7.6	48.0		12.0	52.4	
Actuated g/C Ratio	0.28	0.28		0.28	0.28	0.28	0.08	0.48		0.12	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	344	761		222	522	443	135	1642		212	1794	
v/s Ratio Prot					0.03		0.04	c0.36		c0.13	0.26	
v/s Ratio Perm	0.12	0.13		c0.40		0.04						
v/c Ratio	0.44	0.48		1.45	0.09	0.13	0.57	0.74		1.07	0.50	
Uniform Delay, d1	29.6	29.9		36.0	26.6	26.9	44.6	21.0		44.0	15.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.5		224.2	0.1	0.1	3.6	3.0		80.4	0.2	
Delay (s)	30.5	30.4		260.2	26.7	27.0	48.2	24.0		124.4	15.6	
Level of Service	C	C		F	C	C	D	C		F	B	
Approach Delay (s)		30.4			158.1			25.4			37.1	
Approach LOS		C			F			C			D	

Intersection Summary			
HCM Average Control Delay	51.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	455	3	6	458	3	6
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	479	3	6	482	3	6

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	319	163	167	321	9
Volume Left (vph)	0	0	6	0	3
Volume Right (vph)	0	3	0	0	6
Hadj (s)	0.03	0.02	0.05	0.03	-0.30
Departure Headway (s)	5.0	5.0	5.0	5.0	5.5
Degree Utilization, x	0.44	0.22	0.23	0.44	0.01
Capacity (veh/h)	715	710	703	714	584
Control Delay (s)	10.6	8.2	8.3	10.7	8.6
Approach Delay (s)	9.8		9.8		8.6
Approach LOS	A		A		A

Intersection Summary			
Delay	9.8		
HCM Level of Service	A		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	109	380	5	3	379	136	9	5	6	211	9	177
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	115	400	5	3	399	143	9	5	6	222	9	186

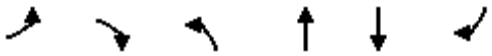
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	315	205	545	21	232	186
Volume Left (vph)	115	0	3	9	222	0
Volume Right (vph)	0	5	143	6	0	186
Hadj (s)	0.22	0.02	-0.12	-0.06	0.51	-0.67
Departure Headway (s)	7.1	6.9	6.6	8.6	7.9	6.8
Degree Utilization, x	0.62	0.39	1.00	0.05	0.51	0.35
Capacity (veh/h)	498	512	537	389	443	521
Control Delay (s)	19.9	13.1	65.5	12.1	17.7	12.1
Approach Delay (s)	17.2		65.5	12.1	15.2	
Approach LOS	C		F	B	C	

Intersection Summary			
Delay	34.1		
HCM Level of Service	D		
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
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)	45	417	2	11	628	34	2	6	3	43	9	67
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	47	439	2	12	661	36	2	6	3	45	9	71

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	488	708	12	125
Volume Left (vph)	47	12	2	45
Volume Right (vph)	2	36	3	71
Hadj (s)	0.05	0.01	-0.09	-0.23
Departure Headway (s)	5.4	5.1	7.2	6.6
Degree Utilization, x	0.73	1.00	0.02	0.23
Capacity (veh/h)	664	705	462	523
Control Delay (s)	21.3	55.1	10.3	11.5
Approach Delay (s)	21.3	55.1	10.3	11.5
Approach LOS	C	F	B	B

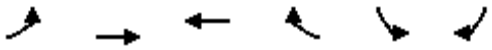
Intersection Summary			
Delay	38.2		
HCM Level of Service	E		
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	22	441	650	135	141	39
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	23	464	684	142	148	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1608	95	189			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1608	95	189			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	52	51	50			
cM capacity (veh/h)	48	943	1382			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	487	732	95	99	91
Volume Left	23	684	0	0	0
Volume Right	464	0	0	0	41
cSH	501	1382	1700	1700	1700
Volume to Capacity	0.97	0.50	0.06	0.06	0.05
Queue Length 95th (ft)	317	71	0	0	0
Control Delay (s)	62.3	9.8	0.0	0.0	0.0
Lane LOS	F	A			
Approach Delay (s)	62.3	8.7		0.0	
Approach LOS	F				

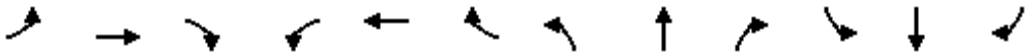
Intersection Summary			
Average Delay	25.0		
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	122	363	411	645	675	68
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	128	382	433	679	711	72

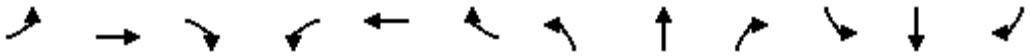
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	256	255	433	679	711	72
Volume Left (vph)	128	0	0	0	711	0
Volume Right (vph)	0	0	0	679	0	72
Hadj (s)	0.29	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	8.1	7.9	7.5	6.8	8.5	7.3
Degree Utilization, x	0.58	0.56	0.90	1.28	1.67	0.14
Capacity (veh/h)	436	442	475	539	430	479
Control Delay (s)	20.6	19.3	46.2	160.8	331.4	10.3
Approach Delay (s)	19.9		116.2		302.0	
Approach LOS	C		F		F	

Intersection Summary			
Delay	156.2		
HCM Level of Service	F		
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		



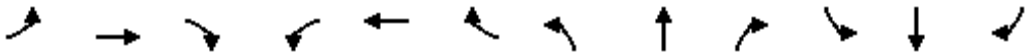
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1590	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1590	
Volume (vph)	0	434	536	450	813	0	0	0	0	264	11	415
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)	0	438	541	455	821	0	0	0	0	267	11	419
RTOR Reduction (vph)	0	0	359	0	0	0	0	0	0	0	145	0
Lane Group Flow (vph)	0	438	182	455	821	0	0	0	0	267	285	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Actuated Green, G (s)		36.0	36.0	35.4	75.9					23.6	23.6	
Effective Green, g (s)		36.5	36.5	35.9	76.4					24.1	24.1	
Actuated g/C Ratio		0.34	0.34	0.33	0.70					0.22	0.22	
Clearance Time (s)		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	
Lane Grp Cap (vph)		1191	533	586	2492					393	353	
v/s Ratio Prot		c0.12		c0.26	0.23						c0.18	
v/s Ratio Perm			0.11							0.15		
v/c Ratio		0.37	0.34	0.78	0.33					0.68	0.81	
Uniform Delay, d1		27.3	27.0	32.7	6.2					38.7	40.0	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.9	1.7	6.4	0.4					4.6	12.7	
Delay (s)		28.1	28.7	39.1	6.5					43.3	52.7	
Level of Service		C	C	D	A					D	D	
Approach Delay (s)		28.5			18.1			0.0			49.1	
Approach LOS		C			B			A			D	

Intersection Summary			
HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0				
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00				
Frt		1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3521	1583	1770	3539		1770	1583				
Flt Permitted		0.79	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		2814	1583	1770	3539		1770	1583				
Volume (vph)	60	534	126	188	714	0	325	0	653	0	0	0
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)	63	562	133	198	752	0	342	0	687	0	0	0
RTOR Reduction (vph)	0	0	68	0	0	0	0	374	0	0	0	0
Lane Group Flow (vph)	0	625	65	198	752	0	342	313	0	0	0	0
Turn Type			Perm	Prot			custom					
Protected Phases		2		1	6							
Permitted Phases			2				4	4				
Actuated Green, G (s)		55.7	55.7	17.8	78.0		28.5	28.5				
Effective Green, g (s)		56.2	56.2	18.3	78.5		29.0	29.0				
Actuated g/C Ratio		0.49	0.49	0.16	0.68		0.25	0.25				
Clearance Time (s)		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				
Lane Grp Cap (vph)		1369	770	280	2405		444	397				
v/s Ratio Prot				c0.11	0.21							
v/s Ratio Perm		c0.22	0.04				0.19	c0.20				
v/c Ratio		0.46	0.08	0.71	0.31		0.77	0.79				
Uniform Delay, d1		19.6	15.9	46.1	7.5		40.2	40.4				
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		1.1	0.2	7.9	0.3		8.0	10.0				
Delay (s)		20.7	16.1	54.0	7.9		48.2	50.4				
Level of Service		C	B	D	A		D	D				
Approach Delay (s)		19.9			17.5			49.7			0.0	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM Average Control Delay	30.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.7%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3515		1770	1728		1770	3488		1770	3481	
Flt Permitted	0.44	1.00		0.58	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	821	3515		1079	1728		1770	3488		1770	3481	
Volume (vph)	130	231	11	98	169	157	12	1192	127	143	824	101
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)	131	233	11	99	171	159	12	1204	128	144	832	102
RTOR Reduction (vph)	0	2	0	0	20	0	0	5	0	0	5	0
Lane Group Flow (vph)	131	242	0	99	310	0	12	1327	0	144	929	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.1	66.1		66.1	66.1		2.4	52.8		15.8	66.2	
Effective Green, g (s)	67.6	67.6		67.6	67.6		2.9	54.3		16.3	67.7	
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.02	0.36		0.11	0.45	
Clearance Time (s)	5.5	5.5		5.5	5.5		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	3.5	3.5		3.5	3.5		1.5	4.0		1.5	4.0	
Lane Grp Cap (vph)	370	1582		486	778		34	1261		192	1569	
v/s Ratio Prot		0.07			c0.18		0.01	c0.38		c0.08	0.27	
v/s Ratio Perm	0.16			0.09								
v/c Ratio	0.35	0.15		0.20	0.40		0.35	1.05		0.75	0.59	
Uniform Delay, d1	27.0	24.4		25.0	27.7		72.7	47.9		65.0	30.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.2		0.2	0.4		2.3	40.3		13.6	0.7	
Delay (s)	29.7	24.6		25.3	28.1		75.0	88.2		78.5	31.6	
Level of Service	C	C		C	C		E	F		E	C	
Approach Delay (s)		26.4			27.4			88.1			37.9	
Approach LOS		C			C			F			D	

Intersection Summary			
HCM Average Control Delay	56.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			