APPENDICES

A. Notice of Preparation

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APPENDIX A

Notice of Preparation

Notice of Preparation

To: State Clearinghouse
(Agency)
1400 Tenth Street, Suite 212
(Address)
Sacramento, CA 95814

Subject: Notice of Preparation of a Draft Environmental Impact Report

Lead Agency:

Agency Name City of Scotts Valley

Street Address One Civic Center Drive

City/State/Zip Scotts Valley, CA 95066

Contact Taylor Bateman

Consulting Firm (If applicable):

Firm Name ESA

Street Address 225 Bush Street, Suite 1700

City/State/Zip San Francisco, CA 94104

Contact Karl Heisler

The City of Scotts Valley will be Lead Agency and will prepare a supplemental environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description and location are contained in the attached materials. An Initial Study is **not** attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but **not later than 30 days** after receipt of this notice.

Please send your response to Taylor Bateman
at the address shown above. Please include the name of a contact person in your agency.

Project Title: Gateway South Retail Store

Project Location: La Madrona Drive and Silverwood Drive — Scotts Valley (City (nearest)) — Santa Cruz (County)

Project Description: (brief)

The proposed project would entail the construction of a 155,000-square foot retail store and 517 associated parking spaces in the City of Scotts Valley. The approximately 17.62-acre project site is located on the west side of State Route 17, on La Madrona Drive, generally southwest of the Mt. Hermon Road / La Madrona Drive exit. The proposed project would require an amendment to the *Gateway South Specific Plan* for allowable building coverage.

Date 03/27/08

Signature

Title Associate Planner

Telephone 831.440.5630
email tbateman@scottsvalley.org

Project Location and Site Description: Scotts Valley is located along State Route (SR) 17 within Santa Cruz County, in the south-central Santa Cruz Mountains. The City is located approximately six miles north of the City of Santa Cruz and 25 miles south of the City of San Jose.

The area surrounding the project site is predominately service commercial, residential, and open space. The project site is bounded on the east by La Madrona Drive, on the north by the Hilton Hotel, on the west by the Monte Fiore community residential uses and to the south by Silverwood Drive. La Madrona Drive is a frontage road along SR 17. Located further to the east is the southbound on-ramp to SR 17, and SR 17 itself. See **Figure 1: Site Location.**

The approximately 17.62-acre project site is an undeveloped meadow of native and non-native grasses that slopes upward to the west. Steeper slopes on the western portion of the site are vegetated with a mature, mixed coniferous forest.

Project Characteristics: The proposed project would construct a 155,000-square foot retail store on the west side of SR 17. The one-story store would be located on the southern portion of the project site at the corner of La Madrona Drive and Silverwood Drive. The front of the store would face the northern portion of the site where patron parking would be provided. The retail footprint would occupy approximately 20 percent of the site. See **Figure 2: Site Plan.**

Vehicle access would be taken from two full-access driveways on La Madrona Drive. Parking for approximately 517 vehicles, including 13 disabled-accessible spaces, would be provided in a two level parking structure on the northern end of the project site. Parking aisles would be constructed parallel to the store entrance to facilitate optimal visibility for pedestrian flow. Sidewalks would be constructed along the project frontage. The primary pedestrian access would be taken from La Madrona Drive. Parking and circulation would occupy approximately 24 percent of the site.

The loading area would be located on the northwestern side of the building, and would not be visible from public roads or the store entrance.

Landscaping would consist of perimeter trees and low lying plantings along the entire project frontage, on the upper level of the garage, and along the project boundary with the Hilton to the north. Landscaping along the project frontage would be terraced in two levels. Landscaping would comprise approximately 16 percent of the site.

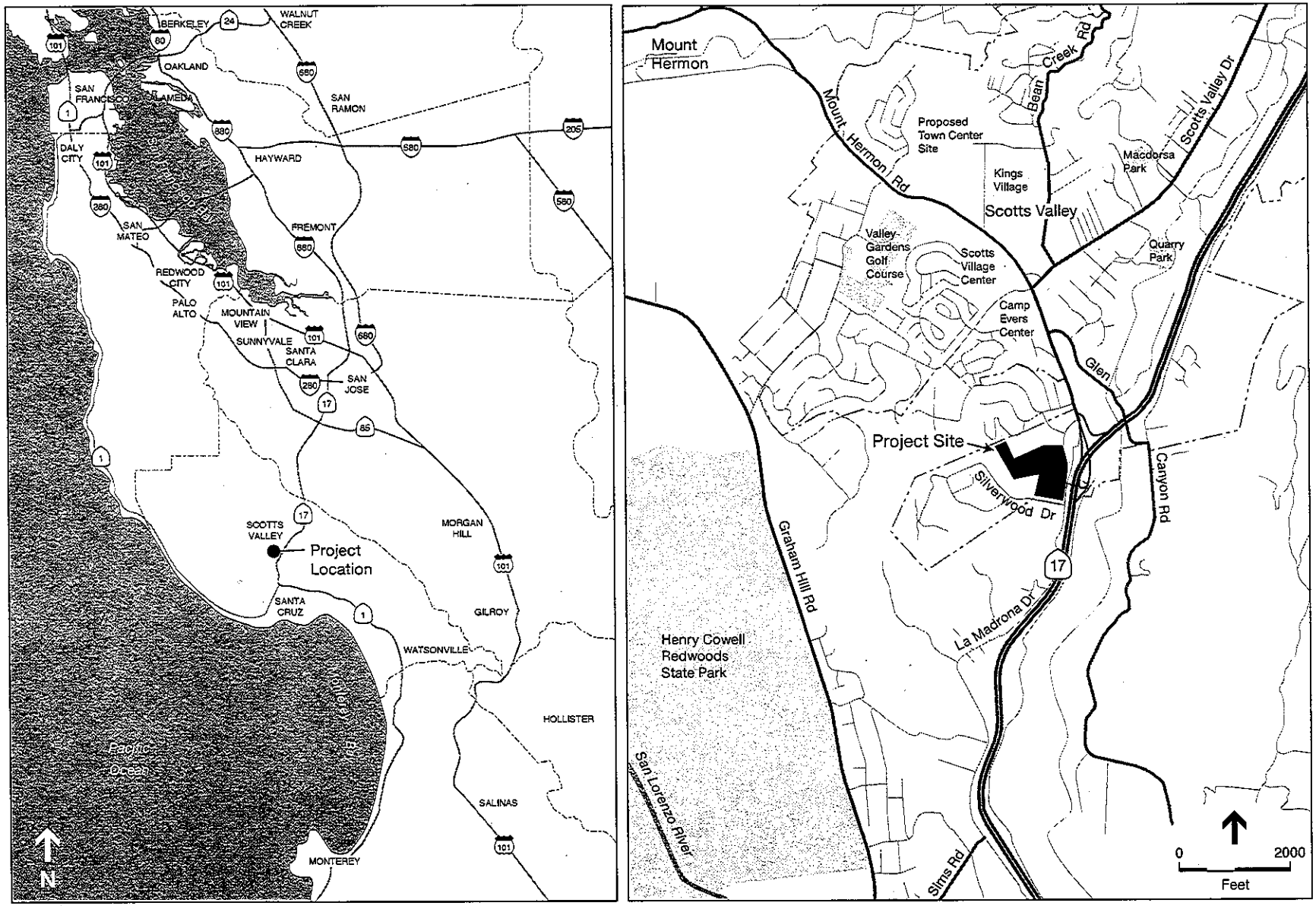
In addition, the project would construct a retaining wall below the 40 percent slope line just to the west of the development to protect the remaining open space, which would constitute approximately 40 percent of the project site. On the west side of the open space, the project would restore native vegetation and plant a new redwood grove.

The proposed project would require an amendment to the *Gateway South Specific Plan* for allowable building coverage.

Probable Environmental Affects to be Discussed in the EIR: Aesthetics, Air Quality, Biology, Economic, Hydrology and Water Quality, Land Use and Planning, Noise, Public Services, and Transportation.

Public Review Period: Notice is hereby given that a public meeting will be conducted on Wednesday, April 16, 2008, at or after 4:00 p.m., in the Scotts Valley Council Chambers, One Civic Center Drive, to receive public comment and recommendations on a Supplemental Environmental Impact Report (SEIR) prepared for the proposed Gateway South Retail Store pursuant to the guidelines and procedures of the California Environmental Quality Act. The required 30-day public comment period shall begin on April 1, 2008 and end at 5:00 p.m. on April 30, 2008. All comments regarding the Notice of Preparation must be received by this ending date/time.

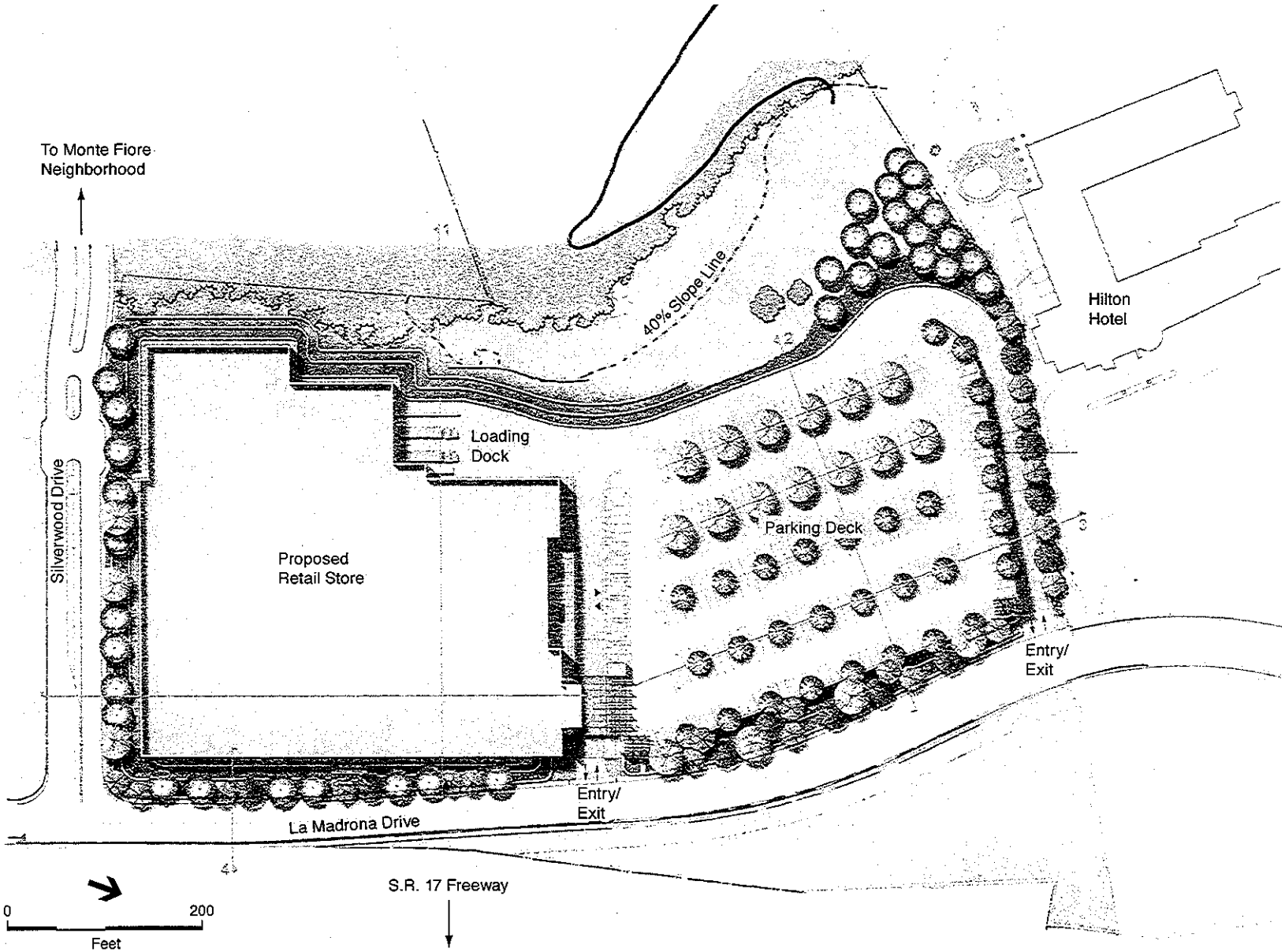
You are encouraged to submit written comments and recommendations. Comments and recommendations may be directed to Taylor Bateman, Associate Planner, City of Scotts Valley, One Civic Center Drive, Scotts Valley, CA 95066, telephone (831) 440-5630, fax (831) 438-2793, or e-mail: **tbateman@scottsvalley.org** by specifying "Gateway South Retail Store" in the subject line.



SOURCE: Thomas Bros. Maps; ESA

Gateway South Retail Store . 207755

Figure 1
Project Location



SOURCE: DES Architects & Engineers

Gateway South Retail Store . 207755

Figure 2
Site Plan

APPENDIX B

Comments Received in Response to the NOP

Last Name	First Name	Title	Group	Address	City	Zip	Phone	Email	Method of Conta	Issues	Notes
McNiesh	Charles	General Mgr	Scotts Valley Water District	P.O.Box 660006	Scottts Valley	95067	831-438-2363	contact@svwd.org	Letter	Hydrology	Hydro eval, poss. groundwater impacts due to landscaping;
Calate	Jennifer	Associate Transp. Mgr	Dept. of Tranportation	50 Higuera St.	San Luis Obispo	93401	805-549-3329		Letter	Traffic	Potential impacts to H 17
Dondero	George	ED	Santa Cruz Regional Transportation Commission	1523 Pacific Ave.	Santa Cruz	95060	831-460-3200	info@sccrtc.org	Letter	Traffic	Potential impacts to H 17, roadway intersections, pedestrian & bicycle facilities & access
Papadakis	Nicolas	ED	Assoc. Monterey Bay Area Governments	445 Reservation Rd., Ste. G	Marina	93933	831-883-3750		Letter		No comments
Pereksta	David M.	Asst. Field Supervisor	US Dept. of Interior, Fish and Wildlife Service	2493 Portola Rd., Ste. B	Ventura	93003			Letter	Hydrology, Biology, Alternatives	Potential effects on biological resources; Hydology
Getchell	Jean	Supervising Planner	Monterey Bay Unified Pollution Control District	24580 Silver Cloud Ct.	Monterey	93940	831-647-9411		Letter	AQ	Potential cumulative AQ impact, potential localized impact, odors, nuisances & sensitive receptors, mitigation measures, project impacts
Houser	Lynn		Resident	306 Sims Road	Santa Cruz	95060			Letter	LU, Traffic	Problem with location; 9,000 cars/day in rural area not desirable;
DeGrassi	Dan		Resident	4173 La Madrona Dr.	Santa Cruz	95060			Letter	Traffic	Traffic study by Fehr & Peers inaccurate; counts should be made during school year; Silverwood/La Madrona Dr. incorrectly identified in study as two-way stop
Patterson	Glenn and Mimi		Resident		Scottts Valley	95067	831-461-1608	glenpatt@pacbell.com	Letter	LU, Biology, PS, Traffic, Economic	Flawed traffic study; potential impact to Golden Eagle habitat; increase in crime, zoning, economic
Nelson	Jack		Resident	127 Rathburn Way	Santa Cruz	95062	831-429-6149	333nelson@baymoon.com	Letter	AQ, Traffic, Economic	GHG increase; increased VMT, economic
Parkin	William	Attorney	Scotts Valley Responsible Local Development PAC	147 South River St., Ste. 221	Santa Cruz	95060	831-429-4055	office@wittwerparkin.com	Letter	LU, Aesthetics, Traffic	Potential impacts to local streets, H 17; night light views, signage; will draw customers away from city core (economic)
Waidhofer	John D.		Resident	508 Shasta Park Ct.	Scotts Valley	95066	831-419-0950		Letter	PS, Traffic, Economic	Traffic analysis needed, emergency response, economic impact to local economy
Eckert	Kenneth		Resident	501 Shasta Park Ct.	Scotts Valley	95066	408-203-0409	ken.eckert@spansion.com	Letter	LU, Aesthetics, Biology, PS, Traffic, Economic	Drain to city services, impact to local businesses; traffic on La Madrona and Silverwood Drive a concern
Gallagher	Jeffrey		Resident	La Cuesta Drive	Scotts Valley	95066			Letter	Traffic, Economic	Traffic on La Madrona; depreciation in home value
Fiorito	Geoff		Resident	311 La Cuesta Drive	Scotts Valley	95066			Letter	PS, Traffic, Economic	Degredation to Altenitas and La Madrona intersection a concern
Strehlke	Shelley		Resident		Scotts Valley				Letter	Aesthetics, Traffic	Concern over increased traffic flows; does not fit aesthetically to surrounding area
Davidson	Edward		Resident	200 Button Street #15	Scotts Valley	95060	831-423-9294		Letter	Alternatives, Traffic	Offers discussion of alternatives; issue of lack of affordable housing for new Target employees
Bach	Paul	President	Scotts Valley Responsible Local Development PAC		Scotts Valley				Letter	Aesthetics, Traffic	Problems with traffic study
Holmes	Sue		Resident	465 La Cuesta Drive	Scotts Valley	95066			Letter	LU, Aesthetics, Traffic	Concern over traffic on La Madron, Mt. Hermon Road
Bustichi	Dene		Scotts Valley City Council		Scotts Valley				Letter	Hydrology, Biology, PS, Traffic, Economic	Requests listed items be included in EIR (see letter)
DeGrassi	Dan		Resident	4173 La Madrona Dr.	Santa Cruz	95060			Letter	ALL	Lists detailed concerns on: traffic, noise, pollution, visual, crime, habitate destruction, litter, solid waste, global warming, water consumption, other hydrologic, grading, local economy
Kimel	Laurie and Howard		Resident		Scotts Valley				Letter	Aesthetics, Traffic, Economic	Increased traffic, decrease in property value, possible losses to small, independent businesses
Parks	Arlene		Resident	150 Elena Ct.	Scotts Valley	95066	831-438-1557		Letter	Traffic	High traffic increase on La Madrona
O'Kelly	Catherine							catherinesv@cruzio.com	Email		General - OpposesTarget development
Tempesta	Daryl		Resident	433 Silverwood Drive	Scotts Valley	95066	831-439-9777	lyradius@gmail.com	Email	Aesthetics, AQ, PS, Traffic, Economic	Negative economic impacts for local economy & city; increased traffic, pollution, crime, env. Impacts (3 letters - other 2 general complaint)
Roddy	Virginia		Resident		Scotts Valley			virginia.roddy@plantronics.com	Email		General - Opposes Target development
Seavers	Hazel		Resident	145 La Cuesta Drive	Scotts Valley	95066			Letter	PS, Traffic, Economic	Increased traffic congestion, traffic on La Madrona, potential loss in home values
?									Letter	Aesthetics, Biology, Traffic	Increased traffic, impacts to neighboring wetlands, impacts to federally protected wildlife in area
Bach	Paul	President	Scotts Valley Responsible Local Development PAC		Scotts Valley				Letter	Aesthetics, AQ, PS, Traffic, Economic	Complaints regarding F & P traffic report; lists sections of SV Economic Development plan & inconsistencies with project and plan
Eckert	Michelle		Resident	501 Shasta Park Ct.	Scotts Valley	95066	831-440-9039	mveckert@sbcglobal.net	Email	Aesthetics, Biology, Traffic	Project does not conform to existing structures in area; Need new traffic study
Dittert	Les		Resident	509 Shasta Park Ct.	Scotts Valley	95066	831-440-9973	lesdit@sbcglobal.net	Letter	Aesthetic, Traffic, Economic	Significant, aesthetic, traffic, and other environmental impacts; incompatible with Hwy 17 as Scenic Route
Doug	Wood		Resident								(Private email forwarded to T. Batement re: traffic study, roadway improvements)
Dough	Wood		Resident								(Letter to a Mr. Dewes re: negative economic impact, design choice for building, alternatives)

Johnston	Matt	Deputy Environmental Coordinator	County of Santa Cruz		Santa Cruz			PLN458@co.santa-cruz.ca.us	Email	Hydrology, Biology, Traffic,	Potential impacts to Hwy 17, La Madrona, El Rancho intersections; stormwater runoff on Carbonera Creek; water availability, conservation, groundwater recharge.
Griffiths	Mark		Resident	156 Silverwood Drive	Scotts Valley						(Letter not directly responding to NOP and addressed to Mayor Johnson - forwarded to T. Bateman - Not in support of Target store)
Gonzalez	Laura		Resident	107 Elena Drive	Scotts Valley	95066	831-438-0268	laurakgonzalez@comcast.net	Letter	LU, Aesthetics, PS, Traffic, Economic	Not consistent with General Plan land uses; will be visible from Hwy 17; loss of property value; traffic congestion and safety issues
Pipal	Kerrie		Resident	6023 Scotts Valley Drive	Scotts Valley			kerriekayaker@yahoo.com	Email	Hydrology, Biology	Include effects of groundwater extraction & runoff from Target development on steelhead population in Carbonera Creek
Gerber	Veronica		Resident	204 Silverwood Drive	Scotts Valley	95066	831-439-9990	gerbs-sv@pacbell.net	Email	Hydrolgy, Aesthetics, Traffic, Economic	Potential traffic, water and other env. impacts that cannot be mitigated; store will be visible from Hwy 17 & inconsistent with designation as Scenic Hwy.
Welch	Charles		Resident	Manana Woods	Scotts Valley			graegle@aol.com	Email	Alternatives	Not in support of Target development; City needs to consider alternatives
Kertai	Frank		Resident	616 Shasta Park Court	Scotts Valley	95066	831-439-0940	fkertai@pacbell.net	Email & Letter	LU, Aesthetics, PS, Hydrology, Noise, Traffic	EIR should address: GHG emissions, wetlands impacts, economic imacts, water impacts, improper zoning for project, incompatibility with local and regional plans, noise impacts, police services and infrastructure support, traffic, Hwy 17, Hwy 1,
Goepfert	Glenn				Scotts Valley		831-426-0688	ggoepfert@sbcglobal.net	Email	ALL	building/pkg lot is out of scale with sorrounding natural and developed environment; slope line w/impervious area significant impact on Wquality; increased car trips, AQ issue; zoning not compatible with this type of development; Traffic report needs more analysis of La Madrona/Sims Road/Hwy 17
Hill	Jeff		Resident		Scotts Valley		831-438-5735	jhill@cruzio.com	Email	Aesthetics, Traffic	Not in support of Target development; inappropriate for character of area; increased traffic hazards
Spague	Dave		Resident	Manana Woods	Scotts Valley			dsprague2003@yahoo.com	Email	Aesthetics, Alternatives	Home prices will be driven down; consider alternatives
Jensen	David		Resident		Scotts Valley			ds_jensen@yahoo.com	Email	Traffic, Economic	Traffic will increase in every direciton; location not appropriate, economic downturn and consumer spending
Rockow	Laura and Gary		Resident		Scotts Valley			gary_rockow@yahoo.com	Email	Hydrology, Biology, Traffic	Traffic study needs to be performed during school year, projected homes, towncenter already going to impact water supply - this will make it worse; impacts to wetlands & other habitat (sent 2 emails)
Bailey	Scott		Resident	Manana Woods	Scotts Valley			sbailey@liveops.com	Email	Traffic	Monte Fiore, Manana Woods neighborhood will suffer with traffic impacts to La Madrona, Mt. Herman, Altenitas roads
White	Bob							motox8r@comcast.net	Email	PS, Aesthetics, Economic, Traffic	How will emergency services to La Madrona, Silverwood, Altenitas residents be affected? Development not compatible with rural, residential area
Archer	Mike		Resident		Scotts Valley			marcher007@sbcglobal.net	Email		General: Opposed to Target development
Finn	Rebeca		Resident		Scotts Valley			rebeca.finn@sbcglobal.net	Email	Aesthetics, Traffic, Hydrology, Economic	(Generally a form letter similar to above - concerned about negative aesthetic, water and other environmental impacts)
Hooper	Virginia		Resident		Scotts Valley			ginnyhooper@excite.com	Email	Traffic, Cultural/Aesthetic	Development would create increase in traffic; does not suit SV image
Ransler	Mark							markransler@comcast.net	Email	Economic, Hydrology, Traffic	(lists questions to address when considering economic impact); 2nd email - concerned about store height, impact on water
Michalak	Gene							genemich@gmail.com	Email	Hydrology, Alternatives, Aesthetic	Water impact to Town Center; consider alternative site; Traffic on Hwy 17; not visually compatible with Hilton
Phelan	Paula						831-234-4334	paula@nadelphelan.com	Email	Hydrology, Biology, Traffic, Economic	Study needs to include: Reduction in housing value, impact of commuting Target employees, runoff from parking lot; impact on bird population, etc. (sent 2 emails)
Nadel	Fred		Resident	625 Lassen Park Court	Scotts Valley		831-440-2400	fred@nadelphelan.com	Email	Traffic, PS	Analysis should cover: Response times from fire station and EMT with traffic projections; measurement of traffic when schools are in session
Wood	Doug							zzotcase@sbcglobal.net	Email	Aesthetics, Alternatives, Economic	Impacts of large-scale development on small communities; consider alternative sites, like K-Mart downtown (see 3 emails from D. Woods)
North	David							dnorth@comcast.net	Email	Cumulative, Growth Inducing	Please include in SEIR

Weingord	Jerry		Resident					jerry.j.weingord@seagate.com	Email	Traffic	Millions of $ in roadway construction will be necessary; request for new traffic study when most people are not on vacation; no mitigation plan proposed in traffic study for La Madrona & Altenitas intersection impact
Butler	Tim and Sandra			281 Civic Center Drive				tim@tjbco.com	Email	Traffic	Trafffic impact on La Madrona will be "horrendous"
McMahon	Sherrie		Resident	268 Bluebonnet Lane	Scotts Valley			sherriemcmahon@mac.com	Email	Traffic	Please have SEIR differentiate between vehicle traffic impact (project only and all)
Gilliam	Ryan		Resident	26 Torrey Oaks Court	Scotts Valley			ryangilliam@sbcglobal.net	Email	Traffic	Traffic already heavy on Mt. Herman
Wagner	Jan		Resident	204 Camino Sinuoso	Scotts Valley		831-438-2628	jansantacruz@cruzio.com	Email	Noise, AQ, Traffic, Economic	Noise & pollution from delivery trucks; lost revenue to other businesses
North	Sonia		Resident	143 Montclair Drive	Santa Cruz			snorth@comcast.net	Email	Economic	Will draw business away from Town Center
Gross	John		Resident	159 El Sereno Drive	Scotts Valley	95066	831-461-1736	johng123@comcast.net	Email		Opposes Target Development
Campbell	Shannon and Kilner		Resident	Sunridge Drive	Scotts Valley			campsxc@sbcglobal.net	Email	Traffic	Lights, noise from parking lot, increased number of cars; location not appropriate
Tomasi	Myron		Resident					myrmar5@sbcglobal.net	Email	Aesthetic, Traffic, Economic	Commuting employees to Target will add to congestion; "blight and eyesore" on SV
Browne	Doug		Resident	3 Camp Evers Lane	Scotts Valley	95066	831-438-4000	doug@driveworks.com	Email	Traffic, Economic	Will increase traffic, decrease small biz opps, increase crime
Brock	Jim		Resident				831-239-0095	jbrock@attributor.com	Email	Traffic, Economic	Congestion, crime, economic impacts
Connor	Nancy				San Lorenzo Valley			nancy@toadski.com	Email	Traffic, Economic	increase in traffic, negative impact on local biz
Snow	Luke and Amy							amyshull@yahoo.com	Email	Traffic, Economic, Biology, Aesthetics	increased traffic, theft & other crime, decreased home value, impact on wildliife & aesthetic beauty of SV
Williams	Michael		Resident	301 La Cuesta Dr.	Scotts Valley		831-438-4183	tenosce9@pacbell.net	Email		General: Opposed to Target development; concern over Public Meeting times
Perkins	Elizabeth		Resident					perkinann@sbcglobal.net	Email	Hydrology, Traffic	Traffic on Mt. Herman, Hwy 17; stress to water supply
Fawcett	Peggy, John, Kathy		Resident		Scotts Valley			peggy.fawcett@plantronics.com	Email	Traffic, Economic	Decrease in property value, Hwy 17 backup
Palmer	Charlie & Inge		Resident		Scotts Valley			chpirz@pacbell.net	Email	Traffic, Economic	Profits will not be invested in local economy; traffic on La Madrona, potential for home prices to decline
Imboden	Cathy Levy		Resident		Scotts Valley			drimboden2@aol.com	Email		General: Opposes Target development
Wakeland	Carl		Resident	110 Caliente Drive	Scotts Valley			cwakeland@sbcglobal.net	Email	Traffic, cultura/aesthetic, Economic	Increase traffic, crime, cause local biz to lose revenue & close
Wallwork	Thira		Resident		Scotts Valley			thiraelaine@yahoo.com	Email	Traffic, Growth	concerned about increased traffic
Levy	Cathy		Resident					drimboden2@aol.com	Email		General - Opposes Target development
Chappelear	Bill		Resident				831-295-5757	billc@anastrophe.com	Email	Traffic, Aesthetic,	Increased traffic & congestion on narrow roads; inconsistent with surroundings
Bothman	Kathryn		Resident	118 Elena Drive	Scotts Valley	95066		ktbothman@comcast.net	Email	Traffic	Area already heavily congested during normal commute hours, this will make it worse; Impacts to Mt. Herman and Hwy 17
Brock	Enid		Resident		Scotts Valley			eavh@yahoo.com	Email		General: Opposes Target development
Espinola	Joseph		Resident	Manana Woods	Scotts Valley			jsejr@pacbell.net	Email		General: Opposes Target development
Barton	Amy		Resident	La Madrona Drive	Scotts Valley			amymcbarton@sbcglobal.net	Email		General: Likes idea of Target in SV, opposes it on this site
Shaffer	Camilla, Richard and Marissa		Resident		Scotts Valley			zebraparis@sbcglobal.net	Email	Aesthetics, Biology, Traffic	Meadow on La Madrona wrong choice; traffic study was not done during school time
Price	David and Beth		Resident	465 Silverwood Dr.	Scotts Valley			bdprices@aol.com	Email	Hydrology, AQ, Economic, PS, Biological, Traffic,	Increase water demand & pollution from runoff (pkg lot); Strain to local police/fire services; money diverted from local businesses to big box store; Increased traffic from Silverwood Dr. to La Madrona
Kertai	Frank	President	Heritage Parks Association	616 Shasta Park Court	Scotts Valley	95066	831-439-0940		Letter	Biological, Mitigation Measures, Hydrology	Impacts to biological resources & wildlife; request discussion of proven mitigation measures; project should look at N deposition & impacts to local biota; Carbonera Creek already listed as impaired;

Group:
Agency
Organization
Resident
Attorney

Issues:
1 Hydro/WQ
2 Land Use
3 Aesthetics
4 Air Quality
5 Biological
6 Noise
7 Public Services (Public Safety)
8 Traffic
9 Alternatives
10 Economic

General: General opposition and general concern over traffic, economic, aesthetic

Scotts Valley Water District
P.O. BOX 660006 ◦ SCOTTS VALLEY, CA 95067-0006
(831) 438-2363 ◦ *FAX* (831)438-6235
EMAIL: contact@svwd.org

Office Address:
2 CIVIC CENTER DR.
SCOTTS VALLEY, CA 95066

Board of Directors:
MARGO HOBER
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Vice President
WILLIAM KASSIS
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Director
CHARLES McNIESH
General Manager

RECEIVED
MAY 0 8 2008
CITY OF SCOTTS VALLEY

April 30, 2008

Taylor Bateman
Associate Planner
City of Scotts Valley/Planning Department
One Civic Center Drive
Scotts Valley, California 95066

Subject: Gateway South Retail Store Project/Scope and Content of Supplemental Environmental Impact Report

Dear Mr. Bateman:

The Scotts Valley Water District appreciates this opportunity to comment on the scope and content of the Supplemental Environmental Impact Report (SEIR) for the Gateway South Retail Store project. The District issued a Will Serve Letter on August 6, 2007, for this project. The Will Serve Letter includes the District's main concerns, as summarized below.

First, detailed project plans and further hydraulic evaluation will be required to determine whether the District's existing delivery system is capable of adequately servicing the site. The problem, if there is one, is likely to be meeting fire flow requirements. Mitigating such a problem typically entails enlarging or adding water mains, adding storage, or making other improvements to the District's system.

Second, the District has concern about possible groundwater impacts due landscape water use at the site. The District's Will Serve letter strongly encourages use of drought-tolerant species and the latest irrigation technologies. It also requires installing "purple pipe" in any new landscaping at the site to facilitate later conversion to recycled water. Further, the District will want to see a cost analysis demonstrating whether recycled water service at the site is or is not, in fact, economically feasible.

Assuming the proposed project moves forward, the District will be able to address the above concerns directly as part of a detailed water services agreement to be negotiated with the project proponent. Nevertheless, it seems the same topics should be addressed from a different vantage point in the context of the SEIR.

Please let me know if the Water District can provide further information or clarification.

Yours truly,

Charles McNiesh
General Manager

cc. Scotts Valley Fire Protection District

DEPARTMENT OF TRANSPORTATION
50 HIGUERA STREET
SAN LUIS OBISPO, CA 93401-5415
ONE (805) 549-3101
X (805) 549-3329
TDD (805) 549-3259
http://www.dot.ca.gov/dist05/

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CITY OF SCOTTS VALLEY

Flex your power!
Be energy efficient!

April 30, 2008

SCr 17-3.44
SCH# 2008042012

Mr. Taylor Bateman
City of Scotts Valley
Planning Department
One Civic Center Drive
Scotts Valley, CA 95066

Dear Mr. Bateman:

COMMENTS ON THE NOTICE OF PREPARATION (NOP) FOR THE GATEWAY SOUTH RETAIL STORE DRAFT ENVIRONEMNTAL IMPACT REPORT (EIR)

The California Department of Transportation (Department), District 5, Development Review, has reviewed the above referenced project and has the following comments.

1. The Department supports local development that is consistent with State planning priorities intended to promote equity, strengthen the economy, protect the environment, and promote public health and safety. We accomplish this by working with local jurisdictions to achieve a shared vision of how the transportation system should and can accommodate interregional and local travel and development.

2. Given that this project will generate additional traffic and has the potential to significantly impact Highway 17, the Department requests that a traffic impact study be prepared to study the project's impacts on the State highway facility. The traffic study should include information on existing traffic volumes within the study area, including ramp operations and should include analysis that incorporates all project impacts known to the city. In addition, the traffic study should be based on recent traffic volumes less than two years old. Counts older than two years cannot be used.

3. To ensure that the traffic impacts of the future development on Highway 17 are properly evaluated, it is recommended that the traffic study be prepared in accordance with the Department's "Guide for the Preparation of Traffic Impact Studies." Please visit the Department's Internet site for a copy of these guidelines at: http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf. An alternative methodology that produces technically comparable results can also be used.

4. Because the Department is responsible for the safety, operations, and maintenance of the State transportation system, our Level of Service (LOS) standards should be used to determine the significance of the project's impact. We endeavor to maintain a target LOS at the transition between LOS C and LOS D on all State transportation facilities. In cases where a State facility is already operating at an unacceptable LOS, any additional trips added should be considered a significant cumulative traffic impact, and should be mitigated accordingly.

If you have any questions, or need further clarification on the items discussed above, please do not hesitate to call me at (805) 549-3099 or e-mail jennifer.calate@dot.ca.gov.

Sincerely,

JENNIFER CALATÉ
Associate Transportation Planner
District 5 Development Review Coordinator

SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION
1523 Pacific Ave., Santa Cruz, CA 95060-3911 · (831) 460-3200 FAX (831) 460-3215 EMAIL info@sccrtc.org

RECEIVED
APR 2 8 2008
CITY OF SCOTTS VALLEY

Taylor Bateman
City of Scotts Valley Planning
One Civic Center Drive
Scotts Valley, CA 95066

April 24, 2008

RE: Comments on the Notice of Preparation of a Draft Supplemental Environmental Impact Report for the proposed Gateway South Retail Store in the City of Scotts Valley

Mr. Bateman,

Thank you for the opportunity to comment on the scope and content of the environmental information to be discussed in the Draft Supplemental Environmental Impact Report (SEIR) for the proposed Gateway South Retail Store. The Santa Cruz County Regional Transportation Commission would like to submit the following recommendations for your consideration, which are consistent with the *2005 Regional Transportation Plan* (*RTP*) Goals and Policies:

1. The proposed project will result in increased traffic on roadways in the vicinity, including the state highway system. RTC staff recommends that a complete traffic analysis, which addresses project specific and cumulative traffic impacts, be carried out as part of the environmental review process. The traffic analysis should address potential impacts to:
    - Highway 17, Highway 9 and Highway 1,
    - On- and off-ramps for northbound and southbound Highway 17 at Mt. Hermon Road,
    - Roadway intersections including, but not limited to, La Madrona/ Mt Hermon Road, Scotts Valley Drive/Mt. Hermon Road, La Madrona/Sims Road Exit and La Madrona/Pasatiempo Exit,
    - Roadways including, but not limited to, La Madrona (inside and outside of the City of Scotts Valley City limits), Mt. Hermon Road, Scotts Valley Drive and El Rancho Drive; and,
    - Pedestrian and bicycle facilities and access on these roadways.

    The Draft SEIR should identify appropriate mitigation measures for all impacts identified in the traffic analysis (*RTP* Goal 3.3.4). These may include, but are not limited to:
    - the developer paying their fair share of improvements required to maintain the City of Scotts Valley intersection LOS requirements,
    - decreasing the total single-occupant vehicle (SOV) trips made by customers and employees to the proposed project site and surrounding area by replacing SOV trips with transportation alternatives including carpooling, transit, bicycling (*RTP* goals and policies 1.3.1 and 1.3.2). (Ecology Action's Transportation Division

can assist the project sponsor in implementing some of the latter transportation demand management measures.)

- enabling a job/ housing balance by ensuring that the available housing opportunities in the Gateway Specific Plan Area are financially accessible to the employees of the any new development in the Specific Plan planning area (*RTP* goal and policy 3.4 and 3.4.7).

RTC staff also recommends that any proposed mitigations that may impact Caltrans or County of Santa Cruz facilities should be agreed upon by the organization prior to their inclusion in the Draft SEIR as a reasonably expected mitigation measure.

2. The development of the Gateway South Retail Store is an opportunity for the proposed retail store sponsor and Santa Cruz County residents to recognize the benefits of potential commuter park and ride spaces at the proposed projects location. Managers of retail establishments typically support weekday commuter park and ride spaces for three reasons:
    - to help mitigate area traffic congestion resulting from the new development,
    - to increase revenues from commuters who combine their commute trip with a trip to the associated retail establishment, and
    - to strengthen a positive relationship between the retail establishment and the community at large.

    The Gateway South Specific Plan states that the City of Scotts Valley will work with developers to jointly create a park and ride lot. A joint-use park and ride lot was identified in the Gateway South Specific Plan as a potential replacement to an informal park and ride lot that was previously within the Specific Plan area. RTC staff recommends that the City of Scotts Valley work with the developer of the Gateway South Retail Store to designate a minimum of 5% (approximately 25 spaces) of proposed parking spaces as weekday park and ride spaces. The RTC's Commute Solutions Program staff is available to discuss how to designate park and ride spaces in a manner that maximizes the benefits to the proposed development, the customer and the community.

3. To achieve the *RTP* Goals which address multi-modal access to facilities and safety for all transportation modes, RTC staff requests that the proposed project include:
    - sidewalks and bicycle lanes on La Madrona Drive between Altenitas Road and Silverwood Drive to accommodate pedestrian and bicycle travel to and from the proposed project (*RTP* Goal 2.1.1),
    - bicycle parking and pedestrian walkways between the parking lot and the retail store (*RTP* Goal 1.6.2); and,
    - a transit stop adjacent to the proposed project and regular bus service to the project location (*RTP* Goal 2.3).

4. The parking demands of the project may be improved using technology which disseminates information to drivers about parking availability within the proposed project parking area. Providing drivers with information about the availability of parking can reduce traveler frustration and congestion associated with searching for parking (*2005 RTP* goals and policies 1.7).

Thank you for the opportunity to provide input into the scope and content of the Draft SEIR for the proposed Gateway South Retail Store. If you have questions about the above recommendations, please contact Grace Blakeslee of my staff at 831-460-3219.

Sincerely,

George Dondero
Executive Director

Cc: Commissioner Johnson
Commissioner Stone

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AMBAG
ASSOCIATION OF MONTEREY BAY AREA GOVERNMENTS

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APR 21 2008
CITY OF SCOTTS VALLEY

April 14, 2008

Ms. Taylor Bateman
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

RE: MCH# 20080310 – Notice of Preparation for Notice of Public Hearing for Gateway South Retail Store

Dear Ms. Bateman:

AMBAG's Regional Clearinghouse circulated a summary of notice of your environmental document to our member agencies and interested parties for review and comment.

The AMBAG Board of Directors considered the project on **April 12, 2008** and has no comments at this time.

Thank you for complying with the Clearinghouse process.

Sincerely,

Nicolas Papadakis
Executive Director

SERVING OUR REGIONAL COMMUNITY SINCE 1968
445 RESERVATION ROAD, SUITE G ✧ P. O. BOX 809 ✧ MARINA, CA 93933-0809
(831) 883-3750 ✧ FAX (831) 883-3755 ✧ www.ambag.org

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
81440-2008-B-0222

April 30, 2008

RECEIVED
MAY 05 2008
CITY OF SCOTTS VALLEY

Taylor Bateman, Associate Planner
Planning Department
City of Scotts Valley
One Civic Center Drive
Scotts Valley, California 95066

Subject: Comments on the Notice of Preparation of a Draft Supplemental Environmental Impact Report for the Gateway South Retail Store, Scotts Valley, Santa Cruz County, California

Dear Mr. Bateman:

We have received your request for comments on the Notice of Preparation of a Draft Supplemental Environmental Impact Report (SEIR) dated March 27, 2008, and received in our office on March 31, 2008, for the Gateway South Retail Store project. The 17.62-acre project site is located in the southern portion of the city of Scotts Valley (City), Santa Cruz County, California. The applicant has proposed to build a 155,000-square foot retail store and 517 associated parking spaces. Additionally, the applicant proposes to construct a retaining wall in order to protect approximately 40 percent of the project site as open space.

The Service believes the following issues should be thoroughly addressed in the SEIR:

1. A complete discussion of the purpose and need for the project.

2. A description of the proposed project, including all feasible alternatives and the no action alternative. This alternatives analysis is important to the Service's evaluation of the project, as feasible alternatives often reduce effects to biological resources.

3. Specific acreage and detailed descriptions of the amount and types of habitat that may be affected by the proposed project or project alternatives. Of particular concern will be the acreage of wetland and riparian habitats to be affected. This number should be verified by the Army Corps of Engineers or Environmental Protection Agency. Maps and tables should be included to assist in the evaluation of project-related effects.

4. Quantitative and qualitative information concerning plant and animal species associated with each habitat type.

5. A list of sensitive species that are found at or near the project site including federally listed species, State listed species, and locally declining or sensitive species. A detailed discussion of these species, focusing on their site-related distribution and abundance and the anticipated effects of the project on these species, should be included. A list of federally listed species that could potentially occur within the project area is enclosed with this letter.

The U.S. Fish and Wildlife Service's (Service) responsibilities include administering the Endangered Species Act of 1973, as amended (Act), including sections 7, 9, and 10. Section 9 of the Act prohibits the taking of any federally listed endangered or threatened animal species. Section 3(18) of the Act defines "take" to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Service regulations (50 CFR 17.3) define "harm" to include significant habitat modification or degradation that actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harassment is defined by the Service as an intentional or negligent action that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. The Act provides for civil and criminal penalties for the unlawful taking of listed species. Exemptions to the prohibitions against take may be obtained through coordination with the Service in two ways: through interagency consultation for projects with Federal involvement pursuant to section 7, or through the issuance of an incidental take permit under section 10(a)(1)(B) of the Act.

"Zayante soils" is a soil type that supports the Zayante sandhills ecosystem that occurs exclusively in the Santa Cruz Mountains near the city of Scotts Valley and the communities of Ben Lomond, Mount Hermon, Felton, Olympia, Corralitos, and Bonny Doon. Two federally listed animals endemic to Zayante soils are the federally endangered Mount Herman June beetle (*Polyphylla barbata*) and Zayante band-winged grasshopper (*Trimerotropis infantilis*). We recommend that the SEIR address the potential for the above listed species, and any other federally listed plants and animals, to occur within the project area. If it is determined that federally listed species may be affected by the proposed project, we recommend that the City and the project proponent coordinate with us to ensure compliance with the Act either through consultation or preparation of a habitat conservation plan and issuance of an incidental take permit.

The Mount Hermon June beetle is found in association with vegetation of the Zayante sandhills, which is characterized by a mosaic of ponderosa pines (*Pinus ponderosa*), silverleaf manzanita (*Arctostaphylos silvicola*), and areas that are sparsely vegetated with grasses and herbs. The larvae of the Mount Hermon June beetle are fossorial and feed on plant roots. Adults can also be found within the sandy soils during a portion of their lifespan and may be active above ground between mid-May and mid-August. Recent survey efforts have documented ponderosa pine trees and/or other native plant species as common features of nearly all of the known Mount Hermon June beetle locations (Richard Arnold, entomologist, unpublished data; Jodi McGraw, ecologist, unpublished data). For this reason, the roots of ponderosa pine trees and other native plants are potential food sources for Mount Hermon June beetle larvae that live in burrows in Zayante soils.

The Zayante band-winged grasshopper is also endemic to the Zayante sandhills. Within this limited distribution, the Zayante band-winged grasshopper is restricted to areas of barren or sparsely vegetated loose sands that are exposed to sunlight. This habitat type is commonly referred to as "sand parkland." Adult Zayante band-winged grasshoppers are usually active from late July through late October.

The Service designated critical habitat for the Zayante band-winged grasshopper in a final rule, dated February 7, 2001 (66 FR 9219). The action area for the proposed project is within Zayante band-winged grasshopper critical habitat which encompasses approximately 10,560 acres. This unit is essential to the recovery of the species because it supports all of the populations that are currently known and the entire known suitable habitat for the Zayante band-winged grasshopper throughout its range. The unit consists of approximately 610 acres of state land and approximately 9,950 acres of private land. The primary threat to the Zayante band-winged grasshopper is loss of habitat. The disruption of natural landscape-level processes may also be resulting in shifts in plant communities, which has reduced the extent and quality of habitat available for the Zayante band-winged grasshopper. Given the habitat based threats to this species summarized above, we believe that designated critical habitat requires special management considerations or protection.

Several additional federally threatened and endangered plants and animals have the potential to occur in the proposed project area. We recommend that the project proponent review the species list enclosed with this letter in addition to information in the California Department of Fish and Game's Natural Diversity Data Base. You can contact the California Department of Fish and Game at (916) 324-3812 for information on other sensitive species that may occur in this area.

6. An assessment of the effects on biological resources, including those which are direct, indirect, and cumulative. All aspects of the project should be included in this assessment.

7. An analysis of the effects of the project on the hydrology of associated drainages and any other riparian or wetland communities within the sphere of influence of the project. The effects of alteration of natural flows within the affected creeks and rivers should be thoroughly examined.

8. Specific mitigation plans to offset project-related effects, including cumulative habitat loss, degradation, and modification resulting from the direct, indirect, and cumulative consequences of the action. The objective of the mitigation plan should be to offset qualitative and quantitative project-induced loss of habitat values. Avoidance of the effects through project modification is considered mitigation. In particular, the Service recommends that impacts to wetlands, riparian corridors, and grasslands, which provide an important habitat to many species of wildlife, be avoided.

9. Identification of construction methods to be employed to prevent soil erosion, along with specific erosion and sedimentation control plans to be carried out throughout the life of the project.

The Fish and Wildlife Coordination Act, as amended, provides the opportunity for the Service to comment on any public notice issued for a Federal permit or license affecting the Nation's waters, in particular, permits administered by the Corps pursuant to section 404 of the Clean Water Act, as amended. In our review of section 404 permits, we recommend avoidance of impacts to waters and wetlands as the primary means of protecting these sensitive habitats. In the regulations pertaining to the section 404 permitting process, projects which do not require proximity to waters or special aquatic sites are considered non "water-dependent" (40 CFR §230.10). If the project is not water-dependent, the Service will recommend denial of the permit. The proposed development project may require a permit from the Corps because it may involve placing fill in a wetland. We recommend that details of the project be provided to the Corps.

Thank you for the opportunity to participate in the planning of this project. If you have any questions concerning this letter, please contact Chad Mitcham of my staff at (805) 644-1766, extension 335.

Sincerely,

David M. Pereksta
Assistant Field Supervisor

FEDERALLY LISTED SPECIES
WHICH HAVE THE POTENTIAL TO OCCUR
WITHIN THE PROPOSED PROJECT AREA
IN SCOTTS VALLEY, CALIFORNIA

Birds		
Marbled murrelet	*Brachyramphus marmoratus marmoratus*	T, CH
Amphibians		
California red-legged frog	*Rana aurora draytonii*	T, CH
Invertebrates		
Mount Hermon June beetle	*Polyphylla barbata*	E
Zayante band-winged grasshopper	*Trimerotropis infantilis*	E, CH
Ohlone tiger beetle	*Cicindela ohlone*	E
Plants		
Ben Lomond spineflower	*Chorizanthe pungens* var. *hartwegiana*	E
Scotts Valley spineflower	*Chorizanthe robusta* var. *hartwegii*	E, CH
Robust spineflower	*Chorizanthe robusta* var. *robusta*	E, CH
Santa Cruz cypress	*Cupressus abramsiana*	E
Ben Lomond wallflower	*Erysimum teretifolium*	E
Santa Cruz tarplant	*Holocarpha macradenia*	T, CH
Scotts Valley polygonum	*Polygonum hickmanii*	E, CH

Key:
E – Endangered T - Threatened CH - Critical habitat

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
81440-2008-B-0222

April 30, 2008

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APR 30 2008
CITY OF SCOTTS VALLEY

Taylor Bateman, Associate Planner
Planning Department
City of Scotts Valley
One Civic Center Drive
Scotts Valley, California 95066

Subject: Comments on the Notice of Preparation of a Draft Supplemental Environmental Impact Report for the Gateway South Retail Store, Scotts Valley, Santa Cruz County, California

Dear Mr. Bateman:

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Sincerely,

David M. Pereksta
Assistant Field Supervisor

FEDERALLY LISTED SPECIES WHICH HAVE THE POTENTIAL TO OCCUR WITHIN THE PROPOSED PROJECT AREA IN SCOTTS VALLEY, CALIFORNIA

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<u>Amphibians</u>		
California red-legged frog	*Rana aurora draytonii*	T, CH
<u>Invertebrates</u>		
Mount Hermon June beetle	*Polyphylla barbata*	E
Zayante band-winged grasshopper	*Trimerotropis infantilis*	E, CH
Ohlone tiger beetle	*Cicindela ohlone*	E
<u>Plants</u>		
Ben Lomond spineflower	*Chorizanthe pungens* var. *hartwegiana*	E
Scotts Valley spineflower	*Chorizanthe robusta* var. *hartwegii*	E, CH
Robust spineflower	*Chorizanthe robusta* var. *robusta*	E, CH
Santa Cruz cypress	*Cupressus abramsiana*	E
Ben Lomond wallflower	*Erysimum teretifolium*	E
Santa Cruz tarplant	*Holocarpha macradenia*	T, CH
Scotts Valley polygonum	*Polygonum hickmanii*	E, CH

Key:
E – Endangered T - Threatened CH - Critical habitat

MONTEREY BAY
Unified Air Pollution Control District
serving Monterey, San Benito, and Santa Cruz counties

AIR POLLUTION CONTROL OFFICER
Douglas Quetin

24580 Silver Cloud Court • Monterey, California 93940 • 831/647-9411 • FAX 831/647-8501

DISTRICT BOARD MEMBERS

CHAIR:
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San Benito County

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Santa Cruz County

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San Benito County Cities

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Mon
Peni ities

Ellen Pirie
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Fernando Armenta
Monterey County

Sam Storey
Santa Cruz County Cities

George Worthy
South Monterey County Cities

April 1, 2008

Mr. Taylor Bateman, Associate Planner
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

SUBJECT: NOP FOR DRAFT SUPPLEMENTAL EIR FOR GATEWAY SOUTH RETAIL STORE

Dear Bateman:

Staff reviewed the referenced document and has the following suggestions for a scope of work for the air quality analysis for the proposed retail store:

Project's Cumulative Air Quality Impact on Regional Ozone
The District uses consistency with the 2004 Air Quality Management Plan (AQMP) for the North Central Coast Air Basin to determine a specific plan's cumulative impact on regional air quality (ozone levels). Please request a formal consistency determination from AMBAG for the proposed population-serving project and include it in the Draft EIR.

Project's Localized Air Quality Impact on Carbon Monoxide Levels
Localized impact is evaluated by determining if project build-out would create or substantially contribute to carbon monoxide "hotspots" (where federal or State ambient air quality standards are exceeded). If project or cumulative traffic would cause LOS to decline from D or better to E or F, dispersion modeling should be undertaken to determine if carbon monoxide concentrations would violate ambient air quality standards at sensitive receptor locations.

Odors, Nuisances and Sensitive Receptors
If the project would revise land use designations that might result in development of odors or nuisances in adjacent land uses, the Draft EIR should include an assessment of those impacts. District Rule 402, Nuisances, should be reviewed for applicable requirements.

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CITY OF SCOTTS VALLEY

Mitigation Measures

Mitigation measures should be identified for any significant impacts on air quality. The Draft EIR should quantify the emission reduction effectiveness of each measure, identify the agencies responsible for implementation and monitoring, and determine whether mitigation measures reduce impacts to a less-than-significant level.

Projects Impacts

The District has established the following thresholds of significance for individual projects: 137 lbs/day for VOC or NO_x, 82 lbs/day for PM_{10}, 150 lbs/day for SO_x, a significant decline in LOS, and a cancer risk greater than 10 per 1,000,000 people. (Please refer to Table 5-3 on page 5-5, and page 9-2 of the District's CEQA Air Quality Guidelines, July 2004).

Suggested Design Features to Reduce Air Quality Impacts

The District suggests the following to reduce air quality impacts of the proposed project:

- Shopping center parking facilities could include infrastructure to allow easy installation of electric vehicle charging facilities for the public and employees.
- The retail store could be designed to provide infrastructure to allow electric vehicle charging facilities for forklifts, and other vehicles and equipment.
- The loading areas and dock could be electrified, to eliminate diesel truck idling in these areas.

The District's CEQA Air Quality Guidelines may be found on the District's website at www.mbuapcd.org under "Air Quality Plan".

Thank you for the opportunity to review the document.

Sincerely,

Jean Getchell
Supervising Planner
Planning and Air Monitoring Division

cc: David Roemer, AMBAG

RECEIVED
APR 07 2008
CITY OF SCOTTS VALLEY

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 1, 2008

To: Reviewing Agencies

Re: Gateway South Retail Store
SCH# 2008042012

Attached for your review and comment is the Notice of Preparation (NOP) for the Gateway South Retail Store 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:

Taylor Bateman
City of Scotts Valley
1 Civic Center Drive
Scotts Valley, CA 95066

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
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

RECEIVED
APR 07 2008
CITY OF SCOTTS VALLEY

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# 2008042012
Project Title Gateway South Retail Store
Lead Agency Scotts Valley, City of

Type NOP Notice of Preparation

Description The proposed project would construct a 155,000 square foot retail store in the City of Scotts Valley. The 17.62-acre project site is located on the west side of State Route 17. The proposed project would require an amendment to the Gateway south Specific Plan for allowable building coverage.

Lead Agency Contact

Name Taylor Bateman
Agency City of Scotts Valley
Phone (831) 440-5630 **Fax**
email
Address 1 Civic Center Drive
City Scotts Valley **State** CA **Zip** 95066

Project Location

County Santa Cruz
City Scotts Valley
Region
Cross Streets La Madrona/Silverwood
Parcel No. 021.141.05
Township **Range** **Section** **Base**

Proximity to:

Highways SR 17
Airports
Railways
Waterways
Schools
Land Use GP: Gateway South Specific Plan: Service Commercial and Open Space

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Economics/Jobs; Forest Land/Fire Hazard; Flood Plain/Flooding; Drainage/Absorption; Geologic/Seismic; Job Generation; Housing; Minerals; Noise; Public Services; Schools/Universities; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife; Growth Inducing; Landuse; Cumulative Effects

Reviewing Agencies Resources Agency; Department of Conservation; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Game, Region 3; Native American Heritage Commission; California Highway Patrol; Caltrans, District 5; Department of Toxic Substances Control; Regional Water Quality Control Board, Region 3

Date Received 04/01/2008 **Start of Review** 04/01/2008 **End of Review** 04/30/2008

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

Resources Agen

- ■ **Resources Agency**
  Nadell Gayou
- ☐ **Dept. of Boating & Waterways**
  David Johnson
- ☐ **California Coastal Commission**
  Elizabeth A. Fuchs
- ☐ **Colorado River Board**
  Gerald R. Zimmerman
- ■ **Dept. of Conservation**
  Sharon Howell
- ☐ **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**
  Mark Herald
- ☐ **S.F. Bay Conservation & Dev't. Comm.**
  Steve McAdam
- ■ **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou
- ☐ _____
  Conservancy

ish 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
- ☐ **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**
  Robert Sleppy
  Environmental Services Section
- ☐ **Dept. of Health Services**
  Veronica Malloy
  Dept. of Health/Drinking Water

Independent Commissions,Boards

- ☐ **Delta Protection Commission**
  Debby Eddy
- ☐ **Office of Emergency Services**
  Dennis Castrillo
- ☐ **Governor's Office of Planning & Research**
  State Clearinghouse
- ■ **Native American Heritage Comm.**
  Debbie Treadway
- ☐ **Public Utilities Com lon**
  Ken Lewis
- ☐ **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
- ■ **California Highway Patrol**
  Shirley Kelly
  Office of Special Projects
- ☐ **Housing & Community Development**
  Lisa Nichols
  Housing Policy Division

Dept. of Transportation

- ☐ **Caltrans, District 1**
  Rex Jackman
- ☐ **Caltrans, District 2**
  Marcelino Gonzalez
- ☐ **Caltrans, District 3**
  Jeff Pulverman
- ☐ **Caltrans, District 4**
  Tim Sable
- ■ **Caltrans, District 5**
  David Murray
- ☐ **Caltrans, District 6**
  Moses Stites
- ☐ **Caltrans, District 7**
  Vin Kumar
- ☐ **Caltrans, District 8**
  Dan Kopulsky
- ☐ **Caltrans, District 9**
  Gayle Rosander
- ☐ **Caltrans, District 10**
  Tom Dumas
- ☐ **Caltrans, District 11**
  Jacob Armstrong
- ☐ **Caltrans, District 12**
  Ryan P. Chamberlain

Cal EPA

Air Resources Board

- ☐ Airport Projects
  Jim Lerner
  - ☐ Transportation Projects
    Ravi Ramalingam
  - ☐ Industrial Projects
    Mike Tollstrup
- ☐ **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
- ■ **Dept. of Toxic Substances Control**
  CEQA Tracking Center
- ☐ **Department of Pesticide Regulation**

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Regional Water C y 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)
- ☐ **RWQCB 8**
  Santa Ana Region (8)
- ☐ **RWQCB 9**
  San Diego Region (9)

☐ **Other** _____

_____

_____

Last Updated on 03/03/2008

Lynn Houser
306 Sims Road
Santa Cruz, CA 95060

April 28, 2008

Scotts Valley City Council
1 Civic Drive
Scotts Valley, CA 95060

City council members:

We have been residents of Sims Road for 32 years. In all that time, SV has been looking for an identity and a "main street" as a city center. Now I am reading that the city wants to sprawl and become "Chain city, USA" by adding a Target.

What more can a person NEED or WANT to buy at Target that can't already be purchased at Kmart one half mile down the street?

The biggest and most prominent problem in the plan is the location. 9,000 cars per day in a rural neighborhood area is not desirable. At the present, the Hilton is a lovely building, blending beautifully in with the environment. I can't imagine staying at an upscale hotel such as the Hilton and waking to the clanging and banging of early morning delivery trucks and then enjoying the beautiful view of a big box store surrounded by acres of paved parking lots. Not a good plan.

How about SV being creative with the piece of property. Turn it into something unique that will fit in with the surrounding area.

Something to think about.

Lynn Houser

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CITY OF SCOTTS VALLEY

April 30, 2008

City Council
City of Scotts Valley
1 Civic Center Drive
Scotts Valley, CA 95066

RE: Additional SEIR Recommendations for Gateway South Retail Store – Target

Dear Councilmembers,

Please accept the following additional comments and recommendations for analysis in the Supplemental EIR for the Gateway South Retail Store – Target. These are subsequent to comments in my letter to you dated April 10, 2008.

Traffic

1. The traffic study prepared by Fehr and Peers is inaccurate in several areas and needs to be revised.
    a. Traffic counts should be conducted during the school year because there is a very substantial amount of traffic using La Madrona Drive at that time which would significantly increase any counts developed in July or August. This would be traffic accessing Brook Knoll Elementary School, Scotts Valley Middle School and Scotts Valley High School.
    b. Peak traffic counts for a., above, should be conducted during school peak traffic times.
    c. The F&P study incorrectly identifies the Silverwood/La Madrona Drive intersection as being a two-way stop. It is only a one-way stop, there is currently no stop on La Madrona Drive.
2. The impact of increased traffic on La Madrona Drive should be examined in the context of shoppers from the west side of Santa Cruz, including UCSC and Davenport, using La Madrona Drive as an access route (via Graham Hill Road and Sims Road) incoming to the proposed Target store, as well as exiting the proposed store.

Thank you very much for your consideration of these comments. I can be reached at 438-2336 or dan.degrassi@baymoon.com if you have any questions about the recommendations made in this letter.

Sincerely,

Dan deGrassi

Dan deGrassi
4173 La Madrona Drive
Santa Cruz, CA 95060

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Cc: Supervisors Jan Beautz and Mark Stone
John Leopold
Susan Mauriello, Santa Cruz County Administrative Officer
Tom Burns, Santa Cruz County Planning Department
Tom Bolich, Santa Cruz County Public Works Department
Steve Robbins, Santa Cruz County Sheriff's Department
Sue Roth, Scotts Valley Unified School District Board of Trustees
Susan Silver, Superintendent, Scotts Valley Unified School District
Kathy Frandle, Principal, Brook Knoll School
Scotts Valley Chamber of Commerce
San Lorenzo Valley Chamber of Commerce
Santa Cruz County Cycling Club
Santa Cruz County Regional Transportation Commission
Santa Cruz Metropolitan Transit District
Responsible Local Development

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April 30, 2008

Taylor Bateman
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066
831.440.5633

Subject: Gateway South Retail Store

RE: Notice of Preparation – Draft Supplemental Environmental Impact Report
Gateway South Retail Store

Mr. Bateman:

As residents of Scotts Valley, we have serious concerns about the proposed Target store development, referred to as "Gateway South Retail Store". A summary of these concerns is:

1. A seriously flawed traffic study. Here are just a few of the apparent problems—
   - Does not conform to AASHTO standards, used by Cal-Trans and other cities, relative to the space required for Target trucks to maneuver into and out of the Target site. Per AASHTO, there is inadequate space on the narrow La Madrona Rd. for the larger Target trucks to turn into and out of Target, as well as issues of adequate clearance within the Target site.
   - Does not include the impact of Target on many important county roads and intersections, such as Sims Road, El Rancho, and the "fishhook", to name only a few examples.
   - Does not include the impact on access to adjoining or nearby home developments, such as Manana Woods (over 150 home sites), Monte Fiore (over 80 home sites), and the homes south of Target on La Madrona Road.
   - Does not include the impact on access to nor safety of travel to local schools, such as Brook Knoll School off of La Madrona Rd, as well as Scotts Valley Middle School, etc.
   - Does not include the impact of access to and from the proposed Fire Station, to be located directly across La Madrona Road from the proposed Target site. Emergency access from the Fire Station could be heavily compromised due to car traffic and especially trucks entering or leaving Target (again, see the AASHTO standards re this).
   - Does not realistically address the impact on ease of access to the adjacent Hilton hotel.
   - It is quite possible that the traffic study underestimates the level of traffic due to Target. One only has to look at the most recent example—the traffic study done relative to the Home Depot store on 41st Avenue—to see how this can impact our community. Per a 4/21/2008 article in the Santa Cruz *Sentinel*, the actual traffic due to Home Depot was so much greater than the original traffic study estimates, that the city/county are going to have to add a third lane to the 41st Ave. bridge over Hwy 1, resulting in millions of dollars of added expense, several lawsuits, and traffic gridlock while the lengthy bridge expansion is under way.
   - To mitigate the unacceptable traffic delays identified by the study that are associated with the Mt. Hermon Road/Hwy 17 intersection, this traffic study **requires** the proposed mid-city interchange to be implemented. But this major exit from Hwy 17 is estimated to cost between $30-$50 million, and is currently unfunded and unscheduled; it is today little other than a pipe dream with a low probability of happening. <u>Which leaves us with completely unacceptable delays at the Mt. Hermon/17 intersection, per the city's own standards</u>.

2. Environmental Issues: While there are a large number of species to be concerned about relative to the proposed Target development, we'd like to focus on one: The Golden Eagle. We walk by this site daily, and have literally more than a dozen photographs of Golden Eagles hunting on the proposed Target site. They appear to nest nearby, in the hill above the site. Note that Golden Eagles are considered an endangered species, and are specifically protected by the "Bald and Golden Eagle Protection Act, 1940" (administered by the U.S. Fish and Wildlife Service/U.S. Department of the Interior). *This act prohibits the transportation or moving of these birds except if permits have been granted for scientific, educational or Native American religious purposes.* The proposed Target development would seem to be in conflict with this Federal law.

3. Crime. A 2006 Crime Study documented an average of 170 crime incidents per Target store. The proposed Target Store will possibly increase the number of Scotts Valley arrests by one-third (33%). How much will this change our community and how much will it cost taxpayers and the city? How many additional police officers will need to be employed to appropriately deal with the additional crime impacts resulting from this proposed Target Shopping Center project?

4. Comparative analysis of nearby cities with Target stores. We see no evidence that the city has contacted other nearby communities to see what their actual experiences have been after they allowed a Target store to be installed in their locales. We'd like to suggest that it would be very unwise for Scotts Valley to not look at other Target store installations within, say, 75 miles, and find out what the real-world experience has been on actual results vs. planned or study projections.

5. Zoning anomalies. Note that both other local big-box stores—Costco and Home Depot—are located in business/industrial zones, NOT immediately adjacent to significant home developments or upscale hotels. How can Scotts Valley possibly justify the multiple discrepancies that seem to exist between our stated Scotts Valley land-use and zoning plans and the proposed Target site? This seems to put the city at risk for multiple, expensive lawsuits—something no residents want.

6. Economic Impact. Many studies have shown that the promise of increased tax revenues to local governments from big-box stores like Target is illusory at best, and actually negative in most cases. See, for example, the economic study titled "*SUPERCENTERS AND THE TRANSFORMATION OF THE BAY AREA GROCERY INDUSTRY: Issues, Trends, and Impacts*". This economic study specifically examined the impacts of big-box retail stores with grocery service, such as Target, on local economies. This report is designed to provide decision makers with the information and analytical tools needed to make sound decisions regarding the possible development of supercenters in their communities. This economic study can be accessed in its entirety at the following website: http://www.againstthewal.com/studies/norcalstudy.pdf
   The study concluded that the primary impacts of these big-box supercenters were:
   Lower prices charged for grocery goods,
   Lower wages and benefits paid to grocery workers, and
   An array of negative local development issues, including traffic and negative fiscal impacts.

We hope you find these comments useful.

Sincerely,
Glenn and Mimi Patterson
Scotts Valley
831-461-1608
email: glenpatt@pacbell.net

JACK NELSON
127 RATHBURN WAY, SANTA CRUZ CA 95062
(831) 429-6149 / 333NELSON@BAYMOON.COM

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MAY 01 2008
CITY OF SCOTTS VALLEY

Taylor Bateman
Scotts Valley Planning Department
One Civic Center Drive
Scotts Valley CA 95066

Re: Gateway South Retail Store (Target), EIR preparation

Dear Taylor Bateman:

Here are some comments for the referenced EIR preparation. First, to state what principally concerns me about the project: I believe that the core concept of a Target Superstore sited near a freeway interchange in Scotts Valley, isolated from existing urban development and drawing in regional automobile traffic, would be contrary to the legislative intentions and statutory requirements of the State of California's Global Warming Solutions Act of 2006 (a.k.a. AB 32). Personally, from my own current studying of the fast-moving science of climate change, I cannot imagine a more crucial 21st-century environmental and societal issue than what AB 32 seeks to address. I am writing to you because my conscience compels me to act.

CEQA and AB 32

Detailed CEQA guidelines for addressing AB 32 in an EIR have not yet been adopted, but local agencies are not temporarily relieved of addressing climate change as a significant cumulative impact under CEQA. There is one very clear quantified criterion established under AB 32: roll back greenhouse gas emissions (GHG) to 1990 levels, by the year 2020. The proposed project would move in the opposite direction of that statutory criterion, and to make matters worse, would weaken the prospects for alternate future development which does move in the right direction.

Vehicle Miles Travelled

A Target Superstore at the proposed location in Scotts Valley would do business based on drawing shoppers by automobile from a wide geographic area. This would draw consumers away from other existing (or potential future) more-localized or clustered shopping, inducing increased vehicle miles travelled (VMT) while economically sabotaging the present and the future of other more environmentally-sound land-use patterns of commercial development. In other words, the proposed project would reinforce an existing paradigm of land use which is high-VMT and high-GHG. AB 32 unmistakably requires local land use planning to move away from that model.

In 2006 Cal EPA and the Climate Action Team reported that 41% of California's climate change emissions come from the transportation sector. My understanding is that locally the percentage is yet higher than that; this is a key GHG arena where progress can and must be made when major new development is allowed.

Transportation of Goods

Target's mode of operation is based on centralized distribution of large volumes of identical retail goods, involving relatively high distances travelled (and embedded GHG) on the goods arriving at any given store. Retail goods sold at Target largely consist of goods manufactured in China and other distant countries, involving increased transportation GHG; rarely are goods sold at Target which were produced or value-added locally. In the grocery sector at a Target Superstore, a similar effect is in play. I would compare that to a locally-oriented grocery like New Leaf, where three grocery categories of Santa Cruz Local, Buy Fresh/ Buy Local, and Eco-Regional are identified on a selection of products, which have less embedded transportation GHG.

Big-Box Site Development

Big-box stores tend to have the very least of any building type in the way of passive solar heating, natural ventilation, and natural light; they instead depend on energy-intensive comprehensive HVAC systems and artificial lighting. This is an additional GHG concern, notwithstanding Target's stated policy of minimizing energy consumption. Also, large parking lots in a totally car-oriented development like this typically have relatively high albedo (absorption of solar radiation on pavement).

Employee Commuting

Target is based on lowest-wage retail employment. Few Target employees will be able to afford housing in Scotts Valley. Further, the isolated location is not practically accessible by public transportation or bicycle or walking. Employees, like the customers, will almost universally drive increased distances to the store.

Scotts Valley Town Center

The long-dreamed-of goal of a pedestrian-friendly downtown and civic center for Scotts Valley may be dealt an economic death blow by approval of a Target Superstore at this location. Target's power to draw vital economic lifeblood away from the Town Center project (as well as away from existing local businesses), before the Town Center can even get off the ground, seems unmistakable and obvious to me. The Town Center concept alternatively has potential merit with respect to reducing GHG consistent with AB 32, and that consideration needs a very close look.

I request that the City of Scotts Valley, in the EIR for this project, address the concerns raised in this letter. Thank you for your time and attention!

Sincerely,

Jack Nelson

Jack Nelson

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Jonathan Wittwer
William P. Parkin

WITTWER & PARKIN, LLP
147 SOUTH RIVER STREET, SUITE 221
SANTA CRUZ, CALIFORNIA 95060
TELEPHONE: (831) 429-4055
FACSIMILE: (831) 429-4057
E-MAIL: office@wittwerparkin.com

PARALEGAL
Miriam Celia Gordon

April 30, 2008

Mr. Taylor Bateman
Associate Planner
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

RE: Comments on Notice of Preparation for Environmental Impact Report for the Gateway South Retail Store

Dear Mr. Bateman:

This office represents the Scotts Valley Responsible Local Development Political Action Committee concerning the above referenced project. The following are comments on the Notice of Preparation for the Environmental Impact Report ("EIR").

My clients are extremely concerned that the City will not adequately address the specific impacts caused by the proposed Target store. A new EIR is needed to address the specific impacts concerning traffic (both on local streets and Highway 17), aesthetics (including, but not limited to, night lighting, signage and views from adjacent development and Highway 17), compatibility with adjacent residential and hotel uses, and wetlands and other biotic issues. Furthermore, the EIR must address how the Project will impact other retail businesses in the City's core. The economic effects will directly relate to physical changes to the environment. The proposed Target store is located on the outskirts of the City and will draw customers away from the City's core. For this reason, the EIR must also consider alternative locations for the Target store within Scotts Valley. Finally, the EIR must address the changes to the Gateway South Specific Plan that are needed and why the previous restrictions on development are no longer necessary.

Thank you for your consideration of these comments.

Very truly yours,
WITTWER & PARKIN, LLP

William P. Parkin

cc: client

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April 20, 2008

Taylor Bateman
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

Subject: Gateway South Very Large Discount Retail Store

Re: Comments to Include in Draft Supplemental Environmental Impact Report

Mr. Bateman,

Because the proposed retail project is very large and the proposed location is on a two lane country road close to a future fire station, there are three aspects that I would like studied further in the EIR.

Traffic Analysis: I would like to see accurate baselines established by a new traffic study that represent traffic levels while the SVUSD is in session.

Emergency Response: I would like to see a detailed study that provides response times from the future fire station on La Madrona to four locations on the edge of the fire station's coverage area. The study should be based on the data from the new traffic study and provide response times both with and with out the proposed retail project on La Madrona.

Economic Impact: I am concerned that the proposed retail project will cannibalize local retail sales and will not provide significant economic benefit to the City of Scotts Valley. I would like to see an independent economic analysis of the spending patterns in Scotts Valley both with and with out the proposed retail project on La Madrona.

Thank you for your consideration.

Sincerely,

John D. Waidhofer
508 Shasta Park Ct.
Scotts Valley, CA 95066

831 419 0950

Taylor Bateman
Associate Planner
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

Subject: Gateway South Retail Store

RE: Notice of preparation of a Draft Supplemental Environmental Impact Report

April 29, 2008

Dear Mr. Bateman,

Please see below for my comments and concerns regarding the Target store proposal (Gateway South Retail Store) in Scotts Valley. I would appreciate it if you would take the time to consider these comments as you go through the decision process concerning the suitability of the proposed development and the impact on the existing developments in the area.

I believe that locating a Target (or any other big box store) anywhere in Scotts Valley is a bad idea due to the drain on city services and impact to the existing small businesses, however, the proposed site at the corners of La Madrona and Silverwood is particularly bad due to the lack of infrastructure for traffic control, incompatibility with existing development, and impact to the adjacent neighborhoods along Altenitas, Silverwood and La Madrona.

1. How will La Madrona Drive (the existing 2 lane rural road) handle the added traffic and what impact will it have during peak traffic hours that overlap with dropping off and picking-up kids at local schools? An adequate traffic study should comprehend peak traffic patterns while school is in session.
2. How will the city of Scotts Valley ensure that Silverwood Drive does not become a "turn-around" for people leaving Target (those who want to turn left, but turn right to avoid the long lines turning left).
3. Why would Target not have to conform to the same architectural "style" as the Hilton or the Scotts Valley Corners development? The current proposal is completely incompatible with anything in the area.
4. Locating a big box retail store adjacent to a thriving neighborhood will significantly impact the quality of life and property values for those of us who live in this area. How will the City of Scotts Valley mitigate these concerns (specifically the neighborhoods along La Madrona between Mt. Hermon and Simms Rd, the neighborhoods along Altenitas and the Monte Fiore neighborhood off of Silverwood)?
5. How will the city ensure that this development will be compatible with existing developments in the area (as specified in Scotts Valley's Land Use Plan – specifically sections LO24/LO25/LO26/LO31/LO37/LO38/LO41)?
6. The Monte Fiore development specifically set aside "wetland" areas to ensure the wildlife would continue to thrive. How will covering 75% of the flat land on the proposed site with concrete allow for proper drainage and how will this impact the existing wildlife in the area?
7. How will the Scotts Valley Police department handle the added crime associated with the new store?
8. What impact will this development have on existing businesses in Scotts Valley?

Please feel free to contact me if you have any questions about my comments. I appreciate your time and consideration.

Sincerely,

Kenneth J. Eckert
501 Shasta Park Ct.
Scotts Valley, CA 95066
Ken.eckert@spansion.com
Cell: (408) 203-0409

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JEFF GALLAGHER

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April 18, 2008

Scotts Valley Planning Commission
1 Civic Center Drive
Scotts Valley, CA 95066

Whatever Target wants, Target gets?

Dear Ladies and Gentlemen:

I'm writing to oppose the approval of a Target store in the currently proposed La Madronna location.

It is frankly bizarre that you are considering allowing the possibility of 3,285,000 cars per year using the intersections I currently MUST use between 4 and 10 times daily to provide an income for my family. (And what about 17 off ramp backups, that could easily and regularly spill onto highway 17? Worst case, the potential for pileups there would probably result in criminal action against the city some day.)

City Attorney Kirsten Powell and her superiors must see little but dollar signs – and not many at that – although her transparent and obvious ploy to keep information from those most affected citizens for as long as possible (short, just short, of actual criminality) decries any cloak of objectivity. Bias *against* the citizenry? Perhaps it is time for tea in the harbor again with such an abundance of royal attitude...

That potential $500,000/year tax revenue amounts to roughly 16 cents per car, and at last we know the price you are considering trading neighborhood safety and traffic patterns for. Further, we all know that that $500K will equal the depreciation in value of any two homes in our area you care to point to if Target comes to La Madronna.

I'm unfortunate enough to live in a home that I purchased on La Cuesta Drive in 2003. I use the intersection of Altenitas and La Madronna daily.

Imagine my surprise to see the degradation of the quality of that intersection, which I MUST TAKE, from B to "F," and, that this decimation is of "No Impact" to this commission. The *daily misery* you choose to create for me and my neighbors, my family, buying so little overall, destroying oh so much, means NOTHING TO YOU? NO IMPACT??

OK let's talk turkey. Your job is **not** to kowtow to Target and pat yourself on the back while you do it. Your job is to provide the leadership this community has the right to expect from its leaders.

Instead of bludgeoning the citizens whose only mistake was trusting you with the quality of their daily lives, you should be working with Target to find more a more appropriate location within Scotts Valley for their store: Mt. Hermon Road? Scotts Valley Drive? The new city center?

Your current bias towards the horrifying change is inappropriate, strangely aloof, and, will destroy value, safety, and the quality of life for several neighborhoods. And worse, you'll be doing it oh so cheaply.

Please reconsider your bias. Please lead. Work with Target and find a more appropriate location before it really is too late.

Sincerely,

Jeffrey D. Gallagher

311 LA CUESTA DRIVE ◦ SCOTTS VALLEY, CA ◦ 95066
PHONE: 831.438.4035

Scotts Valley Planning Commission
1 Civic Center Drive
Scotts Valley, CA 95066

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CITY OF SCOTTS VALLEY

Dear Ladies and Gentlemen:

I'm writing to oppose the approval of the building of a Target store on La Madronna.

There are far better locations for it, yet, the supporters in the news media always choose to ignore this. Why can't you meet with Target to locate far better, more industrial, less neighborhood-centric sites? Why must La Madronna be the ONLY considered location? Without question, you should be meeting with the Target planning team to find a much more suitable Mt. Hermon or Scotts Valley Drive location.

With Target on La Madronna it's clear to those of use who actually live here that the resulting decreases in community safety and property value make this a bad decision for all, not just those of us who will be most impacted, although the negative impact to us will be SUBSTANTIAL.

I live on La Cuesta Drive, and must use the area roads between 4 and 10 times daily, each and every day. In particular I must use the intersection of Altenitas and La Madronna each and every time. The degradation in usability of this intersection alone will result in frustrating and unavoidable delays.

Please don't allow this to happen to those of us whose only mistake was choosing Scotts Valley to make our homes. Please work with Target to find a better suited, more industrial location for their store.

Sincerely,

Geoff Fiorito, homeowner
311 La Cuesta Drive
Scotts Valley, 95066

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Taylor Bateman, Associate Planner
One Civic Center Drive
Scotts Valley, CA 95066

April 20, 2008

Dear Mr. Bateman,

This letter is in response to the Notice of Public Meeting & Notice of Preparation letter I received from the City of Scotts Valley today in the mail. Since I was not able to attend the meeting on April 16th, due to a conflict in my schedule, I wanted to make sure my voice was heard.

I am a resident of Scotts Valley and have lived here for 11 years. What brought me to this town from the busy bay area was a strong desire to raise my children in an environment that felt simple and wholesome. I live in the Monte Fiore development and have lived here for five years. My family has enjoyed the beauty of this development and the care the builders took to incorporate the natural environment when constructing it. We have a variety of wildlife in our yard regularly.

The reason I am writing this letter is I am very concerned with the decision to integrate Target at the location that is proposed. I am not opposed to retail outlets that fit the environments they are in. However, I am very troubled with the judgment of the city officials that are pushing something like this forward. I have watched quietly as each new addition has been integrated into this area, after the addition of the Hilton came the housing complexes that sit along Mt. Hermon Rd., then the new retail and office spaces which became the Scotts Valley Corners and now Target. I feel the need to speak up. I don't believe that a store like Target will add to the ambiance of this location. It is large scale store which means large scale traffic flows. Each of the other additions that I

mentioned above were well thought out and tastefully done. None of them create major traffic problems because of their scale. The Scotts Valley Hilton is large, but because it is designed architecturally to match its surroundings and it is a high-end establishment, activity is minimal. I believe a store such as Target and the proposed plan of a double-level parking lot will not only be out of place with the surroundings, it will create a lot of upheaval due to its character (again it is a large scale discount store). La Madrona road and the surrounding area will have a myriad of ongoing traffic problems. My opinion is this location cannot support the magnitude of this retail store.

I believe Scotts Valley is geographically oriented to be a bedroom community. Its lure and beauty are not related to its retail establishments. I understand that some city officials would like to change this and have been working on the plans for a town center for several years. However, putting a large retail establishment on La Madrona Drive makes no sense and is not in keeping with the existing city plan plus diverts resources away from this goal.

My hopes are that the city of Scotts Valley and the city officials that are in charge of these decisions will make a wise choice regarding Target and its proposed location site. My hopes also are that city officials examine closely the long term effects of putting Target at the proposed site and not just view the projected short-term gains.

Sincerely,

Shelley Strehlke

Shelley Strehlke, Scotts Valley Resident

Edward J. Davidson

200 Button Street #15
Santa Cruz, CA 95060
TEL/FAX 831 423-9294
April 12,2008

Scotts Valley Councilmembers:

I noted that Donna Lind's Sentinel letter found the only virtue of the proposed Target project was its projected sales tax revenue for the city. But Target's sales taxes would come from sales currently generated by existing retailers in the County, excepting leakage to Monterey or Santa Clara Counties. Scotts Valley's retailers would probably be most severely affected. It would be ironic if Scotts Valley's total sales-tax revenue showed little change after the Target is built.

The project is a stand-alone big, big-box, three and a half acres in size, and completely incompatible with its surroundings. There is no way to disguise the scale of the building that, even with outsized signage, would not be visible to Hwy 17 traffic until past the exit ramps. It is unworthy as the "Gateway" to the city. I am certain that the compatibility, design, and traffic issues will be fully discussed at future hearings. Another problem ripe for discussion will be the prospect of vacant stores in the existing shopping centers on Mt. Hermon Rd. leading to the infeasibility of the Town Center project.

My biggest problem with the project is the lack of housing affordable to the hundreds of service workers Target will employ. Your Housing Element places service workers income at $22,000 ($10/hr.) and six-figure incomes needed for housing in Scotts Valley. I have long argued that much of your traffic congestion comes from over-the-hill commuters to higher paying jobs in Silicon Valley and incoming commuters who cannot afford Scotts Valley housing prices.

Scotts Valley has a distinct shortage of rental housing for middle income working families, and very few sites remaining to accommodate them. So in addition to sales tax revenues from other communities, you are also borrowing affordable housing for your employees from them. Your Housing Element adopted Goals and Policies in recognition of this ongoing problem:

Goal 2.0 **Promote a balanced mix of housing opportunities by increasing the number of housing units to accommodate projected population and employment growth.**

Policy 2.1 Provide residential sites through land use, zoning, and specific plan designations to encourage a broad range of housing opportunities.

Policy 2.3 Encourage the production of new residential development which provides a choice of housing type, density, and cost to meet the housing needs of all segments of the community.

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Suggested Discussion of Alternatives to the Proposed Project

In addition to the No Project alternative, CEQA requires consideration of a reasonable range of alternatives to the proposed project. I believe, given the Housing Element policies adopted in the General Plan and certified by the California Department of Housing and Community Development, that a housing project must be one of those alternatives.

I am suggesting a 195-unit project; 170 market-rate units (@10-units/acre) and 25 inclusionary units (15% density bonus.) I am certain there are comparable projects in the region to generate construction costs, property taxes generated, amenities, unit sizes and mix. I would not compare it to the Monarch Apartments on the far West Side of Santa Cruz which has a similar number of units on 9-acres and mostly smaller units (and 40% inclusionary units in a redevelopment project area.) I would prefer to see the majority of units for working families.

Calculating the comparable property tax assessments will be easier than the net sales tax generated by Target. Sales taxes would be lost at larger stores in Scotts Valley like K-Mart and Ace Hardware and small stores like book and record shops, drug and variety stores.

Comparing Target with a rental housing project will be most difficult in the areas of traffic and water supply. For the locally employed, the amount of car-pooling and walk or bike to work must be estimated. Water usage should consider the latest water-saving fixtures as well as gray-water recycling. Scotts Valley has an aggressive program for water conservation and, along with green-building technology, the housing project could generate some demonstration grants.

The thoroughness and accuracy of the consideration of alternatives, while difficult, will be important in the court's review of CEQA compliance. One need only look to the UCSC's Long Range Development Plan to see how the court dealt with traffic, water supply and affordable housing issues.

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I was on the Planning Dept. staff in 1985-86 when the previous General Plan update was adopted and remained during the implementation phase when the other two planners resigned, Noteworthy on the plan were three undetermined "specific plan" areas: Skypark, Glenwood, and Gateway. The Skypark area was largely developed with single families by K & B, but their offer to build low- and moderate-income units, at cost, was killed. The storage lockers on Lockhart Gulch Rd. were to have been the site. The Glenwood area now houses Scotts Valley H.S. along with some habitat protection areas. The property owners in the Gateway Area proposed a large rental housing project. Neighborhood opposition combined with the Police Chief's concerns about criminal activity in rental housing helped kill the project. A decade later the Hilton Hotel was built on half the property; the remaining 17 acres are vacant despite prior big-box proposals.

I believe a 200-unit rental project is a more appropriate use for the site, given all the negatives associated with the Target proposal. This may be the last chance to meet your adopted housing policy for the private sector to provide "a choice of housing type, density, and cost to meet the housing needs of all sectors of the community." I suggest 170 market-rate units at a density of 10 units/acre with a density bonus for inclusionary units for low- and moderate-income households. I would give priority for the inclusionary units to persons employed in Scotts Valley; particularly city employees, teachers, etc. The cost of housing makes it difficult to recruit and retain public employees.

I take issue with several points in Donna Lind's letter. The sales tax estimates must subtract lost sales taxes for Scotts Valley retailers. The stand-alone location will not be much benefit to other local businesses; Santa Cruz and mid-County residents will get right back onto Hwy 17 for the drive home. Finding affordable housing for Target employees as well as for teachers, police and firemen will be more difficult. Finally the statement of consistency with zoning and planning for the area conflicts with the Housing Element policy of the General Plan to meet the housing needs for all sectors of the community.

One final issue should be considered. What could be done with a 155,000 sq. ft. building if Target finds the store unprofitable some five or ten years after its opening. With the City's experience with Borland and E-mu, that possibility cannot be ignored.

On a separate page are my suggestions for compliance with CEQA's required considerations of Alternatives to the proposed project. The thoroughness of the analysis of alternatives will be crucial to the inevitable court challenge to the project.

Respectfully submitted,

Ed Davidson

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CITY OF SCOTTS VALLEY

Good Afternoon.

My name is Paul Bach, I am a local homeowner, local business man and President of the Scotts Valley Responsible Local Development PAC.

At 4:07 pm yesterday afternoon we were informed by the City Attorney Kirsten Powell that the draft traffic report had indeed been shared with both Target Corporation and Title II despite previous assertions to the contrary by City officials, including an April 11th assertion to that effect by Mayor Johnson. Until yesterday afternoon the City was refusing to release this same information to the public yet we now know it was given to the proponents of the Target development. As a result of this action the general public has been denied an even playing field in the review and comment process.

As a result of this breach by the City and their consultants we are requesting that the Public comment period be extended by an additional 28 days (the time period from when an official California Public Information Request was submitted to the City and when the data was finally made available to the public.). This will extend public comment until Wednesday May 28th, 2008.

We have just begun to review the Traffic draft study. The study incidentally is dated November 9th, 2007 a date that precedes the City of Scotts Valley receiving a filing from Target. We are also reviewing the April 4th version.

Several facts immediately jump out of the reports:

- "The proposed Project is estimated to generate 9,075 net new daily trips per day" this is during non-holiday periods. The vast majority of this traffic passes through the intersection of Mt. Hermon Road and La Madrona Road.

- The Traffic Study indicates that Level of Service (LOS) at the Mt. Hermon Rd./La Madrona intersection will drop to LOS (E) with PM delays during rush hour of approximately 79.4 sections. Let me remind the City that the Scotts Valley General Plan requires that this intersection remain at no less then Level C service.

- The intersection of La Madrona and Altenitas Rd. next to the Hilton Hotel will drop to (LOS) F effectively bottlenecking the residents of Manana Woods.

- Highway 17 both North and South currently operate at (LOS) F the lowest level of performance even without the addition of the Target Shopping Center – Caltrans will need to analyze this increased impact.

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- Since a significant number of Target customers are expected to come from Santa Cruz County the impact on Highway 1 and the fishhook will also need to analyzed by Caltrans

- The report offers the Mid-town interchange as a mitigating factor for some of these statistics. Where is the estimated $30 million dollar funding for this project? Since the City has not reserved money for the Mid-Town interchange and unless Caltrans is willing to provided this funding then this is an unrealistic smoke screen to achieve a LOS fantasy.

- Even if funding could somehow be found for the Mid-Town Interchange please identify which residents of Scotts Valley will have their homes taken by the City under Eminent Domain?

- Apparently unsignaled intersections were counted when Brook Knoll School was in recess. Since La Madrona is a major access point by parents dropping off or picking students up from the school the traffic studies must be redone at a time period when the school is in session. Anything less would be suspect.

- La Madrona Road is used not only by parents bringing their children to and From Brook Knoll School but also by students walking or biking to the Middle School on Scotts Valley Drive. The project must take into consideration the safety of these children in the EIR

- The proposed Target Shopping Center will be setback just 22 feet from La Madrona. Because of the proposed grading on the site the 44 foot tall Target tower will rise 70 feet 6 inches from the road elevation. The building not counting the tower will rise 66 feet 6 inches from the road elevation. Aesthetically this is unacceptable and inconsistent with neighboring architecture.

- The proposed Target Shopping Center will effective annex all residents to the South and West of the Building from the rest of the City.

Since the public comment time today has been limited, a more complete list of comments will be submitted before the closing of the written Public Comment Period.

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April 14, 2008

Taylor Bateman
Associate Planner
One Civic Center Drive
City of Scotts Valley, CA 95066

RE: Gateway South Retail Store

Dear Mr. Bateman,

The thought of developing the 17.62 acre site on La Madrona Drive into a 155,000 sq.ft. retail store (with 517 associated parking spaces) makes me almost ill. It is difficult to write this letter without getting overly emotional.
We just bought a home on La Cuesta Drive in October 2007. We chose our current home partly due of the "country" feel of the area. If Scotts Valley government officials approve of the building of this Gargantuan Monstrosity, it will destroy the very essence of rural living in this town.
Scotts Valley already has dedicated areas of retail sites along Mount Hermon Road and Scotts Valley Drive. These areas are structured for higher traffic and other environmental issues; La Madrona Drive is a fairly small, quiet street.
I don't believe that we would have moved to Scotts Valley if the proposed Target store existed on La Madrona Drive. With only 2 exits off of Highway 17, Scotts Valley traffic on Mount Hermon Road would be horrific. My impression of Scotts Valley would be drastically different. I would have chosen a home in Santa Cruz instead; the country feel was the driving force for purchasing a home in Scotts Valley.
I love my new home. Please do not ruin this beautiful small town. I was planning on living the rest of my life here.
I'm certain that many people feel the same way that I do. I can only hope that they speak up and that Scotts Valley will listen to their concerns.
Let us be united in conserving the special beauty of this valley.

Thank you for listening,

S. Holmes

Sue Holmes
465 La Cuesta Dr.
Scotts Valley, CA 95066

TARGET – LET'S GET THE FACTS

As most are aware, there has been an application for a retail development between Silverwood Drive and the Hilton in Scotts Valley, many call it the Target Project. The Environmental Impact Report study is just starting and will take several months to complete.

The first public scoping meeting for this project will be April 16, 2008 at 4:00 p.m. at the Scotts Valley City Council Chambers.

This is a great opportunity for the citizens of Scotts Valley to give their input to this very important process.

If you have concerns or items you wish to be addressed this is your time. Traffic, crime, economic, environmental, water all are issues to be addressed.

The only way to have the facts is to go through this process. I will not speculate on impact pro or con until I have all the facts.

Here is what I do know as fact to date:
1. The proposed site is currently zoned C-S Service Commercial and Retail is a permitted use. This site was zoned for retail in 1995. This zoning is also consistent with the General Plan.
2. State law requires due process to an applicant. We as a Council should not and could not stop an applicant in submitting a project that, in of itself, would be an abuse of power. All applicants deserve a hearing.
3. To not allow the EIR process would be selfish, irresponsible and illegal. The Council does not have the luxury of speculating on impacts. We do not have the luxury of approving a project on whether our home values will decrease. We do not have the luxury of self interest. We have to do what is right for the whole community of Scotts Valley regardless of personal cost. I have included my list of items I would like included in the EIR. I would suggest anyone interested do the same, the more input this process has the better the process will be.

I would like to formally and respectfully request the following to be included in the Environment Impact Report for the proposed Retail Development at APN 21-141-05.

<u>Economic Study</u>
The economic study should include the following:

A. Provide a list of businesses that may be negatively affected by this new retail development and percentage of business lost at each of these businesses.
B. Provide a list of businesses that may be positively affected by this new retail development and percentage of business gained by each of these businesses.
C. Provide percentage of shoppers expected to visit other businesses in the city limits of Scotts Valley.

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D. Provide percentage of visitors to the new retail development whom are not residents of the City of Scotts Valley.
E. Provide estimated dollar amount of each visitor to the new retail development per trip.
F. Provide average income of the average shopper of this retail development.
G. Provide salaries of employees of this new retail from entry level through management and include benefit package.
H. Provide estimate, if any, on the decrease or increase in property values and the net impact financially to the City. This should include both commercial and residential in the immediate area.
I. What is the estimated retail sale tax generated.

Traffic Study

A. How many visits to the store each day?
B. How many visits per day – peak, morning, noon and evening?
C. How many vehicles on site during peak operation?
D. Estimate extra time spent at intersection stoplights at all Mt. Hermon intersections.
E. Percentage of traffic expected to travel into Scotts Valley City.
F. Deliveries of merchandise – times and frequency.

Environment

A. Possible harm to existing wildlife and mitigation if needed.
B. Possible harm to existing plant life and mitigation if needed.
C. Possible contamination of run off from vehicles and mitigation if needed.
D. Possible harm to wetlands, if any, and possible mitigation if needed.

Water

A. What is existing recharge of aquifer on site and what will recharge be after completion of project.
B. What will be the total water use for the project, please compare to residential use.
C. What percentage of water use will be recycled water.

Crime

A. What, if any, increase or decrease in crime could we expect if the project was complete.
B. What fiscal impact would this have on our police department.
C. If there is an increase in crime what would those crimes be.

Dene Bustichi
Scotts Valley City Council

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April 9, 2008

City Council
City of Scotts Valley
1 Civic Center Drive
Scotts Valley, CA 95066

RE: SEIR Recommendations for Gateway South Retail Store – Target

Dear Councilmembers,

Please accept the following comments and recommendations for analysis in the Supplemental EIR for the Gateway South Retail Store – Target.

Traffic

1. The impact of increased traffic on the intersection of La Madrona Drive and Mt. Hermon Road needs to be examined in regards to the stacking lane for vehicles on La Madrona Drive turning right (southbound). The stacking lane now can accommodate 5 vehicles before the Scotts Valley Corners shopping center exit adjacent to Surf City Coffee is blocked. With an estimated 15,000 vehicles per day (1250 vehicles per hour on average) leaving the proposed Target store, it is certain that this stacking lane will always contain more than 4 vehicles, thus effectively closing off this exit.
    a. What economic impact will this have on the businesses in the Scotts Valley Corners shopping center?
    b. How will the closure of this exit impact the other entrance/exit from the shopping center?
    c. Will a stoplight be required at this other entrance/exit which is directly across from Altenitas Rd?
    d. How many vehicles are estimated to be backed up at the La Madrona Drive/Mt. Hermon Road intersection on La Madrona during the day and evening? Provide an hourly estimate, for left turns and right turns.
    e. Will this backup extend into or past the Altenitas Rd intersection with La Madrona?
    f. What economic impact will this backup have on the Hilton Hotel?

2. With 1250 vehicles per hour average for the 12 hours of store operation leaving the store parking lot, and likely most of the customers coming from the City of Santa Cruz and other communities to the south and east, it is certain that many of these vehicles will choose to travel from the store back south by turning right from the store parking lot and driving south along La Madrona Drive in order to avoid the traffic backup at the LaMadrona/Mt. Hermon intersection. If only 10% of such customers make this choice, that is 125 vehicles per hour. La Madrona Drive is a County-maintained road and is in very poor condition with cracked pavement, inadequate drainage, narrow curves and no shoulders.

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a. Provide an estimate (including methodology) of the number of vehicles per hour likely to turn south on La Madrona Drive from the project. Include peak hour loadings.
b. Identify (characterize) the existing roadway condition (i.e., pavement, drainage, width, etc.) on La Madrona Drive south of the project in the context of this increased use.
c. What will be the impacts of 125 (or number identified in Item a.) additional vehicles per hour daily usage of La Madrona Drive on the pavement condition? On the drainage? How will this be mitigated?

3. La Madrona Drive, south of the proposed Target store, is used by County residents living along the street and by City residents living in Monte Fiore for access to schools- Brook Knoll Elementary, Scotts Valley Middle School and Scotts Valley High School. It is also used by County residents to access shopping and other services in Scotts Valley and is designated as an Alternate Bike Route.
   a. What will be the impact of an additional 125 (or number identified in Item 2a., above) vehicles per hour on the safety of La Madrona Drive for schoolchildren traveling on foot, bicycle or by car to school (Brook Knoll, Scotts Valley Middle School and Scotts Valley High School)? How will these increased traffic hazards be mitigated?
   b. What will be the impact of an additional 125 (or number identified in Item 2a., above) vehicles per hour on the safety of La Madrona Drive for other vehicles traveling northbound? For residents enterting and exiting driveways along La Madrona? How will these increased traffic hazards be mitigated?
   c. What will be the impact of an additional 125 (or number identified in Item 2a., above) vehicles per hour on the safety of La Madrona Drive for bicyclists? How will this increased traffic hazard be mitigated?

4. The intersection of La Madrona Drive and Mt. Hermon Rd is one of the busiest in the county. During the evening commute hours northbound traffic sometimes backs up from the intersection onto the northbound lanes of Highway 17.
   a. What will be the impact of an additional 1250 vehicles per hour using the Target store on this intersection and on Highway 17? How will this increased traffic hazard be mitigated?

5. The pedestrian access at the intersection of La Madrona Drive and Mt. Hermon Rd. is very limited. Currently employees of the Hilton Hotel have to walk along Mt. Hermon without sidewalks or attempt to cross four lanes of the intersection in a brief amount of time. The closest public transit stops are across the freeway (a pedestrian has to walk across the overpass) and ¼ mile away near Scotts Valley Drive.
   a. How many Target employees are estimated to walk to work? What will their pedestrian access be from public transit stops?
   b. What will be the effect of an increased 1250 vehicles per hour on pedestrian (employee and customer) access to the Target store from residents living in Scotts Valley?

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Noise

1. With 15,000 vehicles per day, an increase in noise levels will occur from customer vehicles and truck deliveries.
    a. What will be the increase in noise levels for residents to the south of the Target store, in particular those along La Madrona Drive and in Monte Fiore where there is a direct line of sound travel (i.e., no topographical barrier)?
    b. How will this be mitigated?
    c. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to any policies, measures and activities to avoid this negative neighborhood impact

Visual Pollution

1. At present residents to the south of the Target store, in particular those along La Madrona Drive and in Monte Fiore experience a night sky. At nighttime it is dark; one can look up and see stars. Store and parking lot security and street lighting will destroy this night sky.
    a. Provide an estimate of the amount of glare to be experienced by various adjacent areas.
    b. Indicate how this will be mitigated.
    c. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to any mitigation policies, measures and activities to avoid this negative impact.

Crime

1. No doubt with the thousands of customers coming to the Target store day and night and drawn from all over the county and certainly from out-of-county travelers on Highway 17, there will be some number of miscreants who will see an opportunity to explore new ground, especially adjoining neighborhoods, for petty crime activity. Given the rural character of the adjacent unincorporated areas along La Madrona Drive, the likelihood for an increase in such crime will be significantly increased as a result of this project. The unincorporated county is not served by the City of Scotts Valley Police Department, rather by the Santa Cruz County Sheriff's Department which is understaffed, facing budgets cuts and able to provide only very sparse patrols in this area.
    a. What are the estimates of increased crime resulting from this project; estimate additional County patrol hours (and costs) need to counter this neighborhood threat.
    b. Indicate other mitigations proposed and their costs?

Habitat Destruction

1. The meadow on which the Target store is proposed to be located is one of the last remaining grassland habitats in the area. While degraded with invasive exotics, this grassland does still provide foraging grounds for several raptors, including Red-tail hawks, Merlins and Kestrels.
    a. What will be the immediate and cumulative impacts of this habitat destruction on the viability of these species continued presence in the local area?

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Litter

1. There will be thousands of plastic bags generated daily by the operations of the Target store. No doubt a good number of these will end up as wind blown litter, in the parking lot, on the hillside above the parking structure, on the Hilton property, along La Madrona Drive and elsewhere.
    a. Provide an estimate of the number of plastic bags to be generated daily by the store operations, an estimate of the quantity to be discarded as litter on the store property or from vehicles along La Madrona Drive and an estimate of the likely locations for these wind blown objects to end up.
    b. Indicate mitigations for this significant impact. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to these policies, measures and activities.

Solid Waste

1. A 155,000 square foot retail store will generate a very significant amount of solid waste. The City of Scotts Valley uses the County's Buena Vista Landfill which is very close to capacity with no new landfill alternative available. Refuse from the City of Scott's Valley that is transferred out of county incurs an additional and significant economic and environmental cost.
    a. Provide an estimate of the quantity of refuse generated daily, by material type. Provide an estimate of the additional economic costs for out-of-county transfer of the additional refuse to be generated from this project. Describe and quantify the associated incremental environmental costs (e.g., air pollution, CO2 emissions, traffic) resulting from out-of-county transfer of the additional refuse to be generated from this project.
    b. Provide an estimate of landfill space consumed daily as a result of the disposal amounts generated by this Target store operation.
    c. Indicate waste reduction programs to be required by the City as a permit condition including reduction, reuse, recycling and composting. Provide specifics including number and types of recycling containers, locations, capacity, service frequency.
    d. Indicate number of refuse containers including size and service frequency as a comparable measure of waste diversion intentions of the project.
    e. Indicate staff persons responsible for waste management and waste reduction. Indicate employee training programs and incentives for reducing and diverting waste.
    f. Indicate programs for capturing food scraps generated by the store's operation and diversion programs to which this material will be directed.
    g. Provide an estimate of the quantity of goods discarded daily from the Target store as "unsellable", "damaged" or otherwise "not to be sold", but which are still in usable condition. Indicate methods to be employed to minimize this type of waste, including corporate policies.
    h. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to these waste reduction mitigation policies, measures and activities.

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Global Warming

1. Placement of this large high-volume retail store far from the city's business district and public transportation hub will encourage more automobile use than if placed close in, thus resulting in increased automobile emissions and contributing to further warming of the earth's atmosphere.
    a. Provide an estimate of the quantity of CO2 emissions resulting from this project, both construction phase and operations phase.
    b. Indicate mitigations for this significant impact.

2. A retail facility of this size will have a significant energy consumption impact resulting from in-store lighting, outside security lighting, air conditioning and in-store refrigeration. Production of this required energy has bounce back impacts to atmospheric warming.
    a. Provide an estimate of the quantity of energy consumed daily and an estimate of the atmospheric warming contributions from these activities.
    b. Indicate corporate energy conservation policies and programs to be applied to this project, such as all-night lighting.
    c. Indicate energy conservation measures to be required of the project by the City's development permit for the project.
    d. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to these mitigation policies, measures and activities.

Water Consumption

1. The water supply for the City of Scotts Valley is the Santa Margarita Sandstone Formation, an EPA-designated Sole Source Aquifer. It is the only supply of water for the City of Scotts Valley. This aquifer is also the water supply for many residents of the unincorporated county living in the surrounding area. This aquifer is heavily overdrafted (more water is being taken out than is being replenished).
    a. Provide an estimate of the daily water usage for this project. Indicate project usage amounts by type of use, e.g., in-store, landscaping, refrigeration, etc.
    b. Indicate the overdraft status of the Santa Margarita Sandstone Formation and comparative usage amounts for the Sole Source Aquifer, i.e, this project in relation to other users.
    c. Indicate corporate water conservation policies and water conservation measures to be applied by the City of Scotts Valley as conditions on the development permit to be issued for this project, including water use requirements, water saving devices, and landscaping.
    d. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to these mitigation policies, measures and activities.

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Hydrologic

1. The parcel in questions is underlain by a number of subsurface seeps. Well after rainfall events water can be seen draining onto the sidewalk with the rust stains characteristic of local groundwater iron content.
   a. Indicate how subsurface flows will be affected by the project.
   b. Indicate how the conversion of about 8 acres of open land to impervious surface will impact groundwater recharge for the Santa Margarita Sandstone Sole Source Aquifer.
   c. Indicate how the conversion of about 8 acres of open land to impervious surface will impact surface drainage. Estimate increases of stormwater runoff and the ability of existing drainage conveyances serving the area to handle these increased flows, including for 100-year storms and lesser storms of high intensity which are predicted to occur as a resulting of weather changes resulting from global warming.
   d. Indicate the amount of stormwater to be discharged to the drainage running south along La Madrona Drive into the unincorporated county and the ability of drainage conveyances in that area to handle increased flows.

Grading

1. Construction of the store structure and the parking structure will require extensive grading and earth removal.
   a. Estimate the quantity of excavated soil to be removed from the site.
   b. Indicate where the excavated soil is to be taken; estimate the impact on the County's nearly at-capacity landfill in terms of number of disposal days consumed by this volume of excavated soil.
   c. Estimate the air quality impacts from earth moving equipment and truck removal of the excavated spoil, both in terms of pollutants (e.g., diesel particulates) and CO2 emissions.

Local Economy

1. What will be the economic impact of this large high-volume low cost retail store on other retail stores, many of which are small businesses selling the same products, which are located in the central Scotts Valley business district.
   a. Estimate the loss of sales to such small businesses and the concomitant loss of jobs.
   b. Estimate the number of such businesses, by business type, to close and the resultant local sales tax loss.
   c. Estimate the loss in commercial property rental income, reduced property valuations from increased vacancies and concomitant reduction in local property tax revenue.
   d. Indicate mitigations for these severe impacts to the local economy.

2. Provide the same analysis for similar businesses in the San Lorenzo Valley which will experience a loss in business as result of Valley bound residents stopping at the Target store on the way home rather than at Valley shops.

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Thank you very much for your consideration of these comments. I can be reached at 438-2336 or dan.degrassi@baymoon.com if you have any questions about the recommendations made in this letter.

Sincerely,

Dan deGrassi
4173 La Madrona Drive
Santa Cruz, CA 95060

Cc: Supervisors Jan Beautz and Mark Stone
John Leopold
Susan Mauriello, Santa Cruz County Administrative Officer
Tom Burns, Santa Cruz County Planning Department
Tom Bolich, Santa Cruz County Public Works Department
Steve Robbins, Santa Cruz County Sheriff's Department
Allison Niday, Scotts Valley Unified School District Board of Trustees
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Santa Cruz Metropolitan Transit District
Responsible Local Development

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CITY OF SCOTTS VALLEY

April 10, 2008

City Council
City of Scotts Valley
1 Civic Center Drive
Scotts Valley, CA 95066

RE: SEIR Recommendations for Gateway South Retail Store – Target

Dear Councilmembers,

Please accept the following comments and recommendations for analysis in the Supplemental EIR for the Gateway South Retail Store – Target.

Traffic

1. The impact of increased traffic on the intersection of La Madrona Drive and Mt. Hermon Road needs to be examined in regards to the stacking lane for vehicles on La Madrona Drive turning right (southbound). The stacking lane now can accommodate 5 vehicles before the Scotts Valley Corners shopping center exit adjacent to Surf City Coffee is blocked. With an estimated 15,000 vehicles per day (1250 vehicles per hour on average) leaving the proposed Target store, it is certain that this stacking lane will always contain more than 4 vehicles, thus effectively closing off this exit.
    a. What economic impact will this have on the businesses in the Scotts Valley Corners shopping center?
    b. How will the closure of this exit impact the other entrance/exit from the shopping center?
    c. Will a stoplight be required at this other entrance/exit which is directly across from Altenitas Rd?
    d. How many vehicles are estimated to be backed up at the La Madrona Drive/Mt. Hermon Road intersection on La Madrona during the day and evening? Provide an hourly estimate, for left turns and right turns.
    e. Will this backup extend into or past the Altenitas Rd intersection with La Madrona?
    f. What economic impact will this backup have on the Hilton Hotel?

2. With 1250 vehicles per hour average for the 12 hours of store operation leaving the store parking lot, and likely most of the customers coming from the City of Santa Cruz and other communities to the south and east, it is certain that many of these vehicles will choose to travel from the store back south by turning right from the store parking lot and driving south along La Madrona Drive in order to avoid the traffic backup at the LaMadrona/Mt. Hermon intersection. If only 10% of such customers make this choice, that is 125 vehicles per hour. La Madrona Drive is a County-maintained road and is in very poor condition with cracked pavement, inadequate drainage, narrow curves and no shoulders.

a. Provide an estimate (including methodology) of the number of vehicles per hour likely to turn south on La Madrona Drive from the project. Include peak hour loadings.
b. Identify (characterize) the existing roadway condition (i.e., pavement, drainage, width, etc.) on La Madrona Drive south of the project in the context of this increased use.
c. What will be the impacts of 125 (or number identified in Item a.) additional vehicles per hour daily usage of La Madrona Drive on the pavement condition? On the drainage? How will this be mitigated?

3. La Madrona Drive, south of the proposed Target store, is used by County residents living along the street and by City residents living in Monte Fiore for access to schools- Brook Knoll Elementary, Scotts Valley Middle School and Scotts Valley High School. It is also used by County residents to access shopping and other services in Scotts Valley and is designated as an Alternate Bike Route.
   a. What will be the impact of an additional 125 (or number identified in Item 2a., above) vehicles per hour on the safety of La Madrona Drive for schoolchildren traveling on foot, bicycle or by car to school (Brook Knoll, Scotts Valley Middle School and Scotts Valley High School)? How will these increased traffic hazards be mitigated?
   b. What will be the impact of an additional 125 (or number identified in Item 2a., above) vehicles per hour on the safety of La Madrona Drive for other vehicles traveling northbound? For residents enterting and exiting driveways along La Madrona? How will these increased traffic hazards be mitigated?
   c. What will be the impact of an additional 125 (or number identified in Item 2a., above) vehicles per hour on the safety of La Madrona Drive for bicyclists? How will this increased traffic hazard be mitigated?

4. The intersection of La Madrona Drive and Mt. Hermon Rd is one of the busiest in the county. During the evening commute hours northbound traffic sometimes backs up from the intersection onto the northbound lanes of Highway 17.
   a. What will be the impact of an additional 1250 vehicles per hour using the Target store on this intersection and on Highway 17? How will this increased traffic hazard be mitigated?

5. The pedestrian access at the intersection of La Madrona Drive and Mt. Hermon Rd. is very limited. Currently employees of the Hilton Hotel have to walk along Mt. Hermon without sidewalks or attempt to cross four lanes of the intersection in a brief amount of time. The closest public transit stops are across the freeway (a pedestrian has to walk across the overpass) and ¼ mile away near Scotts Valley Drive.
   a. How many Target employees are estimated to walk to work? What will their pedestrian access be from public transit stops?
   b. What will be the effect of an increased 1250 vehicles per hour on pedestrian (employee and customer) access to the Target store from residents living in Scotts Valley?

Noise

1. With 15,000 vehicles per day, an increase in noise levels will occur from customer vehicles and truck deliveries.
    a. What will be the increase in noise levels for residents to the south of the Target store, in particular those along La Madrona Drive and in Monte Fiore where there is a direct line of sound travel (i.e., no topographical barrier)?
    b. How will this be mitigated?
    c. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to any policies, measures and activities to avoid this negative neighborhood impact

Visual Pollution

1. At present residents to the south of the Target store, in particular those along La Madrona Drive and in Monte Fiore experience a night sky. At nighttime it is dark; one can look up and see stars. Store and parking lot security and street lighting will destroy this night sky.
    a. Provide an estimate of the amount of glare to be experienced by various adjacent areas.
    b. Indicate how this will be mitigated.
    c. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to any mitigation policies, measures and activities to avoid this negative impact.

Crime

1. No doubt with the thousands of customers coming to the Target store day and night and drawn from all over the county and certainly from out-of-county travelers on Highway 17, there will be some number of miscreants who will see an opportunity to explore new ground, especially adjoining neighborhoods, for petty crime activity. Given the rural character of the adjacent unincorporated areas along La Madrona Drive, the likelihood for an increase in such crime will be significantly increased as a result of this project. The unincorporated county is not served by the City of Scotts Valley Police Department, rather by the Santa Cruz County Sheriff's Department which is understaffed, facing budgets cuts and able to provide only very sparse patrols in this area.
    a. What are the estimates of increased crime resulting from this project; estimate additional County patrol hours (and costs) need to counter this neighborhood threat.
    b. Indicate other mitigations proposed and their costs?

Habitat Destruction

1. The meadow on which the Target store is proposed to be located is one of the last remaining grassland habitats in the area. While degraded with invasive exotics, this grassland does still provide foraging grounds for several raptors, including Red-tail hawks, Merlins and Kestrels.
    a. What will be the immediate and cumulative impacts of this habitat destruction on the viability of these species continued presence in the local area?

Litter

1. There will be thousands of plastic bags generated daily by the operations of the Target store. No doubt a good number of these will end up as wind blown litter, in the parking lot, on the hillside above the parking structure, on the Hilton property, along La Madrona Drive and elsewhere.
    a. Provide an estimate of the number of plastic bags to be generated daily by the store operations, an estimate of the quantity to be discarded as litter on the store property or from vehicles along La Madrona Drive and an estimate of the likely locations for these wind blown objects to end up.
    b. Indicate mitigations for this significant impact. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to these policies, measures and activities.

Solid Waste

1. A 155,000 square foot retail store will generate a very significant amount of solid waste. The City of Scotts Valley uses the County's Buena Vista Landfill which is very close to capacity with no new landfill alternative available. Refuse from the City of Scott's Valley that is transferred out of county incurs an additional and significant economic and environmental cost.
    a. Provide an estimate of the quantity of refuse generated daily, by material type. Provide an estimate of the additional economic costs for out-of-county transfer of the additional refuse to be generated from this project. Describe and quantify the associated incremental environmental costs (e.g., air pollution, CO2 emissions, traffic) resulting from out-of-county transfer of the additional refuse to be generated from this project.
    b. Provide an estimate of landfill space consumed daily as a result of the disposal amounts generated by this Target store operation.
    c. Indicate waste reduction programs to be required by the City as a permit condition including reduction, reuse, recycling and composting. Provide specifics including number and types of recycling containers, locations, capacity, service frequency.
    d. Indicate number of refuse containers including size and service frequency as a comparable measure of waste diversion intentions of the project.
    e. Indicate staff persons responsible for waste management and waste reduction. Indicate employee training programs and incentives for reducing and diverting waste.
    f. Indicate programs for capturing food scraps generated by the store's operation and diversion programs to which this material will be directed.
    g. Provide an estimate of the quantity of goods discarded daily from the Target store as "unsellable", "damaged" or otherwise "not to be sold", but which are still in usable condition. Indicate methods to be employed to minimize this type of waste, including corporate policies.
    h. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to these waste reduction mitigation policies, measures and activities.

Global Warming

1. Placement of this large high-volume retail store far from the city's business district and public transportation hub will encourage more automobile use than if placed close in, thus resulting in increased automobile emissions and contributing to further warming of the earth's atmosphere.
    a. Provide an estimate of the quantity of CO2 emissions resulting from this project, both construction phase and operations phase.
    b. Indicate mitigations for this significant impact.

2. A retail facility of this size will have a significant energy consumption impact resulting from in-store lighting, outside security lighting, air conditioning and in-store refrigeration. Production of this required energy has bounce back impacts to atmospheric warming.
    a. Provide an estimate of the quantity of energy consumed daily and an estimate of the atmospheric warming contributions from these activities.
    b. Indicate corporate energy conservation policies and programs to be applied to this project, such as all-night lighting.
    c. Indicate energy conservation measures to be required of the project by the City's development permit for the project.
    d. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to these mitigation policies, measures and activities.

Water Consumption

1. The water supply for the City of Scotts Valley is the Santa Margarita Sandstone Formation, an EPA-designated Sole Source Aquifer. It is the only supply of water for the City of Scotts Valley. This aquifer is also the water supply for many residents of the unincorporated county living in the surrounding area. This aquifer is heavily overdrafted (more water is being taken out than is being replenished).
    a. Provide an estimate of the daily water usage for this project. Indicate project usage amounts by type of use, e.g., in-store, landscaping, refrigeration, etc.
    b. Indicate the overdraft status of the Santa Margarita Sandstone Formation and comparative usage amounts for the Sole Source Aquifer, i.e, this project in relation to other users.
    c. Indicate corporate water conservation policies and water conservation measures to be applied by the City of Scotts Valley as conditions on the development permit to be issued for this project, including water use requirements, water saving devices, and landscaping.
    d. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to these mitigation policies, measures and activities.

Hydrologic

1. The parcel in questions is underlain by a number of subsurface seeps. Well after rainfall events water can be seen draining onto the sidewalk with the rust stains characteristic of local groundwater iron content.
   a. Indicate how subsurface flows will be affected by the project.
   b. Indicate how the conversion of about 8 acres of open land to impervious surface will impact groundwater recharge for the Santa Margarita Sandstone Sole Source Aquifer.
   c. Indicate how the conversion of about 8 acres of open land to impervious surface will impact surface drainage. Estimate increases of stormwater runoff and the ability of existing drainage conveyances serving the area to handle these increased flows, including for 100-year storms and lesser storms of high intensity which are predicted to occur as a resulting of weather changes resulting from global warming.
   d. Indicate the amount of stormwater to be discharged to the drainage running south along La Madrona Drive into the unincorporated county and the ability of drainage conveyances in that area to handle increased flows.

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1. Construction of the store structure and the parking structure will require extensive grading and earth removal.
   a. Estimate the quantity of excavated soil to be removed from the site.
   b. Indicate where the excavated soil is to be taken; estimate the impact on the County's nearly at-capacity landfill in terms of number of disposal days consumed by this volume of excavated soil.
   c. Estimate the air quality impacts from earth moving equipment and truck removal of the excavated spoil, both in terms of pollutants (e.g., diesel particulates) and CO2 emissions.

Local Economy

1. What will be the economic impact of this large high-volume low cost retail store on other retail stores, many of which are small businesses selling the same products, which are located in the central Scotts Valley business district.
   a. Estimate the loss of sales to such small businesses and the concomitant loss of jobs.
   b. Estimate the number of such businesses, by business type, to close and the resultant local sales tax loss.
   c. Estimate the loss in commercial property rental income, reduced property valuations from increased vacancies and concomitant reduction in local property tax revenue.
   d. Indicate mitigations for these severe impacts to the local economy.

2. Provide the same analysis for similar businesses in the San Lorenzo Valley which will experience a loss in business as result of Valley bound residents stopping at the Target store on the way home rather than at Valley shops.

Thank you very much for your consideration of these comments. I can be reached at 438-2336 or dan.degrassi@baymoon.com if you have any questions about the recommendations made in this letter.

Sincerely,

Dan deGrassi
4173 La Madrona Drive
Santa Cruz, CA 95060

Cc: Supervisors Jan Beautz and Mark Stone
John Leopold
Susan Mauriello, Santa Cruz County Administrative Officer
Tom Burns, Santa Cruz County Planning Department
Tom Bolich, Santa Cruz County Public Works Department
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Santa Cruz Metropolitan Transit District
Responsible Local Development

City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

Attn: Taylor Bateman

This letter is to address the inconceivable idea of putting in a Target, big box store, on La Madrona Drive.

I live in Manana Woods with the only exit to go into Scotts Valley to shop is by making a left turn off Altenitas onto La Madrona. If you allow Target on La Madrona, making this left turn would be near impossible.

I know the traffic on Highway 17 on the week end and with there being two on ramps and one off ramp at the intersection of La Madrona and Mt. Hermon the traffic would probably back up onto the freeway. We would end up with a mini version of the "Fish hook". This would also cause a back up on Mt. Hermon. I question whether or not the consulting firm **out of San Francisco** has taken any of this into account.

In addition to the traffic congestion, let's address the infrastructure required to service a big box store. Santa Cruz is now off of water rationing but not Scotts Valley. The sewage plant is at capacity. The total law enforcement required for Scotts Valley's safety is allegedly not available with the current budget. Where will it come from to support Target? Road maintenance has no funds to repair current problems. What will the anticipated 10,000 cars a day do to these roads?

The city boasts an additional $500,000 in sales tax revenue from the store. From what I can tell, that will not even support the necessary requirements to accommodate Target in Scotts Valley. We the taxpayer will be supporting the store. What happens when the city loses the revenue from the Hilton. Personally the last thing I would want to see while staying at a Hilton Hotel is a big box Target outside my window and the noise and traffic that accompanies it.

With home prices falling due to the current economy, how can the city council feel justified in jeopardizing the homeowners in the nearby areas even more? No one wants to live next to a big box store. Perhaps if there is an increase in the number of foreclosures due to lowered home value, the city council would consider this loss revenue.

Please do not put a Target store on La Madrona or this surrounding area. I question the selection of the consulting firm. Why would you not use a firm more familiar with this area and the problems associated with Highway 17 traffic.

I moved to Scotts Valley in 1972. My children attended school here. I shopped at Camp Evers and Kings Market. The only fast food was Crockers. I even started the girls' softball league with Evelyn Jones in Scotts Valley. We both have daughters who liked to play softball, but there were only leagues for boys at that time.

It is my hope that the City Council will rethink this project and see it for what it is, A VERY BAD MOVE, and NOT in the best interest for Scotts Valley.

A Very Concerned Scotts Valley Resident,

Hazel L Seavers

Hazel L. Seavers
145 La Cuesta Drive
Scotts Valley, CA 95066

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APR 07 2008
CITY OF SCOTTS VALLEY

Edward J. Davidson

200 Button Street #15
Santa Cruz, CA 95060
TEL/FAX 831 423-9294
April 12,2008

Scotts Valley Councilmembers:

I noted that Donna Lind's Sentinel letter found the only virtue of the proposed Target project was its projected sales tax revenue for the city. But Target's sales taxes would come from sales currently generated by existing retailers in the County, excepting leakage to Monterey or Santa Clara Counties. Scotts Valley's retailers would probably be most severely affected. It would be ironic if Scotts Valley's total sales-tax revenue showed little change after the Target is built.

The project is a stand-alone big, big-box, three and a half acres in size, and completely incompatible with its surroundings. There is no way to disguise the scale of the building that, even with outsized signage, would not be visible to Hwy 17 traffic until past the exit ramps. It is unworthy as the "Gateway" to the city. I am certain that the compatibility, design, and traffic issues will be fully discussed at future hearings. Another problem ripe for discussion will be the prospect of vacant stores in the existing shopping centers on Mt. Hermon Rd. leading to the infeasibility of the Town Center project.

My biggest problem with the project is the lack of housing affordable to the hundreds of service workers Target will employ. Your Housing Element places service workers income at $22,000 ($10/hr.) and six-figure incomes needed for housing in Scotts Valley. I have long argued that much of your traffic congestion comes from over-the-hill commuters to higher paying jobs in Silicon Valley and incoming commuters who cannot afford Scotts Valley housing prices.

Scotts Valley has a distinct shortage of rental housing for middle income working families, and very few sites remaining to accommodate them. So in addition to sales tax revenues from other communities, you are also borrowing affordable housing for your employees from them. Your Housing Element adopted Goals and Policies in recognition of this ongoing problem:

Goal 2.0 **Promote a balanced mix of housing opportunities by increasing the number of housing units to accommodate projected population and employment growth.**

Policy 2.1 Provide residential sites through land use, zoning, and specific plan designations to encourage a broad range of housing opportunities.

Policy 2.3 Encourage the production of new residential development which provides a choice of housing type, density, and cost to meet the housing needs of all segments of the community.

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CITY OF SCOTTS VALLEY

I was on the Planning Dept. staff in 1985-86 when the previous General Plan update was adopted and remained during the implementation phase when the other two planners resigned, Noteworthy on the plan were three undetermined "specific plan" areas: Skypark, Glenwood, and Gateway. The Skypark area was largely developed with single families by K & B, but their offer to build low- and moderate-income units, at cost, was killed. The storage lockers on Lockhart Gulch Rd. were to have been the site. The Glenwood area now houses Scotts Valley H.S. along with some habitat protection areas. The property owners in the Gateway Area proposed a large rental housing project. Neighborhood opposition combined with the Police Chief's concerns about criminal activity in rental housing helped kill the project. A decade later the Hilton Hotel was built on half the property; the remaining 17 acres are vacant despite prior big-box proposals.

I believe a 200-unit rental project is a more appropriate use for the site, given all the negatives associated with the Target proposal. This may be the last chance to meet your adopted housing policy for the private sector to provide "a choice of housing type, density, and cost to meet the housing needs of all sectors of the community." I suggest 170 market-rate units at a density of 10 units/acre with a density bonus for inclusionary units for low- and moderate-income households. I would give priority for the inclusionary units to persons employed in Scotts Valley; particularly city employees, teachers, etc. The cost of housing makes it difficult to recruit and retain public employees.

I take issue with several points in Donna Lind's letter. The sales tax estimates must subtract lost sales taxes for Scotts Valley retailers. The stand-alone location will not be much benefit to other local businesses; Santa Cruz and mid-County residents will get right back onto Hwy 17 for the drive home. Finding affordable housing for Target employees as well as for teachers, police and firemen will be more difficult. Finally the statement of consistency with zoning and planning for the area conflicts with the Housing Element policy of the General Plan to meet the housing needs for all sectors of the community.

One final issue should be considered. What could be done with a 155,000 sq. ft. building if Target finds the store unprofitable some five or ten years after its opening. With the City's experience with Borland and E-mu, that possibility cannot be ignored.

On a separate page are my suggestions for compliance with CEQA's required considerations of Alternatives to the proposed project. The thoroughness of the analysis of alternatives will be crucial to the inevitable court challenge to the project.

Respectfully submitted,

Ed Davidson

Ed Davidson

Suggested Discussion of Alternatives to the Proposed Project

In addition to the No Project alternative, CEQA requires consideration of a reasonable range of alternatives to the proposed project. I believe, given the Housing Element policies adopted in the General Plan and certified by the California Department of Housing and Community Development, that a housing project must be one of those alternatives.

I am suggesting a 195-unit project; 170 market-rate units (@10-units/acre) and 25 inclusionary units (15% density bonus.) I am certain there are comparable projects in the region to generate construction costs, property taxes generated, amenities, unit sizes and mix. I would not compare it to the Monarch Apartments on the far West Side of Santa Cruz which has a similar number of units on 9-acres and mostly smaller units (and 40% inclusionary units in a redevelopment project area.) I would prefer to see the majority of units for working families.

Calculating the comparable property tax assessments will be easier than the net sales tax generated by Target. Sales taxes would be lost at larger stores in Scotts Valley like K-Mart and Ace Hardware and small stores like book and record shops, drug and variety stores.

Comparing Target with a rental housing project will be most difficult in the areas of traffic and water supply. For the locally employed, the amount of car-pooling and walk or bike to work must be estimated. Water usage should consider the latest water-saving fixtures as well as gray-water recycling. Scotts Valley has an aggressive program for water conservation and, along with green-building technology, the housing project could generate some demonstration grants.

The thoroughness and accuracy of the consideration of alternatives, while difficult, will be important in the court's review of CEQA compliance. One need only look to the UCSC's Long Range Development Plan to see how the court dealt with traffic, water supply and affordable housing issues.

B. Housing Goals and Policies

This section overviews the key issues from the Needs Assessment, as well as the goals and policies that Scotts Valley intends to implement to address these housing needs. In addressing the City's housing needs, the City's goals and policies are designed to:

Goal 1: Conserve housing and neighborhoods

Goal 2: Promote the production of a diversity of housing

Goal 3: Assist in the provision of affordable housing

Goal 4: Protect and conserve environmental resources

Goal 5: Further equal housing opportunities

City has developed the following goals and policies to encourage the preservation, production, maintenance, and improvement of housing within Scotts Valley.

1. Housing and Neighborhood Conservation

Housing and neighborhood conservation are important to maintaining and improving quality of life for residents. While the majority of housing in Scotts Valley is in good condition, some of the older neighborhoods and some multi-family housing show signs of deterioration. Efforts to improve and revitalize housing must address existing conditions, but also focus on encouraging efforts to ensure that that quality of the housing stock is maintained.

GOAL 1.0: Ensure the quality, safety, and livability of existing housing and the continued high quality of residential neighborhoods.

Policy 1.1 Continue to monitor and enforce building and property maintenance standards in residential neighborhoods.

Policy 1.2 Continue to promote housing rehabilitation programs for single-family homes, apartments, townhomes, and mobilehomes.

Policy 1.3 Continue to support the repair and upgrade of infrastructure, services, and public facilities in existing neighborhoods.

2. Housing Production and Diversity

The Regional Housing Needs Plan addresses the need for decent, adequate, and affordable housing to accommodate existing needs in Scotts Valley, as well as provide housing to address the growth in employment opportunities. In order to further these goals, Scotts Valley is committed to assisting in the development of adequate housing that is affordable to residents of all income levels in the community.

GOAL 2.0: **Promote a balanced mix of housing opportunities by increasing the number of housing units to accommodate projected population and employment growth.**

Policy 2.1 Provide residential sites through land use, zoning, and specific plan designations to encourage a broad range of housing opportunities.

Policy 2.2 Ensure that new residential sites have appropriate public services, facilities, streets and roadways, water, sewer, and other needed infrastructure to support residential development.

Policy 2.3 Encourage the production of new residential development which provides a choice of housing type, density, and cost to meet the housing needs of all segments of the community.

Policy 2.4 Facilitate and encourage the development of mixed-use residential/commercial projects at appropriate locations by providing appropriate regulatory and financial incentives.

Policy 2.5 Offer regulatory incentives and concessions for affordable housing, such as modified development standards, density bonuses, or fee waivers where deemed to be appropriate.

3. Housing Assistance

Scotts Valley is home to groups with special housing needs, including seniors, large families, disabled persons, single parent families, students, homeless people and other groups. These groups may face greater difficulty in finding decent and affordable housing due to special circumstances. Special circumstances may be related to one's income, family characteristics, disability, or health issues.

GOAL 3.0: **Expand and protect housing opportunities for all economic segments and special needs groups within the community.**

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CITY OF SCOTTS VALLEY

K

Ms. Laurie Kimel
Howard Kimel
2100 Bean Creek Rd.
Scotts Valley, CA 95066

April 25, 2008

Dear Mr. Bateman,

Scotts Valley is currently at a crucial turning point. We can take advantage of our location, five minutes to Santa Cruz, the beach and as gateway to the San Lorenzo Valley and our beautiful natural surroundings. Or we can turn our town into just another "anywhere USA." Target and its like are "a dime a dozen." We can build a people friendly town center with unique shops and

cafes or restaurants, or we can be known as the place/exit where the Target and traffic is.

My husband and I, (and our neighbors) are both very upset about the possibility of a hugh eye sore, traffic backed up even more on a summer weekends, loss of property values, probable losses to small, independant boisnesses, detriment to attracting more small, independant boisness (shops) and a hugh blow to creating a small, prospering welcoming <u>community</u>.

We can move in the direction of a town where people come to spend an afternoon, and money, at a nice outdoor cafe and shop for that special gift or outfit or..., Not just come, or stop by, Scotts Valley for ~~their~~ (Target's) great deal on a 12 pack of toilet paper and leave.

As more and more small boisnesses fall prey to the "BIG BOX", we in Scotts Valley still have the opportunity to be something special. Laurie + Howard Kimel

4/04/08

To City Council Chambers, One Civic Center Drive, Scotts Valley

From: Arlene Parks 150 Elena Ct. Scotts Valley, California 95066

Subject: Proposed one story 155,000 square foot retail store on La Madrona Drive.

Dear Mr. Bateman;

We are concerned that if this retail store is built on the La Madrona location it would impact our area with very high traffic. Already a large hotel and other small retail business are in the same area. It has been rumored that the fire department would like to put a facility just across the street from the above. Add to that, the streets surrounding this area are in need of repairs and there seems to be no action or funds for these repairs. The increased traffic will increase maintenance needs. We would ask for your office to recommend that this facility be put onto Scotts Valley Drive, or some other location.

Thank you for your consideration.

Yours truly,

A. Parks

Arlene L. Parks
831 438-1557

Apr 04 08 01:18p Clint Parks 831-475-4371 p.1

Taylor Bateman

From: Catherine O'Kelly [catherinesv@cruzio.com]
Sent: Sunday, May 04, 2008 10:40 AM
To: tbateman@scottsvalley.org
Subject: Target store

I'm writing you via the Target website. But I see that the only comments they post are ones in support of the store.

I do not support the Target store at that location. Why is it not planned for the "downtown" area? I think I know. There is not enough population in Scotts Valley alone to support a Target. They are relying on the huge sign that will be beside the freeway to lure commuters to their store.

It is a great disservice to the residents of Monte Fiore to place a department store at the entrance to their subdivision. What is really needed are more apartments for single people and older people. Although the area is zoned commercial, it shouldn't be.

It looks to me, that it's already a "done" deal for Target to have already drawn up such detailed plans. It looks to me like this was yet another "sweet deal" made between property owners and city government. It won't do any good for us to complain. You've already made up your minds.

Catherine O'Kelly
10-year Scotts Valley resident

Taylor Bateman

From: Daryl Tempesta [lyradius@gmail.com]
Sent: Thursday, May 01, 2008 12:45 PM
To: lyradius@yahoo.com
Subject: Re: Taylor Bateman is On Vacation - Notice of Preparation Comments RE: Target Center Project

Hello,

I was at the Council Chambers about 3 weeks ago, I was a bit early. In the room were about 25 people sitting around a bending row of conference tables, I think it was planning, I saw Michael in there.
Everyone was working toward some aim.

So I would like to participate in finding ways to improve the kinds of processes you follow.

Concerning Major Retail applications.

1) it is obvious that a quiet period should made ordanance The quiet period serves various functions in corporate America, and used in lock-out dates and IPO's among other. They are accepted standard and predictable practice.

Right now We have Target actively working against the opponents of the project in SV. Not just in the sense that they have opened an application, but specifically they are posting new stories on their site. I think that this is poor form. It would show great leadership to remind the citizens that they are more important than an outside interest.

Especially magnified by the current application.

In Practice, It should be simple, after an application is submitted, the submitter waits until the city asks for clarification or other office action, denial or approval. Like a Patent application. The facts are outlined, presented, and the application is processed. I have patents and this quiet period allows the facts of the project to speak for itself/

Part of the solution is fixing the perception of fairness. If ,for instance, a company which like Target would admittedly spend 2-20 million dollars to get a store approved and running, they should have all f their facts and research completed before submitting their application. They have all the time and money and opportunity to focus on the facts or that site, make written arguments and positions and submit the application. Then it's the city's turn to process and the citizens turn to support and opposes, criticize or praise.

Here is the problem. The City has an official place to ask, receive and post questions and answers.

The public is a group of individual people, with individual resources.
The only way they can speak is when there is an election. This creates a GREAT imbalance. A large company has deep pockets and does not feel the pain to do what it will through it's project managers. Theyhave this power 365 days of every year. The individual has 1 day every 4 years. This is bad public policy.

The individual citizen worries about their family and working and putting food on the table. And if one should speak up, The company waits until it hits the news and skims it for their web site. That site which created an maintained by a pile of money. This is bad corporate stewardship. It should be a violation of city statutes and policy.

If the truth of an application is worth it's salt, then it should withstand it's harshest critics. This is fair, and just, and protects the citizens in a way only it's leaders, you, can ensure. The leadership you ask for and provide every term. This deserves to be an election issue.

Thanks,
Daryl Tempesta

Taylor Bateman

From: Roddy, Virginia [Virginia.Roddy@plantronics.com]
Sent: Thursday, May 01, 2008 9:55 AM
To: Taylor Bateman
Subject: RE: No No to Target

That's it? When I received your "our of office reply" I forwarded this to Mr. Bustichi. At least I got a nice response from him. In all fairness, perhaps this is an automatic canned response; however, since I already received a reply from my first email, I doubt it.

Regards,
Virginia

From: Taylor Bateman [mailto:tbateman@scottsvalley.org]
Sent: Thursday, May 01, 2008 9:20 AM
To: Roddy, Virginia
Subject: Re: No No to Target

Thank you for your comments. The City has received this email.

From: Roddy, Virginia [mailto:Virginia.Roddy@plantronics.com]
To: tbateman@scottsvalley.org
Sent: Mon, 28 Apr 2008 14:48:12 -0700
Subject: No No to Target

I wish the City of Scotts Valley would look before they leap. We don't have a town center, and now, we have yet another "area" of Scotts Valley with the advent of Target. What a nightmare that would be. We, have so far the following "areas" of SV:

1. Nob Hill
2. Scotts Valley Market
3. Scotts Valley Drive
4. K-mart
5. Safeway
6. Skypark
7. Starbucks, ABC Restaurant
8. Surf City Area which includes the Hotel and now Target

Sit still and make some decisions about how we want our city to be and not just from a revenue generating standpoint.

I think the best thing that's happened to this town in a long time is Bustichi. Love his new building on SV Drive. We could definitely make this a destination stop if we tried; however, once again we're going in several different directions.

Oh, we've lived in Scotts Valley for over 20 years, so I feel my opinion is worth something.

Thanks for listening, and don't let Target in.

John and Virginia Roddy
Bean Creek Road
Scotts Valley
438-5692

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For further information about Plantronics - the Company, its products, brands, partners, please visit our website www.plantronics.com.

Taylor Bateman

From: Daryl Tempesta [lyradius@gmail.com]
Sent: Wednesday, April 30, 2008 6:09 PM
To: Taylor Bateman;Lawrence Fogel;Jackie Heald;Deborah A. Muth;Todd Ritchie;Michael Shulman;Steve Ando;Chuck Comstock;Tracy Ferrara;Kirsten Powell;April Wooden;Stephany E. Aguilar;Cliff Barrett;Dene Bustichi;Randy Johnson;Jim Reed
Subject: The golden rule

I sent a canned letter earlier with my submission of the SEIR. I have thought about this a great bit a few days ago and came up with the following conclusion which I would like to share with all:

I have been reminded that the golden rule is in order. So I have taken some time to really think about how both sides of the issue. Then it struck me. Target has a formula for getting into communities where they find opposition.

It's obvious that they want to change the focus form their disruptive store and place it on disruptive people. ahh "Divide and Conquer", it's one of the oldest strategies. It has slowed me down realizing this.

So you will see me offering an olive branch to the proponents of the Target, and I ask that we not cooperate in allowing Target to rip our community apart. This isn't old town Chicago, people on both sides of the issue want the best thing for their friends and families. In many cases we share friends we don't even know about.

Mr Bustichi is family friends of my daughters teacher, of whom offered to hold my baby in her arms during the last meeting of 100 opponents of Target. Something is wrong when the community comes apart at it's seams and eats it's own so to speak. And why? So that Target can take advantage?

You can expect a direct marketing campaign from Target anytime now.
There is a reason why they signed papers in July but didn't launch the application until Novenber..It's one year until the elections. The elections of a city council, which will see 3 seats up for grabs. I could think of no better conditions to formant discontent and pit all of us against each other.

I am from Maine, it reminds me of a movie made by Stephen King called "Needful Things" (spoiler alert) at the point in the movie where people are literally running around turning on each other, someone stops. He has the courage to say NO! The courage that even being justified, it isn't worth the destruction of the town, the people or the good things that enjoy about their community. And I say the same now. No.

We will not allow the city to be divided for the benefit of Target.

Reach out to the City and find common ground, respect each other's right to believe the way they want. Mend fences and as the Chief reminded me treating people according to the golden rule is what will help us live peacefully even after this issue fades into the past.

Hiram Scott was from Maine, about an hour from where I grew up. Target would like to divide my input from the ongoing conversation by labeling me an outsider. They are welcome to their opinions, but I will continue to question their claims, motives and promises.

We can do better than Target in many ways.

Thank you,
Daryl Tempesta

Taylor Bateman

From: Catherine O'Kelly [catherinesv@cruzio.com]
Sent: Sunday, May 04, 2008 10:40 AM
To: tbateman@scottsvalley.org
Subject: Target store

I'm writing you via the Target website. But I see that the only comments they post are ones in support of the store.

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It is a great disservice to the residents of Monte Fiore to place a department store at the entrance to their subdivision. What is really needed are more apartments for single people and older people. Although the area is zoned commercial, it shouldn't be.

It looks to me, that it's already a "done" deal for Target to have already drawn up such detailed plans. It looks to me like this was yet another "sweet deal" made between property owners and city government. It won't do any good for us to complain. You've already made up your minds.

Catherine O'Kelly
10-year Scotts Valley resident

Taylor Bateman

From: Camilla Shaffer [zebraparis@sbcglobal.net]
Sent: Wednesday, April 30, 2008 8:46 PM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

Dear Taylor Bateman,
The idea of building a Target, or any Big Box store, on La Madrona Drive at Mirafiore, seems complete folly to me. I have absolutely no idea how the City of Scotts Valley could even contemplate advancing this project.
Having been present at the City Council quarters this month, having heard the many speakers, and having independently spoken on the subject to many individuals living in different parts of Santa Cruz County, I know that there is great opposition to this project. At that meeting, there were many cases made against the project on environmental grounds: As just one example, I fully support Mr. deGrassi's letter of 04/09/08. I support every one of the facts stated in his letter against the proposal.
I understand that at this point, we are dealing purely with environmental concerns, so I will not go into the many compelling facts why aiding and abetting a Target store would be a wholly immoral and unprincipled act. I will simply reinforce several items that are most important to me:
The meadow on La Madrona is a wrong choice - if you must build a big box store, do it in an area of town that is already developed and idle. What about the town center project? The land in question on La Madrona is home to many diverse forms of life that would be eradicated by building a big box store.
The road itself, La Madrona Drive, cannot support the increased traffic. The traffic study is a waste of time since it was done during school vacation time, when families were out of town and parents were not using the road to ferry children to and from school. Neighborhood children will no longer be able to cycle safely around the area.
The beauty of our town would be totally spoiled by an ugly big box store with its immensely tall tower. Is that the landmark you would like to see when you arrive at our city limit?
I say "our city", but I am a resident of Santa Cruz, living on El Rancho Drive near the intersection of La Madrona Drive. I have always felt much closer to Scotts Valley, a visually appealing town, apparently concerned with supporting small local businesses and, I thought, a considered, well-educated, community, concerned with issues important in our world. What would the presence of a Target store say about the town of Scotts Valley? Please tell me what you think!
The pollution created in the area would be extensive, as would litter, and exorbitant energy and water use, not to mention the contribution to global warming. I do not think that the Target machine cares to monitor and handle these issues.
Have you ever seen the documentary movie "Walmart: The high cost of low price"? If you do only one thing, please just watch that film and reflect on its content. Please tell me your opinion if or when you have seen it.
I look forward to your response.
Please note that my whole family is against the Target project.
We look forward to hearing from you.
Yours sincerely,

Camilla Shaffer

Richard, Camilla and Marissa Shaffer

1200 El Rancho Drive
Santa Cruz, CA 95060
Telephone: 831-469-0838
Skype: zebraparis
www.zebraparis.com

Taylor Bateman

From: Daryl Tempesta [lyradius@gmail.com]
Sent: Wednesday, April 30, 2008 3:55 PM
To: Taylor Bateman
Cc: Lawrence Fogel;Jackie Heald;Deborah A. Muth;Todd Ritchie;Michael Shulman;Steve Ando;Chuck Comstock;Tracy Ferrara;Kirsten Powell;April Wooden;Stephany E. Aguilar;Cliff Barrett;Dene Bustichi;Randy Johnson;Jim Reed
Subject: Gateway South Retail Store

Attachments: Gateway_South_Retail_Store_issues.doc

Gateway_South_Retail_Store_iss...

April 30, 2008

Taylor Bateman
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066
831.440.5633

Subject: Gateway South Retail Store

RE: Notice of Preparation – Draft Supplemental Environmental Impact Report
Gateway South Retail Store

Dear Mr. Bateman:

Attached you will find my detailed comments and concerns relating to this proposed project. I am asking for my UPADATED comments and concerns to be added to the SEIR.

The Target Shopping Center does not have a mandate with public, or business. It only serves to divide our community which Target is counting on to slip in, while evryone is fighting each other, especially during this election year. It is bad for the city for a list of reasons outlined in my concerns.

The project is a bad idea for the City of Scotts Valley and its citizens. This project would have significant traffic, pollution, crime, water and environmental impacts which cannot be readily mitigated. In addition, I believe the net economic impacts of this project would be negative for both the local economy and the finances of the city. This city, and its citizens, should not be subjected to subsidizing a multi-billion dollar international retail operation.
Also, purely from an aesthetics and visual impacts perspective, a big-box store at the Southern Gateway entrance to Scotts Valley is not an appropriate fit for this city. Finally, a Big-Box Store highly visible from Hwy 17 is inconsistent and incompatible with the County of Santa Cruz's designation of Hwy 17 as a scenic route.

I also object to the City's not extending the comment period because we were given access to the preliminary traffic report half-way (fifteen days) through the comment period. Another fifteen days would have been reasonable not only for our local community's input, but also for other governmental agencies.

We should reach for common ground an not allow Target to tear our community apart. This can be accomplished with transparency in government and application of the golden rule as I have been reminded.

Please feel free to contact me if you have any questions about my concerns or comments. My contact information is below.

Thank You.

Daryl Tempesta
433 Silverwood Drive
Scotts Valley, CA 95066
831 439-9777

April 30, 2008

This UPADTED document, originally written on April 15 2008 presents the objections of Daryl Tempesta, concerning the [illegible] located at glen along La Madrona Drive and Silverwood Drive in Scotts Valley, California.

a) Target .com is available to most homes already so this is a redundant service, and adding Kmart and Safeway and Nob Hill to the mix, you have overly redundant and economically unjustified companies.
    a. What will the impact be to the existing stores?
    b. What about all the stores?
    c. What will happen to Kmart when if it is put out of business?
b) Target states on it's corporate web site :
    a. [illegible]

[illegible]

[illegible]

[illegible]

1) The public is not served, nor the SEIR, by the members of the city staff intentionally withholding public documents in the face of direct requests under the freedom of information act. As such, I respectfully insist that the 4:00 pm meeting be done over, with proper notification; allowing all citizens of Scotts Valley to have a look at the Gateway South Draft traffic study; which was released less than a day before the scheduled meeting on April 16, 2008.
2) The proposed Target Store property. Which this SEIR addresses, needs to be entirely redone. The original study for the previous project, an office building, is out dated, in many ways. As well the document needs to

expand it's scope and specifically list the parameters under consideration. We have the right to know exactly what is being included and what is being left out. As such the entire document is suspect.

a. Unlike the Office building, which would operate primarily during working hours during the week, the Target would effect the entire community even on the weekends late into the evening.
b. Inaccurate data like the 16% disparity in the new numbers
c. General statements concerning which proposed projects are included in report , how do we know which ones those are? They just approved a bunch of very high density rezoning is that included?

There are many more described and probably others we are not aware of given the amount of delay and blocking we have encountered trying to access the publicly available documents.

3) In Addition to the issues brought to your attention by other citizens against this proposed development, and supported by a wide, growing organized and funded opposition, The Gateway south document has glaring weaknesses. Including:
   a. The report fails to define the exact set of guidelines used which are worded to include "the City of Scotts Valley and California Department of Transportation (Caltrans)"
      i. The original project was an office building so the basis of the EIR is wholly inadequate.
   b. The document only includes estimated numbers based on a Target store.
      i. The addition of secondary retail at the Target site has been presented to the Monti Fiori HOA, specifically a high volume store like Taco Bell. This is an added factor – they may have more than 1 added store like a McDonalds. Yet they neglect this entirely in the report.
      ii. The city just rezoned neighboring properties along Mount Herman Road, including the property at the corner of Mount Herman Road and La Madrona. This traffic impact was not included in this traffic report. As well as water, air , noise pollution, and it's CO2 footprint.
      iii. Scotts Valley drive has a new approved development which is mixed use residential and retail this is not included in the projections.
      iv. The City has committed the building of a fire station directly across the street from the proposed Target. There is no mention of this and the impact it will have. including
         1. loss of response time
         2. Economic justification – currently the money is coming from the city general fund. After the city residents voted it down 3 separate times on ballot, there is no mandate to use city funds for this manner. The estimated 13 Million dollars required to build the fire station represents what target has presented as $500,000 in sales tax; this represents 26 years of Target revenue to the City of Scotts Valley. That

alone means that the City wasting money and resources, needed in other areas like the lost teachers jobs.

a. It also means that the upcoming Measure Q could be 13 Million dollars less. This waste impacts the city by having 30 children from k-3rd grade .
b. The lack of economic justification for a Target at this location shows how much they do not care for the fabric of Scotts Valley.
c.

v. The GSDTR (Gateway South Draft Traffic Report) is damaging to Target as it reads, but it also FAILS to identify the impacts at other intersections along the corridor between Granite Greek exits and Mount Herman.
    1. The additional firehouse, Taco bell, McDonalds or like quick retail destination, Very High Density residential zoned traffic, and the new Town Center as proposed, will push the time waiting to get into Scotts Valley from Mount Herman well over the projected numbers in the report. This will cause the traffic to quickly fill the stacking lanes and push onto highway 17. The southbound Mount Herman exit is located around a blind corner. The approaching speed is posted at 65 mph and at the end of a long down hill straight away, which begins over 500ft higher in elevation. and a mile away.
        a. Cars bunched up on 17 coming from San Jose area break out of the traffic before the granite Creek Exit and often speed towards Santa Cruz in excess of 65 mph often 80-100 mph.
        b. Major fatality accidents are inevitable
            i. This will be our children, parents, friends and commuters. What will the financial costs for this be? I want to see projections of cost stemming from this.
        c. If the city moves to mitigate the traffic by adding an exit between the Mount Herman and Granite Creek, the traffic danger will be even more pronounced as it occurs closer to the hwy 17 incline.
            i. Accidents here or at Granite Creek will push stand still traffic up the hwy 17 incline and the vulnerable cars at the end will result in crushing fatalities certain to interrupt the flow, and economic bloodline to SV and the rest of the coastal communities especially Santa Cruz
                1. including South bound Commuters at peak time.

vi. NEW High Density Zoning
    1. a handful of properties were recently added that represents an order of magnitude it traffic. Why is it that the city knows these extra sources of traffic yet ARE NOT INCLUDED in the draft or recent update?

vii. The 2007 Traffic plan for Scotts Valley shows that the volume of traffic from Granite Creek to Mount Herman road is over 120,000 cars a day with added traffic from Proposed projects. The increased traffic shows that the 10,000 claimed and in actuality probably closer to 15-20k cars a day due to the unreported additions like Taco Bell, new zoning etc. as previously mentioned, will create delay upon the highway for this entire segment, especially during peak times.

1. 120,000 cars delayed 1 min equal 2,000 hours of lost time and economic damage to all destinations south including Scotts valley , SLV destinations, Santa Cruz Destinations.
    a. The volume of co2 produced - What is this volume? How much will it impact air quality – it is CLEARLY an unaccounted fro addition in the current reports.
        i. What are the projections of increased sickness for seniors, children and the population in Scotts Valley?

c. The report completely fails to mention the fact that Highway 17 is eligible for the "State Scenic Highway System" Designator. The proposed signage structure would have significant visual impact.
d. The Residential neighborhood of Monti Fiori contains permanent wetland and the flying insects, which other creatures rely on as food will be irreparably damaged by the large red Target logo and property lights as they fly to the light source and die. The protected nature area is mandated by the City of Scotts Valley to not have exposure to unnecessary lighting which would interfere with this sensitive riparian environment.. You will see that there are NO streetlights in Monti Fiori as a REQUIREMENT of the city for the homes to have been built there. This is a significant environmental impact. If ruined would have a significant impact ob the preserve and home values as well.
e. The report sates 410 per hour in each direction o at peak times – that equates to 7 cars a minute. This seems very unrealistic during peak time. they should look at this number again.

4) What is the liability to the city and Target for the economic damage created by these issues?
5) There are documented reports and of Federally protected wildlife and other wildlife in the vicinity, which rely on, the 17 parcel mentioned.
    i. Golden Eagles
    ii. Herons
    iii. Mountain Lions
    iv. Bobcats
b. What will the impact of the increased pollution of 120,000 cars worth of air pollution be? Base don 2,000 hrs of delay plus on top of the existing pollution, there will be negative impacts – where in the food chain doe sit enter and effect the Golden Eagles in this Riparian Environment.
    i. This area should be rezoned to City Park.

6) The area has parking problems; the result of a lack of parking will result in overflow parking of cars onto La Madrona and Silverwood.

7)With the additional late night trailers full of merchandise for restocking, there will be continual activity at the site, which is not suitable for, residential.

8) Target has shown that it has been a bad actor using smaller numbers in the draft they had in their possession, essentially either lying or obstructing facts. As such it is IMPORTANT that the city knows exactly what claims have merit as far as what it's telling us. On the back cover of the Newsweek magazine for the week around April 25, 2008, an ad for the Target 5% was published, it claims that it has done this since 1946?, according to wikipedia, this is not true, The entry for Target shows that in fact they gave 3% for years and years. While it is a detail, it shows how they will say and do anything to get the store at the La Madrona site. How much of the submitted Target proposal to the city accurate?

Myth 1: 40% is the area used for the target store. In fact they use nearly 100% of what is available to them, the rest is already preserved as un-developable open space. That area has redwoods and is geologically unstable. This makes their claim as being concerned about the environment dubious.

a) How will the protected nature preserve located in between Silverwood Dr? It is a wet lands area which hosts Great Herons, Golden Eagles and other protected species.
    i. What are these species today
    ii. What effects will air pollution have on the food chain which these species eat
    iii. How will the flying incents not be drawn to the massively lighted parking lot or store signage which will tower 50ft in the air?
    iv. What will be the impact of all the car lights at night, which attract this critical food source?

Myth 2: 5% goes to you communities in the way of charity giving.

a) They clain on the back cover of News Week that they have done this 5% since 1943 – Wikipedia.com shows that it was 3% for decades.
    a. This is inaccurate, what other financial information is inaccurate? It shows the facts provided for Target application is at the very least suspect and needs to be verified.

b) They may well give away this much in general, but what exactly gets to Scotts Valley? They state on their web site that the average award is $1,000 to $3,000. This equates to about $70,000 worth of giving according my calculations – this is not 5% of their gross as claimed.
    a. What is the actual amount and exactly which entities would this come from?
    b. What is the pool of potential Scotts Valley based organizations which would be eligible for these economic inputs?

a) if time is money and the traffic of target delays 120,000 cars each day that's 2,000 hrs of lost time each day, that equates to tens of millions of lost economic benefit to the county and city of Santa Cruz county.

a. This is HARDLY a deal. It's a whitewash of the facts that no one has called Target on before and we deserve to keep the natural Beauty of Scotts Valley for everyone to enjoy.

a) What is the economic impact of the claimed 5%

b) How much will actually make it to Scotts Valley, not just a general designation of "the community which could mean from Reo Del Mar to Los Gatos.

Myth 3: they supply well paying jobs. They are displacing an perfect site for affordable housing which would fit a mixed use designation. Or an office site, which can hold an office complex, which would provide above average livable wages as outlined in the cities own Economic Development Plan.

a) What is the economic impact of loosing future high paying High Tech jobs and

b) What is the economic impact of loosing potential supporting jobs created because of the high tech jobs.

c) What is the economic impact of loosing this Affordable housing space

a. What will it cost to mitigate it

b) What will be the impact of developing this as a mixed retail and residential project, more suited for the Residential nature and the sensitive riparian area than a colossal Target as proposed.

Myth 4: Target says on it's site: [illegible]

9) The city has agreed in 2007 to develop with the following principals.:

ATTRACT EMPLOYERS WHO PROVIDE LIVABLE WAGE JOBS..

- Explore joint marketing efforts that would attract desirable businesses to locate in the City of Scotts Valley and the region. TARGET IS NOT DESIRABLE TO RESIDENTS and BUISNESS
- b. Identify business types that offer above average salary levels and are consistent with the natural limitations of our fragile environment. TARGET IS GROSSLY OUT OF PLACE
- c. Develop and implement incentives to attract new business that furthers the goals and objectives of this policy
- d. Proactively market Scotts Valley to attract identified businesses. Utilize the Business Round Table to influence identified businesses to locate in Scotts Valley.
- Support small high-tech start-up cog. Support locally owned businesses.
    - YOU NEED OFFICE BUILDINGS FOR THIS not BIG BOX RETAIL.

my questions are:

- How much money was spent proactively attracting Target.
- How does this support locally owned business

        - What is the negative economic impact for those businesses?
        - What is the negative economic impact for their branch companies located on Pacific Ave in Santa Cruz and locally available Retail areas?
    - How much did the city offer as incentives
    - How does the city justify calling Target wages as Livable. Their own annual report indicate the "challenge" of holding Key Employees because of the level of salaries they earn in a challenging retail environment.

10) HOW MUCH CITY TIME has been spent processing this Target application? If it is substantial, is it a proper use of city money to pursue this without first having proper reports, mandates and public mandate?

a) Who is the official and what is the officials relationship that determines how much resources to spend, or have already spend in projects like this.

i) What are the amounts and limits and projected future costs.

c) There must be a manger for this project at the city, How much time interacting with Target has there been and the cost associated.

a. Utilities
b. Lunches
c. Transportation
d. Time
e. other

11) Recruit retail projects that will diversify and Encourage mixed-use development.

A) Scotts Valley Drive will have mixed usage – having a mixed retail and housing use is more suited to the property.

I) What is the economic impact for these uses?

12) Of the issues submitted, which issues will not be included in the SEIR and what is the projected impact?

a) Economically
b) Traffic
c) Pollution
d) other

13) The city historically passes tax bonds for essential needs. What will the savings be of denying this application?

a) What are the other sources of future revenue which will case the justification to evaporate?

a) Extension of Measure C

b) Changing the Planned town center plan which one that swaps the Library and the Court house – both revenue eating entities, and are redundant.

c) Not Building the Fire Station on LaMadronna which has received a NO 2 times by city wide referendum

i_ Has the city petitioned to move the Capital Improvement funds into the operation expenses, or outsourcing the building and leasing.

d) The sale of excess Gray water projected by the city to be over 1 million gallons in surplus.

e) The reconfiguration of Kings Village Square –

a. Adding a second level like Santa Cruz did during the reconstruction after the Loma Prieta Earth Quake. The President of the downtown association said that by putting the Theater upstairs it created a larger sales tax base.

i. What does George OW say about that?

14) What results does google show which indicates the miscalculations of Traffic, crime and pollution form other municipalities which reflect poor planning or unintended consequences?

a) What keywords or exact phrases, or combination of phrases are used?

b) What are the exact comments

i)What are the URLs

15) Target the crime it will attract, the pollution of various kinds, the destruction of very sensitive riparian environments that host species, federally protected or not. What will it cost to monitor the Protected species in the area?

a) What is the status of each species affected

b) What is each species

a) What is the impact of loosing critical feeding grounds for the Golden Eagle Pair?

b) What is the effect of loosing the protective environmental area, circled by the mountain structures which consolidates pollution, and provides habitat for the Golden Eagle, and othe large and small migratory birds.

i) What are the species

16) A big box store could not be foreseen with the historic pattern of development in the gateway south area. Especially since the current zoning designator does not describe a giant big box or mall type building.

a) What will it cost the city to properly zone?. Scotts Valley corners and the Hilton have been sensitively developed regarding architecture and scope. target fails in both regards.

17) We deserve to know the difference of impact between the office building that was proposed and this project. The data for the other project exists and we deserve to see the impact especially traffic and the environmental factors like CO_2 emissions and above average wages, difference in crime, difference in Economic damage to businesses that exist.

18) People will come from Santa Cruz and San Jose/Los Gatos, these communities should be included for impacted small business, including of traffic, pollution etc.

a) What will the city do to poll these communities?

b)

19) What will the changing demographics be and how will this effect all of the finding in the report

a) 1 year
b) 3 years
c) 5 years
d) 7 Years
e) 10 Years
f) 15 Years
g) 20 Years

20) what are the health costs?

21) What will it cost commuters based on mitigation recommendations?

a) Projected accidents
b) Number of Fatalities
c) Effects of more flowing traffic from construction of HWY 1 at the Fish Hook and the new improved flow north bound. It will attract more people to their community.

a) What will the increase be
b) How will that effect the mitigation recommendations?

1) Pollution
2) Traffic
3) Crimes

22) The study should wait until the current road improvement sin Santa Cruz are finished. It is reported that the Traffic jam will just move to Scotts Valley.

1) What will the cost of this jam be

i) What will impact be on traffic on all exits and other?

ii) What will be the impact on Scotts Valley Drive is the Mount Herman Exit reaches capacity after a Target is built?

a) What will the mitigation?
b) What will it cost?
c) Does it include building a new exit?
    a. Will it increase in priority?
        i. Where will the money come from
            1. What will it cost?
            2. What will be negatively impacted because of the change of priority?

23) If the current propositions concerning Eminent Domain either pass or not pass, what will the economic effect have?

a) On the recently rezoned Very High Density properties on Mount Herman

b) What impact will will that have on the vacant property across Silverwood be? The one directly across from the Target proposal on La Madrona

i) What will the city put there as far as zoning
ii) What will be the traffic and economic impacts be?

d) Scotts Valley Corners has a precarious exit, sloping down.

a. What will the effect of this exit have?

Projected fatalities
Projected Accidents
Projected Pollution

24) What will be the cost of Anti-gang programs be for the increased gang activity?

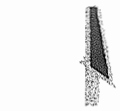
Gateway South Retail Project

PROJECT LOCATION AND STUDY INTERSECTIONS

CRIME

Imagine GIRDLOCK , your last in line and you see a truck barreling at you at 75mph

Granite Creek needs to be added in study



Golden Eagle Habitat

Federally Protected

TRUE IMPACT

120,000 cars a DAY

43,800,000 a YEAR

All Traffic on 17 needs to be added to study because delays, accidents and CO_2 emissions

CRIME - POLLUTION - GRIDLOCK - ECONOMIC DMAGE

LEGEND:

1 = Study Intersections

No TARGET in Scotts Valley

GRIDLØCK

rldpac.org

No TARGET in Scotts Valley

POLUTIØN

rldpac.org

No TARGET in Scotts Valley

FELØNIES

rldpac.org

Scotts Valley Says No TARGET

SEX PREDATØRS

rldpac.org

http://www.nap.edu/catalog.php?record_id=12198

6

Overall Conclusions and Recommendations

The committee's statement of task (see Chapter 1) presents specific questions that were addressed by the committee in Chapters 3-5. This chapter discusses the overall conclusions and recommendations developed in the earlier chapters in the context of the regulatory benefits-assessment process. It also discusses implications for future Environmental Protection Agency (EPA) regulatory impact analyses (RIAs) that include changes in ambient ozone concentration.[1]

Part of the committee's charge was to evaluate recent analyses of epidemiologic studies that found a modest but consistent relationship between short-term ozone exposure and premature mortality. During its deliberations, the committee was mindful of the information needs and framework for benefits assessment. There is a fundamental difference between information needed for regulatory benefits assessment and information needed to set a protective health standard. Selection of a health-based standard focuses on the lowest ambient concentration that poses a risk of adverse health effects in the most sensitive population, whereas benefits assessment uses information to estimate all the health-risk reductions in the entire population that is expected to experience a change in ambient concentrations.

OZONE MORTALITY EFFECT

In carrying out its charge, the committee considered not only the recent epidemiologic evidence, but also toxicologic and pathophysiologic evidence that points to mechanisms by which ozone may contribute to premature mortality. As a gas, ozone is highly reactive, and once inhaled it is immediately engaged in the respiratory tract by the epithelial fluids and cellular membranes that it contacts. Because ozone does not penetrate cells but leads to pulmonary and nonpulmonary events, a cascade mechanism has often been proposed to account for its toxicity. Human chamber and toxicologic studies have yielded strong evidence that short-term exposure to ozone can exacerbate lung conditions, causing illness and hospitalization, and potentially lead to death. The available evidence on ozone exposure and exacerbation of heart conditions, which is less abundant, points to another concern.

Epidemiologic studies also have found that exposure to ozone (as an indicator of the broader mix of photochemical oxidants) is associated with those effects. Although methodologically somewhat different, the studies have been consistent in their use of large datasets with consistent diagnostic codes for health end points, nationally available ambient air measures, and data on adjustment for some potential confounders. The committee found that the four recent time-series analyses and meta-analyses of the relationship between exposure to ozone and premature mortality add to that evidence by providing robust statistical evidence of an association (Bell et al. 2004, 2005a,b; Ito et al. 2005; Levy et al. 2005).

On the basis of the additional insights obtained from its review of the new time-series studies and its review of the broader evidence, the committee concludes that short-term exposure to ambient ozone is likely to contribute to premature deaths. Despite some continuing questions about

[1]In this report, *ozone* is used to refer to the broad array of photochemical oxidants in ambient air, of which ozone is the primary component.

Taylor Bateman

From: Paul Bach [pbach@rldpac.org]
Sent: Wednesday, April 30, 2008 3:41 PM
To: Taylor Bateman
Cc: Paul Bach;Chuck Comstock
Subject: Gateway South Retail Store
Attachments: Gateway South Retail Store.pdf; Watsonville_Crime_Target_2007.pdf; Available Land Next to Enterprise Way Building.pdf

April 30, 2008
Mr. Taylor Bateman,
Associate Planner
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

Re: Comments, questions and recommendations on Environmental Impact Report for the Gateway South Retail Store (aka Target Shopping Center on La Madrona Road)

Dear Mr. Bateman:
Thank you for your consideration of the attached comments, questions and concerns with regard to the proposed Target Shopping Center on La Madrona Road.

Sincerely yours,

Paul H. Bach,
President
The Scotts Valley Responsible Local Development PAC

April 30, 2008

Mr. Taylor Bateman,
Associate Planner
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

Comments, questions and recommendations on Environmental Impact Report for the Gateway South Retail Store (aka Target Shopping Center on La Madrona Road)

Dear Mr. Bateman:

Thank you for your consideration of the following comments, questions and concerns.

Sincerely yours,

Paul H. Bach,
President
The Scotts Valley Responsible Local Development PAC

1. According to the Fehr & Peers (F&P) traffic study a considerable amount of Target traffic is expected to come from the North of Scotts Valley. The April 4th F&P study indicates that 24% of the traffic will travel south on Scotts Valley Drive and 10% south on Highway 17. Please explain why the traffic studies have not analyzed the anticipated traffic at the Intersection of Granite Creek and Scotts Valley Drive.

2. According to the Fehr & Peers (F&P) traffic study a considerable amount of Target traffic is expected to come from the North of Scotts Valley. The April 4th F&P study indicates that 24% of the traffic will travel south on Scotts Valley Drive and 10% south on Highway 17. Please explain why the traffic studies have not analyzed the anticipated traffic at the Intersection of Granite Creek and Enterprise Way.

3. According to the Fehr & Peers (F&P) traffic study a considerable amount of Target traffic is expected to come from the North of Scotts Valley. The April 4th F&P study indicates that 24% of the traffic will travel south on Scotts Valley Drive and 10% south on Highway 17. Please explain why the traffic studies have not analyzed the anticipated traffic at the Intersection of Granite Creek and Santa Village Road.

4. According to the Fehr & Peers (F&P) traffic study a considerable amount of Target traffic is expected to come from the North of Scotts Valley. The April 4th F&P study indicates that 24% of the traffic will travel south on Scotts Valley Drive and 10% south on Highway 17. Please explain why the traffic studies have not analyzed the anticipated traffic at the Intersection of Scotts Valley Drive and Glenwood Drive.

5. According to the Fehr & Peers (F&P) traffic study a considerable amount of Target traffic is expected to come south on Mt. Hermon Road. The April 4th F&P study indicates that 29% of the traffic will travel this route to Target. Given the assertion that Target Customers will also likely shop at other retail in Scotts Valley, please explain why the traffic studies have not analyzed the anticipated traffic at the Intersection of Kings Village Road and Mt. Hermon Rd.

6. According to the Fehr & Peers (F&P) traffic study a considerable amount of Target traffic is expected to come south on Mt. Hermon Road. The April 4th F&P study indicates that 29% of the traffic will travel this route to Target. Given the assertion that Target Customers will also likely shop at other retail in Scotts Valley, please explain why the traffic studies have not analyzed the anticipated traffic at the various intersections with Mt. Hermon Rd. and the traffic intersections with each of the major retail shopping centers such as Kmart, McDonalds, Safeway, Berger King, etc.

7. According to the Fehr & Peers (F&P) traffic study a considerable amount of Target traffic is expected to come south on Mt. Hermon Road. The April 4th F&P study indicates that 29% of the traffic will travel this route to Target. Please explain why the traffic studies have not analyzed the anticipated traffic at the intersection of Skypark Drive and Mt. Hermon Road.

8. According to the Fehr & Peers (F&P) traffic study a considerable amount of Target traffic is expected to come south on Mt. Hermon Road. The April 4th F&P study indicates that 29% of the traffic will travel this route to Target. Please explain why the traffic studies have not analyzed the anticipated traffic at the intersection of Skywood Lane and Mt. Hermon Road.

9. According to the Fehr & Peers (F&P) traffic study a considerable amount of Target traffic is expected to come south on Mt. Hermon Road. The April 4th F&P study indicates that 29% of the traffic will travel this route to Target. Please explain why the traffic studies have not analyzed the anticipated traffic at the intersection of Lockwood Gulch Road and Mt. Hermon Road.

10. According to the Fehr & Peers (F&P) traffic study a considerable amount of Target traffic is expected to come south on Mt. Hermon Road. The April 4th F&P study indicates that 29% of the traffic will travel this route to Target. Please explain why the traffic studies have not analyzed the anticipated traffic at the intersection of Lockwood Gulch Road and Mt. Hermon Road.

11. La Madrona Road is often used as an alternate route when traffic on Highway 17 gets congested. Please explain why the traffic studies have not analyzed the anticipated traffic at the intersection of La Madrona and Sims.

12. For people living in Pasatiempo the likely route to Target will be Sims to La Madrona. La Madrona is a small two lane country road before it reaches Scotts Valley. Please explain why the traffic studies have not analyzed the anticipated traffic from Pasatiempo residents.

13. La Madrona Rd is a major route for parents and children traveling to Brook Knoll School. Please explain why the traffic study was conducted at a time when Public Schools were in recess.

14. Please conduct additional traffic studies during a time period when school is in session.

15. Please explain why the traffic study did not analyze the traffic impact at the intersection of Sims and Brook Knoll Dr.

16. La Madrona Road is used by children walking and riding bikes to attend the Scotts Valley Middle School. Target traffic will create a material hazard to these children unless the sidewalk and bike lanes are significantly expanded. Please explain why this was not taken into consideration with regard to an expansion of bike lanes and sidewalks in the traffic study.

17. The traffic study simply mentions parking spaces and doesn't delineate between compact spaces and full size spaces. Please provide this additional level of detail and comment on the adequacy of parking considering this additional information.

18. Please explain the impact on available parking during holiday seasons such as Christmas. Please explain where the additional traffic will find parking.

19. The traffic study has not analyzed the potential traffic at the two intersections of the Target parking lot and La Madrona. Please explain why this has not been studied.

20. With the understanding that Altenitas Road and La Madrona is expected to fall to a LOS F there is likely to also be an impact on the intersection of La Cuesta Drive and Mt. Hermon when residents of Manana Wood have difficulty exiting their neighborhood. The traffic study has not analyzed the potential traffic impact at the intersection of La Cuesta Drive and Mt. Hermon Road. Please explain why this has not been studied.

21. According to the Fehr & Peers (F&P) traffic study a considerable amount of Target traffic might be mitigated by the building of a Mid-Town Interchanges. Such an interchange would potentially have a significant impact on the intersection of Carbonero Way and Scotts Valley Drive. Please explain why the traffic studies have not analyzed the anticipated traffic at this intersection.

22. According to the Fehr & Peers (F&P) traffic study a considerable amount of Target traffic might be mitigated by the building of a Mid-Town Interchanges. Such an interchange would potentially have a significant impact on the intersection of El Pueblo Road and Carbonero Way. Please explain why the traffic studies have not analyzed the anticipated traffic at this intersection.

23. I am not aware of any funding having been reserved by the City of Scotts Valley for the potential funding of a Mid-Town Interchange. Please explain why this is a viable solution to mitigate Target Traffic. Please explain the source of the funding.

24. Assuming that the City is somehow able to find funding for a Mid-Town Interchange please explain how long it would be before this mitigation factor was feasible. Please explain how long commuters would have to live with the proposed Target traffic at existing intersections before the Mid-Town Interchange would be available to potentially mitigate traffic concerns. To put the question differently: How many years can we expect it to take before a Mid-Town Interchange could take the traffic flows from the Baseline to the Cumulative traffic numbers?

25. Please identify the street addresses of the residents that will be displaced by the proposed Mid-Town Interchange.

26. Please explain how and where the City proposes to replace the affordable housing that a Mid-Town Interchange will eliminate.

27. Has the traffic study that has been conducted for the proposed Target Shopping Center included the proposed Polo Ranch development traffic?

28. Please explain why the City did not allow the use of the Mid-Town Interchange as a mitigating factor for the Glenwood, Polo Ranch and High School Developments yet is allowing it for the Target Development. Does the fact that most of the City Council members live in the Northern part of the City play a factor in this?

29. Please explain why major developments such as Stonegate and Pinnacle Pass which are in the south side of Scotts Valley, where no City Council Members live, have had to include the assumption of a Mid-Town Interchange in contrast to major developments in the Northern side of Scotts Valley (where most City Council Members live) have not required the inclusion of a Mid-Town Interchange. Please explain the rational and rules as to when the Mid-Town Interchange must be included and when in isn't required in the analysis as a mitigating factor. Please explain how or who makes the determination to include or not include the Mid-Town Interchange.

30. Please explain if it will require a widening of either Scotts Valley Drive and or Mt. Hermon Road to meet City General Plan LOS requirements should the proposed Target Shopping Center be built.

31. Please explain if and where Scotts Valley Drive and or Mt. Hermon Road will need to be widened. How many lanes will the intersections of Mt. Hermon /Scotts Valley Drive need to be in order to meet or exceed the Scotts Valley General Plan?

32. Please explain who will fund any potential required widening of Scotts Valley Drive, Mt. Hermon Road and or La Madrona

33. If the number of lanes needs to be expanded at any other intersection to meet an acceptable LOS, please explain who will fund the expansions. Please be specific by location.

34. The intersections of Scotts Valley Corners and La Madrona are already dangerous intersections because of line of sight issues. This is particularly true for cars exiting the southernmost exit from Scotts Valley Corners. The additional Target traffic will exacerbate the problem. Please explain why the traffic flows at this intersection have not been considered.

35. Please explain why the LOS at the intersections of La Madrona and the ingress and egress of the Scotts Valley Corners has not been analyzed.

36. Please explain the logic of using the Mid-Town Interchange as a mitigating factor in the Target Shopping Center Project but not in other developments where if built the Mid-Town interchange would have altered traffic flows.

37. Does the Glen Canyon Road intersection include the load from the new development?

38. From La Madrona Rd. at the intersection of La Madrona and Mt. Hermon Road the stacking length does not appear to be enough to benefit from the right turn overlap. Was this computed manually or auto generated by the traffic program. Please explain.

39. The traffic study does not appear to have considered flow circulation within the Target parking lots with regard to ingress and egress.

40. Given that the traffic study estimates that December peak conditions may create a shortage of 239 parking spaces, please explain the impact and backup at key intersections including but not limited to the ingress and egress to the Target parking lot, traffic flow within the parking lot during this peak time, potential traffic back up on La Madrona and Altenitas as well as La Madrona and Mt. Hermon Road intersections.

41. Please explain where the additional cars will park during peak December conditions.

42. Please explain the (LOS) impact of peak December shopping traffic on all studied intersections.

43. Please explain when the peak December traffic period begins and when it ends.

44. Please identify the LOS at the intersections of La Madrona and the Target entrances.

45. Please explain why LOS estimates at intersections were not analyzed during the peak lunch hour traffic period.

46. The proposed project would alter the project site from a rural residential use with construction of a 155,000 square foot commercial shopping center. Please explain how this will be aesthetically mitigated.

47. The proposed project would introduce new sources of lighting that could adversely affect the existing and proposed development in the vicinity of the project site. Please explain how this will be aesthetically mitigated.

48. The proposed project in combination with cumulative development would add to urbanization of the project area, resulting in a visual change within the City of Scotts Valley. Please explain how this will be aesthetically mitigated.

49. The proposed project is the largest retail project in the City of Scotts Valley's history yet the proposed site is not zoned CSC (Commercial Shopping Center). Please explain why the Commercial Shopping Center CSC zoning is not appropriate.

50. The proposed project is set back from La Madrona just 22 feet at various points. Given the immense size of the structure this will create an unpleasant and imposing appearance. Please explain how this will be aesthetically mitigated.

51. Based upon the published drawings and elevations, the top of the Target Tower will rise 70 feet 6 inches above the elevation of La Madrona just 22 feet away. Please explain why the builder shouldn't be required to level the grade so as to reduce the elevation above the adjacent roadway. Please explain how this will be aesthetically mitigated.

52. The Building is set so high that it will block all South facing mountain views from anyone traveling on Silverwood Drive. Please explain how this will be aesthetically mitigated.

53. The design of the Building is inconsistent with the design of the adjacent Hilton Hotel and Scotts Valley Corners. Please explain how this will be aesthetically mitigated.

54. Hilton Hotel guests staying in rooms in the southern portions of the Hotel will have views of the loading docks and parking lots of the proposed Target Shopping Center. Please explain how this will be aesthetically mitigated.

55. The proposed Target Shopping Center will have its southern wall only minimally setback from Silverwood effectively creating an alley effect. Please explain how this will be aesthetically mitigated.

56. The proposed Target Shopping Center will rise at certain locations over 70 feet above the road way elevations of Silverwood and La Madrona. Given the size of the building this commercial structure will effectively annex the homes of Monte Fiore from the rest of Scotts Valley. Please explain how this will be mitigated.

57. The LOS at the Intersection of Altenitas and La Madrona is forecast to go to LOS F. Please explain the impact on the residents of Manana woods. Please explain how the impact on these residents of Scotts Valley and Santa Cruz County will be mitigated.

58. The LOS at the Intersection of Altenitas and La Madrona is forecast to go to LOS F. Please explain how this unacceptable LOS will be mitigated.

59. Section 2d of the Scotts Valley Economic Development Plan 2007 in the section titled PROMOTE THE CITY AS THE POSITIVE BUSINESS ENVIRONMENT IT IS states "Sustain efforts to maintain the lowest crime rate in the County". The Scotts Valley Police report that in 2007 there were a total of 351 Part 1 Crimes (Homicide, Rape, Robbery, Assault Burglary Larceny Auto Theft and Arson) committed in the entire city during the year. According to the Watsonville Police Department the Target Shopping center alone generated 141 Part 1 Crimes in 2007; which is roughly 40% of the total number of Part 1 crimes for all of Scotts Valley. Please explain how the City intends to meet its goal of the lowest crime rate in the county given the likelihood of a significant number of new Part 1 crimes committed at the proposed Target Shopping Center. In particular crime numbers attributed to Larceny will increase. The Watsonville Crime report is attached as supporting documentation. Please explain how this will be mitigated.

60. Section 3e of the Scotts Valley Economic Development Plan 2007 in the section titled ENCOURAGE BUSINESS EXPANSION AND RETENTION states "Develop continuity in signage throughout the City." The proposed Target will rise 70 feet 6 inches above sections of La Madrona and more than 100' above Highway 17. The proposed signage is planned to be placed near the highest points on the proposed building. The proposed signage at this height is not consistent with other signage within the City. Please explain how this will be mitigated.

61. Section 4b of the Scotts Valley Economic Development Plan 2007 in the section titled ATTRACT EMPLOYERS WHO PROVIDE LIVABLE WAGE JOBS states "Identify business types that offer above average salary levels and are consistent with the natural limitations of our fragile environment." Please explain how the proposed Target Shopping Center is consistent with the living wage issue as well as how the largest retail building in the history of Scotts Valley is "consistent with the natural limitations of our fragile environment". Please explain how these issues will be mitigated.

62. Section 4g of the Scotts Valley Economic Development Plan 2007 in the section titled ATTRACT EMPLOYERS WHO PROVIDE LIVABLE WAGE JOBS states "Support locally owned businesses." Please explain how the proposed Target Shopping Center will "Support locally owned businesses".

63. Section 6c of the Scotts Valley Economic Development Plan 2007 in the section titled ASSURE THAT THE ENVIRONMENT AND PUBLIC INFRASTRUCTURE WILL SUPPORT AND ENCOURAGE A VIABLE BUSINESS CLIMATE states "Support participation in efforts committed to automobile trip reduction, alternative transportation and mass transit programs." The draft traffic report indicates that the proposed Target Shopping Center will degrade the public infrastructure LOS. Please explain this inconsistence with City policy and how this will be mitigated.

64. Section 6e of the Scotts Valley Economic Development Plan 2007 in the section titled ASSURE THAT THE ENVIRONMENT AND PUBLIC INFRASTRUCTURE WILL SUPPORT AND ENCOURAGE A VIABLE BUSINESS CLIMATE states "Seek improvement in commercial traffic circulation patterns." The draft traffic report indicates that the proposed Target Shopping Center will degrade the public infrastructure LOS of traffic circulation patterns. Please explain this inconsistence with City policy and how this will be mitigated.

65. Section 6f of the Scotts Valley Economic Development Plan 2007 in the section titled ASSURE THAT THE ENVIRONMENT AND PUBLIC INFRASTRUCTURE WILL SUPPORT AND ENCOURAGE A VIABLE BUSINESS CLIMATE states "Maintain policies to ensure an attractive natural environment." The building of the largest shopping building in the Cities history and the fact that the building will be set back from the roads just 22 feet seems in direct conflict with the of ensuring "an attractive natural environment". Please explain this inconsistence with City policy and how this will be mitigated.

66. Alternative Plans. At a March 6th meeting between Target representatives and the residents of Monte Fiore, Mr. John R. Dewes stated that while the La Madrona location was their top choice for a location in the area that they had several other acceptable

locations identified as well. He stated that the second choice location was in the City of Santa Cruz. Please evaluate other potential locations within Santa Cruz County.

67. A parcel of land on the northern portion of the City adjacent to the Enterprise Way Building has recently been placed on the market. This is an area near where several of the City Council members live but the land is not adjacent to any existing residential communities. The usable land is equivalent to the usable land of the La Madrona location. This location also has a dedicated egress and ingress from Highway 17 to Santa's Village Road. This location is not adjacent to an existing residential community. The land is comparably priced to the land at La Madrona. The real estate flyer is attached for your review. Please consider this as an alternative location for the Target Shopping Center. If the location is rejected, please explain why this would not be a more acceptable location for a potential store if one is to be built within Scotts Valley.

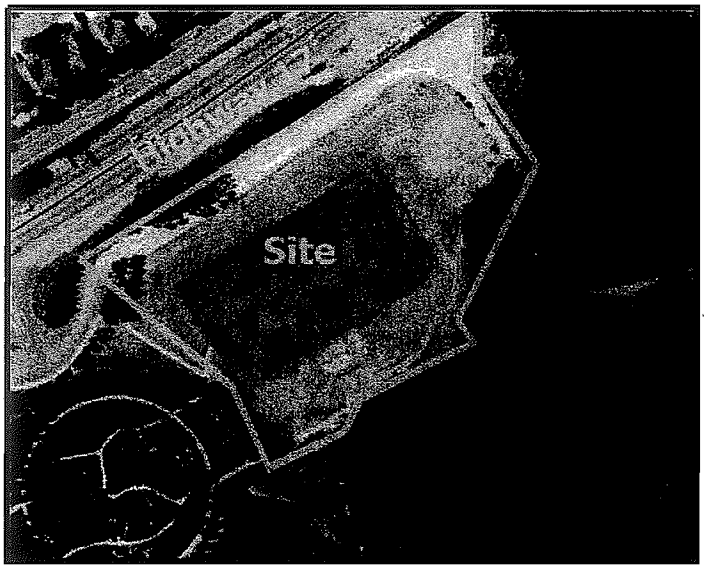
Crime Reported at Target Store, 1415 Main Street, Watsonville from 1/1/2007 - 12/31/2007

Crime Category	Code	2007
	Data Range	
Homicide	1	0
Rape	2	1
Robbery	3	8
Assault (agg & simp)	4	7
Burglary (Commercial & Residential)	5	3
Theft - Larceny	6	96
- Vehicle Burglaries	*459/V*	*9*
Auto Theft	7	4
Arson	8	0
Other Assaults	9	0
Forgery and Counterfeiting	10	2
Fraud	11	5
Embezzlement	12	4
Stolen Property - Buying, Receiving, Possessing	13	1
Vandalism	14	9
Weapons: Carrying, possessing, etc.	15	4
Prostitution & Commercialized Vice	16	0
Sex Offenses	17	0
Drug Abuse Violations	18	8
Gambling	19	0
Offenses against the family and children	20	0
Driving Under the Influence	21	4
Liquor Laws	22	1
Drunkenness	23	1
Disorderly Conduct	24	2
Vagrancy	25	0
All Other Offenses	26	51
Suspicion	27	0
Curfew and Loitering Laws (Under 18)	28	0
Runaways (Under 18)	29	0
Total		205

Person Crimes	1-4, 9, 15, 17, 20,27,29	17
Property Crimes	5-8, 10-14	124
Drug & Alcohol Crimes	**18,21-23**	14
Other Crimes	**16,19,25,26-28**	51
Total		205

Development Opportunity

6.77 ACRES
Santa Cruz County
Scotts Valley, CA



- Level, Buildable Site
- One of the last large developable parcels in Santa Cruz County
- Zoned PD (Planned Development)
- APN #024-031-17
- Many amenities adjacent to the property

SHELDON WISEMAN
Commercial Real Estate

JIM WISEMAN
jwiseman@sheldonwiseman.com

STEVEN SHELDON
ssheldon@ sheldonwiseman.com

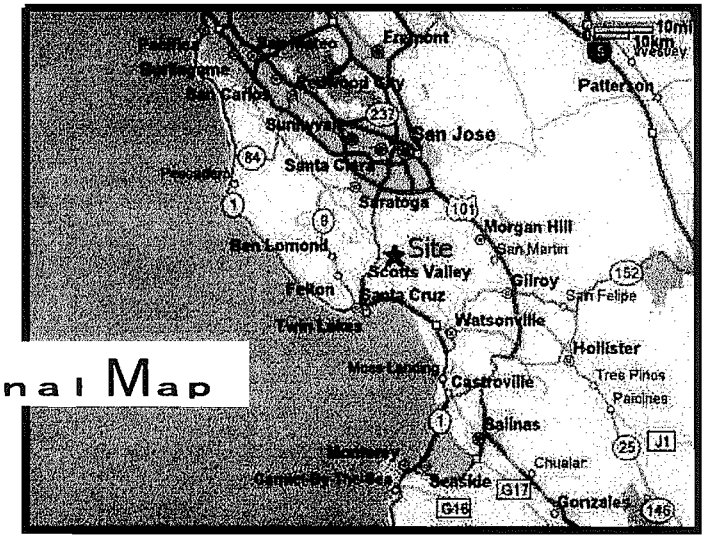
1200 Pacific Avenue
Suite 390
Santa Cruz, CA 95060

Phone (831) 454-9400
Fax (831) 459-7988

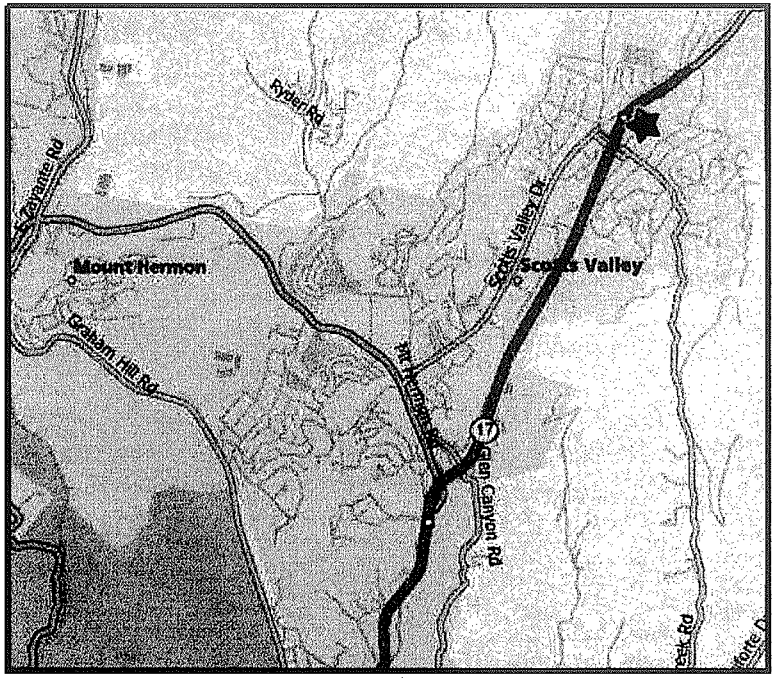
While the information contained herein is deemed reliable, we cannot guarantee its accuracy. All information should be verified.

INTEGRITY ▪ SERVICE ▪ RESULTS

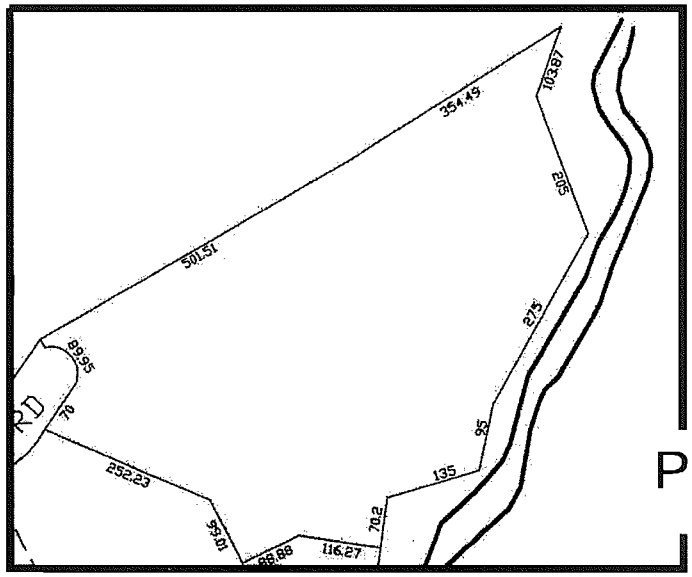
Maps



Regional Map



Local Map



Parcel Map

While the information contained herein is deemed reliable, we cannot guarantee its accuracy. All information should be verified.

INTEGRITY ▪ SERVICE ▪ RESULTS

Taylor Bateman

From: Michelle V Eckert [mveckert@sbcglobal.net]
Sent: Wednesday, April 30, 2008 3:33 PM
To: tbateman@scottsvalley.org
Cc: Kenneth Eckert
Subject: Proposed South Gateway Retail Center

Dear Taylor Bateman,

I am a resident of Scotts Valley and am responding to the request for information on preparing the Supplemental Environmental Impact Report for the above proposed project. First and foremost, I find that the proposal to build a 143,000 square foot retail building and parking area off La Madrona Road between Altenitas Road and Silverwood Drive ludicrious. City Planners should review the Scotts Valley General Plan since this proposal does not conform with that plan and will dramatically impact Scotts Valley's rural charm and character and alter the quality of life for Scotts Valley residents now and in the future. The economic and environmental impacts are many...here are just a few:

*Scotts Valley City Planners should review the General Plan and study the proposed 70 foot tower, concrete footprint, and architecture as the retail project does not conform with the existing structures in Scotts Valley from an **aesthetics and visual quality** standpoint. The Southern Gateway to Scotts Valley would change dramatically. I don't think the architects of the Scotts Valley General Plan had a Large Retail Center in mind as an aesthetic Gateway for visitors to our beautiful city.

*Scotts Valley City Planners should study the General Plan and review whether a 143,000 square foot retail center and parking area conforms to the exisiting infrasture in terms of traffic on La Madrona Road. The proposed store would be open for business from 9am to 9pm and bottlenecks of traffic are bound to occur. **A NEW TRAFFIC STUDY** should take into account rush hour traffic, school hour(s) traffic, holiday traffic, and weekend traffic. For example, as the mother of two Scotts Valley public school children, I travel on La Madrona Road several times a day. With the building of Scotts Valley Corners, there is a noticeable increase of traffic with cars coming off HWY 17 and turning into SV Corners. I have had several "near misses" with cars who don't realize that while La Madrona Road is a 2 lane country road, it is still a main thoroughfare for many residents.

*Scotts Valley City Planners should carefully study the effects of building a large retail building right in between two thriving residential comunities. In this day and age of rising **OBESITY** in our country, I am worried that I will not continue to allow my children to walk and bike ride along La Madrona Road in order to get to school, parks, SV proper, etc... This proposed retail project will essentially cut off this area of Scotts Valley from the rest of Scotts Valley. Residents in these communities would be forced to use their cars (adding to traffic) vs. walking or bike riding into Scotts Valley proper. I don't think the architects of the Scotts Valley General Plan had this in mind.

*City Planners should study the environmental impacts of having a 143,000 square foot retail building and parking garage on a site that currently has a thriving natural plant and animal habitat. Planners should look at how water runoff, flood hazards, soil and habitat deprivation, air and noise pollution, toxic pollution, traffic, etc... impact the wildlife and plantlife and how it will change this area of Scotts Valley forever. City Planners need to research back into the SV General Plan and study whether this is what past, current, and future residents want for our lovely city.

In sum, City Planners need to be progressive in the location of large retail centers. The current trend is to enhance the downtown areas of a city and to encourage a city's cohesiveness by offering retail, leisure, recreational, restaurants, etc... within walking or bike riding distance. This helps to ensure residents are not cut off from one another and helps to retain a city's charm and character. I request that City Planners carefully study the Scotts Valley General Plan which has been carefully written to ensure a safe, healthy, thriving, and aesthetically-pleasing quality of life for all Scotts Valley residents to enjoy now and in the future.

Sincerely,

Michelle Eckert
501 Shasta Park Court
Scotts Valley, CA 95066
(831)440-9039

Taylor Bateman

From: Les Dittert [lesdit@sbcglobal.net]
Sent: Wednesday, April 30, 2008 3:30 PM
To: tbateman@scottsvalley.org
Cc: swestman@scottsvalley.org
Subject: Comments on Scoping of SEIR
Attachments: DittertComments(2)toDraftSEIR.pdf

Dear Ms. Westman and Mr. Bateman,
For your information and use, attached is my input to the scope of the SEIR for the planned Target project.
Sincerely,

Les Dittert
509 Shasta Park Ct.
Scotts Valley, CA 95066
831-440-9973

April 30, 2008

Susan Westman
Taylor Bateman
Planning Department
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

Subject: Gateway South Retail Store

RE: Draft Supplemental Environmental Impact Report
Gateway South Retail Store – Scoping comments

Dear Ms. Westman and Mr. Bateman:

Attached please find my detailed comments and concerns relating to this proposed project. Please incorporate each of these comments and concerns addressed hereunder.

Given the very short time allowed to review the Fehr & Peers Traffic Report impacting this project, I may have some additional comments to the SEIR in the near future.

Summarizing my concerns about this project:

- The proposed Super Target Shopping Center project at the La Madrona Drive site is inappropriate for the City of Scotts Valley.
- This project would have significant traffic, visual, and environmental impacts, which cannot be readily mitigated.
- The aesthetics and visual impacts of this big and tall-box single-floor store with a roofline 56.5 feet above the street, at the Southern Gateway entrance to Scotts Valley is not an appropriate fit for this site. People driving up from Santa Cruz on La Madrona Drive would suddenly face a 426 feet long, 56 feet tall wall with a 10 feet diameter bright red circle marking the entrance of our city.
- The proposed building with it's 70.5 feet tall tower with two 10 feet diameter bright red logos, highly visible from Hwy 17, is inconsistent and incompatible with the County of Santa Cruz's designation of Hwy 17 as a scenic route.
- I believe that the economic impacts of this project would be negative for the existing local economy, and the net financial gain to the city very marginal.

Please feel free to contact me if you have any questions about my concerns or comments.

Les Dittert
509 Shasta Park Court
Scotts Valley, CA 95066
831.440.9973
lesdit@sbcglobal.net

Aesthetics and Visual Impacts

Please address the visual and architectural elements of the project buildings to be located at the Gateway South Entrance to City of Scotts Valley, including the following:

- **How would the 56 foot high elevations (and 70 feet high tower) of the proposed design of the Target Shopping Center compatible with the "Chalet" look of existing developments in the Scotts Valley Corners and the Hilton Scotts Valley.**

- **Please comment on the visual affect and the scale of the proposed size of 155,000 sq. ft. building plus a two story parking structure occupying the full length of the parcel along La Madrona Drive. Please note that the floor and the 30 feet high and 440 feet long walls of the building will be constructed 26 feet above La Madrona Drive on stepped retaining walls a few feet from the sidewalk. This arrangement and the 70 feet high tower (rising above the street) will dwarf all other existing developments in the area and turn Silverwood Drive, a private street to the Monte Fiore residential development, into a back alley of a tall retail store.**

- **Please justify lack of ANY buffer zone between the proposed retail project and an 81 home residential area given the city's published Land Used Plan which specifies the requirement of such buffer zones.**

- **Please explain why would a big-box store at the Southern Gateway entrance to city of Scotts Valley aesthetically appropriate.**

- **Please comment on the visibility from Highway 17, and evaluate the impact and compatibility of the proposed architecture (including the Target Tower that will rise 70 feet above La Madrona Drive and about 100 feet above Highway 17), as shown on the DES architectural drawings and as described in the above, with the July 1995 Final Environmental Impact Report for Gateway South. This document notes that:**

  "The County has designated Highway 17 as a scenic highway, with the policy that the public vistas from these roads are to be afforded the highest level of protection. The County policies call for development to be sited, designed and landscaped to improve the visual quality of the road corridors in urban areas, and to minimize visibility of development in rural areas."

  Compliance with similar policies of The Scotts Valley General Plan should be also evaluated.

Picture Worth A Thousand Words

As they say, pictures can often say so much more than words alone. Below you see the Silverwood Drive entrance to the Monte Fiore development of 81 homes. La Madrona Drive is at the beginning of this entrance. This view is looking east. This entrance to the Monte Fiore residential community would effectively become a back alley. The trees on the left would be displaced as the back of the proposed Target Shopping Center would face west on Silverwood Drive. This bright open street would effectively be in the shadow of the south wall of the store.

Silverwood Entrance to Monte Fiore – Back of the 56 feet high south wall of the proposed Target store would be on left side of the street.

In the following page you see two pictures both looking north to the project site across Silverwood Drive. The top photo show the present condition, and the bottom photo the superimposed wall of the Target building as presented on the current architectural drawings. The building is scaled to the 45 feet height of the PG&E pole at right.
Please note the four retaining walls supporting the 26 feet high earth fill under the building floor, and relative proportion of a full-size passenger car entering Silverwood Drive at right.

LOOKING NORTH ACROSS SILVERWOOD DR. - LA MADRONE DR. IS AT RIGHT SIDE

SAME VIEW WITH TARGET STORE - NOTE SIZE OF CAR AT RIGHT JUST ENTERING SILVERWOOD DR.

Air Quality

Greenhouse Gas Emissions

Please address how this project plans to address greenhouse gas emissions that would result from approval of this Target Shopping Center. The effects that should be addressed include:

-

effects resulting from construction work of the project, including the large amount of earth work (26 feet high compacted fill along La Madrona Drive and 20 feet deep cut at the west wall) required

-

on-going effects from additional traffic generated by this project

-

on-going effects from delivery trucks resulting from this project

-

on-going effects from operation of the building created

-

on-going effects from parking structures created

Note: The Hilton property is in the path of the prevailing winds from this project.

For possible mitigation of these effects, please see:

http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf

The Opportunity Many agencies have questions about how to address global warming through the CEQA process. These may include:

"How do we prepare an inventory of baseline greenhouse gas emissions?"
"How do we model future emissions?"
"What kinds of mitigation must we consider?"

While each agency initially must answer these questions for itself, agencies can learn from each other. With these questions in mind the Local Government Commission will host a series of workshops entitled "CEQA and Climate Change: Partnering with Local Agencies to Combat Global Warming." Speakers will leaders from the Governor's Climate Action Team and modeling experts from around the State. The material covered at each workshop will be similar, but will be tailored to highlight innovative approaches in each region. These aim to provide concrete tips for addressing global warming in CEQA documents, and to foster discussion about experiences so far. Workshop dates are: May 15, Los Angeles May 23, Monterey
Information about the workshops and registration is available at: www.lgc.org

Biology

Please address how this project plans to address Biologic issues related to this site resulting from approval of this Target Shopping Center.

Specifically, please address the following issues:

CEQA compliance measures required of adjoining or other projects in proximity shall be compiled and related to the proposed project. For example, a nature preserve area in the Monte Fiore residential area may have impacts to the native red-legged frog mitigation.

Clearly state, with numerical quantification, thresholds of significance for:

- **a) wetlands impacts**
- **b) grasslands impacts**
- **c) raptor foraging habitat impacts [Note: Golden Eagle in area]**
- **d) loss of bobcat and other small mammal feeding area displaced by this project**
- **e) Mt. Hermon June beetle habitat impacts**
- **f) all other biological, hydrological, and other impacts such as the blockage of wildlife circulation path through the southern edge of Silverwood Drive of the property**

Please provide quantifiable evidence based on data and relevant case studies.

Please quantify numerically the percent cover of native species and native species richness of all grassland types on the property and compare these data with that of other sites with similar soils, slopes and aspects so as to determine the relative rarity of these grassland types.

For concerns in the following areas please see the comments by Mr. Frank Kertai, dated 04/30/2008

Economic Impacts
Hydrology and Water Quality Impacts
Land Use, Planning and Zoning
Impact on Noise
Impact on Public Services,

and in particular, comments under "Transportation and Traffic",
which incorporates a number of my comments and findings based on a preliminary review of the Fehr & Peers, Draft Transportation Impact Analysis, dated 11/09/2007.

Taylor Bateman

From: Jenni Bragar [jbragar@wittwerparkin.com]
Sent: Wednesday, April 30, 2008 3:21 PM
To: tbateman@scottsvalley.org
Cc: 'Bill Parkin'
Subject: RE: Gateway South Retail Store
Attachments: Scoping Comments RLDPAC 4-30-08.pdf

Dear Taylor,

Please find attached the Scotts Valley Responsible Local Development Political Action Committee's comments on the Notice of Preparation for the proposed Target store.

Sincerely,

Jennifer Bragar

WITTWER & PARKIN, LLP
147 South River Street, Suite 221
Santa Cruz, CA 95060
Phone: (831) 429-4055
Facsimile: (831) 429-4057

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Jonathan Wittwer
William P. Parkin

WITTWER & PARKIN, LLP
147 SOUTH RIVER STREET, SUITE 221
SANTA CRUZ, CALIFORNIA 95060
TELEPHONE: (831) 429-4055
FACSIMILE: (831) 429-4057
E-MAIL: office@wittwerparkin.com

PARALEGAL
Miriam Celia Gordon

April 30, 2008

Mr. Taylor Bateman
Associate Planner
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

RE: Comments on Notice of Preparation for Environmental Impact Report for the Gateway South Retail Store

Dear Mr. Bateman:

This office represents the Scotts Valley Responsible Local Development Political Action Committee concerning the above referenced project. The following are comments on the Notice of Preparation for the Environmental Impact Report ("EIR").

My clients are extremely concerned that the City will not adequately address the specific impacts caused by the proposed Target store. A new EIR is needed to address the specific impacts concerning traffic (both on local streets and Highway 17), aesthetics (including, but not limited to, night lighting, signage and views from adjacent development and Highway 17), compatibility with adjacent residential and hotel uses, and wetlands and other biotic issues. Furthermore, the EIR must address how the Project will impact other retail businesses in the City's core. The economic effects will directly relate to physical changes to the environment. The proposed Target store is located on the outskirts of the City and will draw customers away from the City's core. For this reason, the EIR must also consider alternative locations for the Target store within Scotts Valley. Finally, the EIR must address the changes to the Gateway South Specific Plan that are needed and why the previous restrictions on development are no longer necessary.

Thank you for your consideration of these comments.

Very truly yours,
WITTWER & PARKIN, LLP

William P. Parkin

cc: client

Taylor Bateman

From: Dan deGrassi [dan.degrassi@baymoon.com]

Sent: Wednesday, April 30, 2008 2:31 PM

To: 'John Leopold';'Kathy Frandle';'Responsible Local Development';'San Lorenzo Valley Chamber';'Santa Cruz County Regional Transportation Commission';'Santa Cruz Cycling Club';'Scotts Valley Chamber';'Scotts Valley City Administrator';'Steve Robbins';'Sue Roth';'Supervisor Jan Beautz';'Supervisor Mark Stone';'Susan Mauriello';'Susan Silver';'Susan Westman';'SV PRESS BANNER';'Taylor Bateman';'Tom Bolich';'Tom Burns';'William Parkin'

Subject: Additional Comments on Supplement EIR for Proposed Target Store

Attachments: TARGET EIR LETTER 1.doc

Ladies and Gentlemen,
Please consider the attached additional comments for the scoping of the Supplemental EIR for the proposed Scotts Valley Target Store. These are subsequent to comments in my letter dated April 10, 2008
Thank you,
Dan deGrassi

April 30, 2008

City Council
City of Scotts Valley
1 Civic Center Drive
Scotts Valley, CA 95066

RE: Additional SEIR Recommendations for Gateway South Retail Store – Target

Dear Councilmembers,

Please accept the following additional comments and recommendations for analysis in the Supplemental EIR for the Gateway South Retail Store – Target. These are subsequent to comments in my letter to you dated April 10, 2008.

Traffic

1. The traffic study prepared by Fehr and Peers is inaccurate in several areas and needs to be revised.
    a. Traffic counts should be conducted during the school year because there is a very substantial amount of traffic using La Madrona Drive at that time which would significantly increase any counts developed in July or August. This would be traffic accessing Brook Knoll Elementary School, Scotts Valley Middle School and Scotts Valley High School.
    b. Peak traffic counts for a., above, should be conducted during school peak traffic times.
    c. The F&P study incorrectly identifies the Silverwood/La Madrona Drive intersection as being a two-way stop. It is only a one-way stop, there is currently no stop on La Madrona Drive.
2. The impact of increased traffic on La Madrona Drive should be examined in the context of shoppers from the west side of Santa Cruz, including UCSC and Davenport, using La Madrona Drive as an access route (via Graham Hill Road and Sims Road) incoming to the proposed Target store, as well as exiting the proposed store.

Thank you very much for your consideration of these comments. I can be reached at 438-2336 or dan.degrassi@baymoon.com if you have any questions about the recommendations made in this letter.

Sincerely,

Dan deGrassi
4173 La Madrona Drive
Santa Cruz, CA 95060

Cc: Supervisors Jan Beautz and Mark Stone
John Leopold
Susan Mauriello, Santa Cruz County Administrative Officer
Tom Burns, Santa Cruz County Planning Department
Tom Bolich, Santa Cruz County Public Works Department
Steve Robbins, Santa Cruz County Sheriff's Department
Sue Roth, Scotts Valley Unified School District Board of Trustees
Susan Silver, Superintendent, Scotts Valley Unified School District
Kathy Frandle, Principal, Brook Knoll School
Scotts Valley Chamber of Commerce
San Lorenzo Valley Chamber of Commerce
Santa Cruz County Cycling Club
Santa Cruz County Regional Transportation Commission
Santa Cruz Metropolitan Transit District
Responsible Local Development

Taylor Bateman

From: Eckert, Ken [Ken.Eckert@spansion.com]
Sent: Wednesday, April 30, 2008 12:59 PM
To: tbateman@scottsvalley.org
Cc: Eckert, Ken
Subject: Gateway South Retail Store

Taylor Bateman

Associate Planner

City of Scotts Valley

One Civic Center Drive

Scotts Valley, CA 95066

Subject: Gateway South Retail Store

RE: Notice of preparation of a Draft Supplemental Environmental Impact Report

Dear Mr. Bateman,

Please see below for my comments and concerns regarding the Target store proposal (Gateway South Retail Store) in Scotts Valley. I would appreciate it if you would take the time to consider these comments as you go through the decision process concerning the suitability of the proposed development and the impact on the existing developments in the area.

I believe that locating a Target (or any other big box store) anywhere in Scotts Valley is a bad idea due to the drain on city services and impact to the existing small businesses, however, the proposed site at the corners of La Madrona and Silverwood is particularly bad due to the lack of infrastructure for traffic control, incompatibility with existing development, and impact to the adjacent neighborhoods along Altenitas, Silverwood and La Madrona.

1. How will La Madrona Drive (the existing 2 lane rural road) handle the added traffic and what impact will it have during peak traffic hours that overlap with dropping off and picking-up kids at local schools? An adequate traffic study should comprehend peak traffic patterns while school is in session.

2. How will the city of Scotts Valley ensure that Silverwood Drive does not become a "turn-around" for people leaving Target (those who want to turn left, but turn right to avoid the long lines turning left).

3. Why would Target not have to conform to the same architectural "style" as the Hilton or the Scotts Valley Corners development? The current proposal is completely incompatible with anything in the area.

4. Locating a big box retail store adjacent to a thriving neighborhood will significantly impact the quality of life and property values for those of us who live in this area. How will the City of Scotts Valley mitigate these concerns (specifically the neighborhoods along La Madrona between Mt. Hermon and Simms Rd, the neighborhoods along Altenitas and the Monte Fiore neighborhood off of Silverwood)?

5. How will the city ensure that this development will be compatible with existing developments in the area (as specified in Scotts Valley's Land Use Plan – specifically sections LO24/LO25/LO26/LO31/LO37/LO38/LO41)?

6. The Monte Fiore development specifically set aside "wetland" areas to ensure the wildlife would continue to thrive. How will covering 75% of the flat land on the proposed site with concrete allow for proper drainage and how will this impact the existing wildlife in the area?

7. How will the Scotts Valley Police department handle the added crime associated with the new store?

8. What impact will this development have on existing businesses in Scotts Valley?

Please feel free to contact me if you have any questions about my comments. I appreciate your time and consideration.

Sincerely,

Kenneth J. Eckert

501 Shasta Park Ct.

Scotts Valley, CA 95066

Cell: (408) 203-0409

Taylor Bateman

From: Susan Westman [swestman@scottsvalley.org]
Sent: Wednesday, April 30, 2008 12:02 PM
To: tbateman@scottsvalley.org
Subject: Fw: Fwd: Economic research regarding Scotts valley Target
Attachments: text; text

From: Jim Reed [mailto:jimreedsv@gmail.com]
To: Susan Westman [mailto:swestman@scottsvalley.org]
Sent: Tue, 29 Apr 2008 10:13:09 -0700
Subject: Fwd: Economic research regarding Scotts valley Target

Hi Susan -- FYI, e-mail below with some fairly lucid comments on the economic analysis. Just wanted you to have so we can address every possible reasonable question that people raise. Thanks, Jim

---------- Forwarded message ----------
From: **zzotcase** <zzotcase@sbcglobal.net>
Date: Apr 29, 2008 10:03 AM
Subject: RE: Economic research regarding Scotts valley Target
To: Jim Reed <jimreedsv@gmail.com>

Hi Jim,

Thanks for your reply – no apologies necessary!

Mr. Dewes' response, so far, has been: "Thank you for your thoughts and insight. A more in-depth look at the variety of topics you raised will be addressed in the Supplemental Environmental Impact Review and Independent Economic Impact Analysis. We will also continue to work closely with the City of Scotts Valley to ensure we meet your city's unique needs". It is interesting to Google Mr. Dewes and read his responses regarding Target projects built elsewhere, and his responses to questions about Target jobs and pay.

I asked Question #1 because in reading the EIR and the City of Davis Economic Impact Study for their Second Street crossing project, I noticed that no case studies or peer-reviewed research are presented to bolster the assumptions and conclusions of either report. As such, both documents are speculative analyses – and because their focus is for a limited time period (ten years), I believe they do not reflect the true costs to a municipality of supporting a Target or any other large-scale retail project. One example would be the cost of maintaining infrastructure that has had to be put in place to support a store. For example, consider the costs of maintaining the roadway improvements (paving, lighting, signals, pedestrian walkways, and so forth) which will experience higher wear (at 4500 vehicles, including semis, that's 1.64 million cars that did not use those roads prior) than previously. If an EIR looks forward ten years but the city or county has to repave in twelve year cycles, we will not be looking at the true support cost. I don't know what the wear cycles for roads are. But an EIR should look forward far enough to include the first really big infrastructure repair bills.

Question #2 arose because Target has done some highly varied projects all over the US, and I believe the community and the Council can strongly guide the design process of the store. Both the Hilton and the small shopping center across the street are interestingly designed, detailed, and well-landscaped developments that do not overwhelm their surroundings. The proposed Target falls flat, in comparison, and does not meet the criteria of the Gateway South Specific Plan. They can do better. If a Target does get built there, it should complement the surroundings far better, and I believe the Council has a lot of sway over the design.

However, we won't get a better-fitting project unless we ask for it, and I don't think Mr Dewes will point out the variety of their work elsewhere – it's up to us to discover it and mold the design.

Regards,

Doug Wood

From: Jim Reed [mailto:jimreedsv@gmail.com]
Sent: Monday, April 28, 2008 11:12 PM
To: zzotcase

Subject: Re: Economic research regarding Scotts valley Target

Hi Doug -- apologies for my belated response. I'm expecting the concerns behind your point #1 below will be assessed by the economic impact report the city will be asking for on this project. Even if it's not peer-reviewed, it should be an extremely broad look at how Target will effect our community economically. Question #2 is a good one that I hope/expect will be discussed in this process, and I hope you'll pass along any responses you get from Mr. Dewes to this or any other of your questions.

Regards,

Jim

On 4/22/08, **zzotcase** <zzotcase@sbcglobal.net> wrote:

Dear Mr. Dewes,

Thank you for your reply. I understand that you travel, and will be out the office next week. I still look forward to an answer from you regarding the three questions I posed in my email, none of which are addressed, to my knowledge, in any Supplemental Environmental Impact Review or Independent Economic Impact Analysis regarding a Target being built elsewhere. To reiterate, my questions are:

1. Can you direct me to any peer-reviewed research that would show positive economic effects for large-scale retail in local and regional economies, or before-and-after case studies that examined the economy of a town prior to and after the arrival of large-scale retail?

2. What criteria would Target use to consider alternative ideas to single-story warehouse design, such as a two-story design to increase setbacks and provide wider vegetated buffer zones, and/or including green roofs or solar power?

3. Has there been any attempt by Target or any large-scale retailer to include a section in all their stores dedicated to US and locally-produced goods in their stores?

Thank you,

Doug Wood

From: John.Dewes [mailto:John.Dewes@target.com]
Sent: Monday, April 21, 2008 11:52 PM
To: zzotcase
Subject: RE: Economic research regarding Scotts valley Target

Dear Mr. Wood,

I apologize for the delay in responding – I was out of the office last week and will be this week as well.

Thank you for your thoughts and insight. A more in-depth look at the variety of topics you raised will be addressed in the Supplemental Environmental Impact Review and Independent Economic Impact Analysis. We will also continue to work closely with the City of Scotts Valley to ensure we meet your city's unique needs.

Thank you.

John Dewes | NCARB |

⊙**TARGET** | Regional Development Manager | Real Estate Department |

1000 Nicollet Mall, TPN-12i | Minneapolis, MN. 55403 |

612.761.1558 office | 612.761.3728 fax | john.dewes@target.com |

From: zzotcase [mailto:zzotcase@sbcglobal.net]
Sent: Saturday, April 19, 2008 9:23 AM
To: john@scottsvalleytarget.com
Cc: Taylor Bateman
Subject: Re: Economic research regarding Scotts valley Target

---

Mr. Dewes, I previously sent the following message to the email address listed on your business card. Please pardon the duplication – if that indeed has occurred.

Hello Mr. Dewes,

It was a pleasure meeting you at the Scotts Valley City Council meeting yesterday. I have some questions regarding Target in general and the Scotts Valley proposal in particular.

1. It's easy to find plenty of peer-reviewed research on the web regarding the negative economic effects of large-scale retail development. I have also found some research that points to potentially positive effects, but primarily with respect to global economies; i.e. the provision of work (albeit not to Western standards) in foreign countries. Can you direct me to any peer-reviewed research that would show positive economic effects for large-scale retail in local and regional economies, or before-and-after case studies that examined the economy of a town prior to and after the arrival of large-scale retail?

1. Target has built a variety of store designs to accommodate community standards. I note that there are solar installations on some buildings, non-polluting membrane roofs on others, and even "living roofs" covered with soil and planted with sedum, on a few. There are facades designed to mimic the varying roof heights and store fronts that would be found in an urban setting. The proposed Second Street Crossing Target development in Davis, California, has included 200 foot-plus setbacks, including tree-planted, landscaped berms to better isolate the store and parking areas from the neighboring community. In other words, from what I've found, Target exhibits some flexibility and has begun to integrate more environmentally conscious design in their stores. Could you direct me to other alternative Target installations nationally and globally? What criteria would Target use to consider alternative ideas to single-story warehouse design?

My preference would be that the Target replace the Kmart complex downtown, which I recognize may not be possible, due to current ownership and/or lease agreements. Nevertheless, that's where a Target should go, based on the City's General Plan, and in order to most fully complement the planned Town Center. That location would also supply the most reasonable access to the store with regard to traffic and public safety needs. A two-story Target at that location, with a tiered parking garage, would satisfy Target's desire for retail space.

However, if the Target were built at the La Madrona site, it could follow precedents Target has set for itself in other locales. It could be two stories, to reduce the building footprint, and to permit far more generous setbacks from La Madrona and Silverwood drives, and the Hilton Hotel. If the Target tower is intended to be visible from SR17 and the Mt Hermon intersection, a two-story building would achieve the same goal, while providing deeper buffer zones to mitigate the close-range aesthetic, and long-term environmental impacts of the store. It could incorporate rainwater capture systems (with potentially vast storage tank capacity under the parking area) to provide landscape irrigation and to reduce aquifer recharge impacts. It could include a solar installation to defray power use. The second story of the parking area could be roofed, to minimize production of polluted groundwater, and that roof could also be used for rainwater and solar capture. These ideas would obviously cost more that the proposed one-story structure. However, Target claims their buildings are constructed for a fifty-year lifespan. In view of the potential longevity of the stores and their high profitability I think Target could afford, and should build, the most resource-efficient and minimal impact installations it can, in any locale, and by doing so show that it is possible to be even more than the extraordinary retailer it has become, particularly in contrast to the blunderbuss approach taken by Wal-Mart, which appears to be generating increasingly considerable backlash. Target has shown itself to be enormously successful and has an enviable record of charitable contributions. Currently, in some locations Target exercises flexibility and a willingness to work with communities concerning design. They could further differentiate themselves from other retailers by building markedly more "green" installations everywhere a new store is built.

Lastly, I have a question regarding the marketing side of large-scale retail. Economic data shows unprecedented displacement of US manufacturing by foreign sourcing of all manner of goods. That displacement has brought tremendous economic change to the poor and middle class throughout the US. It has increased our dependence on oil to transport goods from further away, causing more pollution, and has accelerated the environmental degradation of other countries by production not regulated to the extent US manufacturers were or are. Our growing awareness of the global ramifications of industry and commerce is changing our perceptions of what we need to do to ensure a viable future for ourselves and future generations. Large-scale retail has the power to affect an enormous shift in the sourcing of goods, and I would suggest that one market they have completely overlooked to date is that for US-manufactured goods and locally-produced inventory, admittedly, at this point, a niche. Target could have a section in all their stores dedicated to US and locally-produced goods. Has there been any attempt by Target or any large-scale retailer to include such a niche in their stores? If Target would lead, the US could regain a small portion of that manufacturing economy – and the skilled, higher-paying jobs that accompanied it. If Target would lead, supporting some local production in every region across the US, imagine the impact on local, regional, and the US economy. Imagine national support Target might garner, particularly if others did not follow suit.

If you could, would you please comment on my suggestions and questions?

Thank you,

Doug Wood

Taylor Bateman

From: Matt Johnston [PLN458@co.santa-cruz.ca.us]
Sent: Wednesday, April 30, 2008 11:48 AM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

Hello Mr. Bateman.

The County of Santa Cruz has the following comments regarding the scope and content of the Supplemental EIR proposed for the development on La Madrona Drive;

1. Please ensure that the traffic study/SEIR considers the potential impacts to La Madrona and El Rancho intersections that may occur when vehicles leaving the Target store during back ups on Highway 17 use these County roads to travel south. We would expect that motorists will be able to see when Highway 17 is backed up and not moving and choose to take another route. This may occur on weekdays during the summer, but it is usually a pretty normal situation during the summer weekends which means they should look at Saturday peak traffic. We would expect to see the traffic study/SEIR discuss possible mitigations to these potential impacts. Please also make sure that the traffic data collected is obtained during a standard weekday when local schools are in session.
2. Please ensure that the SEIR updates the EIR's section on potential impacts to protected biotic species, including marsh sandwort, deceiving sedge, and swamp harebell.
3. Please ensure that the SEIR considers impacts from development stormwater runoff on Carbonera Creek.
4. Please ensure the SEIR considers water availability, conservation and potential for groundwater recharge.

We look forward to reviewing the draft EIR upon it's release. Thank you.

Matthew Johnston
Deputy Environmental Coordinator
County of Santa Cruz

Taylor Bateman

From: Mark Griffiths [m.griffiths@sbcglobal.net]
Sent: Wednesday, April 30, 2008 10:16 AM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

Mr. Bateman,

I am attaching the following letter for your perusal. I realized, after sending this to Mayor Johnson, that you would be the more appropriate recipient. While the content is not specific to the SEIR for the Target Store proposal, it accurately reflects the general attitude held by the residents of those communities closest to the proposed development site.

I appreciate you taking the time to read this letter. With any luck, the sentiment, while not knew to you I am sure, will encourage you and your peers to reflect on the potential ramifications of approving this project, especially in light of the intensity of the public outcry.

Regards,

Mark Griffiths

Mayor Johnson,

I am a resident in Monte Fiore and vehemently oppose the proposed Target Store project. My reasons are many and they are shared by the majority of homeowners in the general vicinity of the proposed site on La Madrona Drive.

Unfortunately for those of us who have chosen to live in the Monte Fiore and Manana Woods neighborhoods, the building of this monolith will greatly, and negatively, impact our day-to-day lives. A Target Store in that location will have a swift and likely significant influence on our ability to fully enjoy and use our immediate environs as we have become accustomed and for which we have paid a premium.

The development will undoubtedly reduce the resale values of our homes, or, at the very least, stunt the growth. The store's existence will cause the obvious problems, i.e., traffic congestion, noise pollution, increased garbage, potential crime rate increases, etc., but will also reduce available open space for the local fauna (despite the "generous" portion left alone on the unbuildable upper slopes of the property). Moreover, there will be the inherent safety concerns that would come along with greater auto and truck traffic. Specifically, our children and family members frequent that particular section of La Madrona Drive while walking to school or exercising their dogs. There are bound to be accidents that, absent the store's existence, would otherwise not occur.

It is mystifying that the City of Scotts Valley and its council members would seek to push this project through given the proposed location. I am well aware that there are other potentially suitable locations for the store within the city limits. There are lots on Mt. Hermon Road and on Scotts Valley Drive, which are more centrally located and where a Target Store would be less intrusive on a fair percentage of the city's populace. While I am quite certain there must be issues with these parcels, it does not automatically designate the La Madrona site as the front-runner.

The city has those two existing thoroughfares along which most of the commercial development is located. To propose and authorize the construction of what would be far and away the largest retail store in our valley, if not the entire county, on the La Madrona site is assinine. We are not blind to the fact that Target coming to our city might boost the local economy by creating jobs. It is not lost on me or my neighbors that Target intends to give back to the community in one fashion or another. However, the fact remains that the primary reason for the proposed development is financial.

Target, as a company, stands to gain where other longstanding businesses, including but not limited to Longs Drugs, Walgreens, Nob Hill, and Safeway, stand to lose. The ultimate goal is profit, and at any expense. To sugar coat it with claims about the unobtrusive architecture and a new redwood grove is both ridiculous and insulting. The store could be constructed of invisible materials, but there would still be the plethora of attendant issues that would inevitably result in the deterioration of our ability to enjoy the tranquility and safety our neighborhoods provide and for which we have worked so hard to maintain.

I do not oppose a Target Store coming to Scotts Valley. The chain provides many quality goods and services at reasonable prices. I would shop at a Target Store were one to be built within the city limits, but only if it was placed in an appropriate location. If the City grants the purchase of the La Madrona property and construction begins, I will seriously consider moving my family from our home. At the very least, we will not patronize the store and we will encourage others to do likewise.

If the City Council and others choose big retail over its longtime residents' very serious concerns, then I, for one, and I am not alone in this way of thinking, would rather leave the area and take my tax dollars with me. I would be extremely disappointed to find that topping off the City's coffers ranks higher on the Council's priority list than the citizens it serves.

I hope you, Mr. Mayor, and your fellow council members do not fall prey to short-sightedness. Your roles as elected officials require your objectivity. Please keep your ears and minds open and do not be distracted from making well-informed and reasonable decisions going forward. With this said, perhaps you and the powers-that-be would consider the following suggestion as a very viable alternative for the parties involved.

Given that the property that sits between the Hilton Hotel and the entrance to Monte Fiore is zoned commercial, it would seem it is destined to be developed; if not now, sometime in the near future. If such is the case, perhaps the City and the current property owner would consider another option for developing that parcel of land.

What about a very reasonable alternative such as a development that would compliment the surrounding area, not detract from its beauty or serve to negatively impact the resale values of nearby homes -- a commercial/retail development more akin to the design of the neighboring Scotts Valley Corners and the impressive and tasteful facade of the hotel; perhaps a combination of higher-end retail stores, businesses and restaurants. It could be conceivable, too, to consider a two-story development with residential space on the upper floor.

Frankly, I am quite certain that the local population would find such a proposal much easier to swallow than the current one. Find another location for the Target Store and, with the owner's help, market the more up-scale and neighborhood-friendly model to local businesspeople. I think you would discover that such a plan would garner infinitely more support from the citizens of Scotts Valley and local businesses. Likewise, many of the problems inherent with the construction of the proposed abomination would be alleviated, if not largely eliminated.

I strongly believe that much more thought should be exercised when it comes to the proposal currently

under consideration. I have no objection to a Target Store finding a permanent home in Scotts Valley, but a decision to select and develop the La Madrona site would be gravely unfortunate. I have no doubt that you, Mr. Mayor, the City Council members, the Target development group, and other pro-development entities can see the logic and rationale behind the opposition's arguments. It remains to be seen whether or not you have your city's and your citizens' best interests in mind.

Sincerely,

Mark Griffiths
156 Silverwood Drive
Scotts Valley

Taylor Bateman

From: laurakgonzalez@comcast.net
Sent: Wednesday, April 30, 2008 8:54 AM
To: tbateman@scottsvalley.org;kpowell@loganpowell.com;rlj12@comcast.net;cliffbarrett1@sbcglobal.net;seajems@pacbell.net;dene@bustichi.com;jimreedSV@gmail.com
Subject: Re: Legal Question & Input For Target EIR
Attachments: Gonzalez Input for Target EIR.doc

Dear Mr. Bateman, Ms. Powell and City Council Members,

Please find attached a legal question regarding the City's madate to consider the Target proposal as well as my input for the EIR.

Sincerely,
Laura Gonzalez

Laura Gonzalez
107 Elena Dr.
Scotts Valley, CA 95066
(831) 438-0268
laurakgonzalez@comcast.net

April 28, 2008

Dear Mr. Bateman, Ms Powell and City Council Members:

I am very concerned that tax dollars are being used to pursue a development proposal that is outside the scope of the lot's current zoning and violates so many key line items in the Scotts Valley General Plan. Paid staff in many government agencies—Scotts Valley City, Santa Cruz County, CALTRANS, Fish and Game, etc.— will be spending needless hours, and many tax dollars, reviewing the proposed EIR. Target Corporation is also investing hundreds of thousands of dollars and could have a good case for suing the City for allowing it to make such an investment on a proposal the City already knows violates major tenants of its General Plan.

Please explain, with specific legal references, why the City is mandated to consider the Target proposal, given that the lot is NOT zoned SC and the scope of the project violates the General Plan in the many ways described below.

Please explain how the City can legally justify putting Target on a lot zoned CS, when the smaller Kmart is on a lot zoned SC.

General Plan Mandate #1: Concentrate Commercial Land Uses

Commercial land uses should be concentrated along the urban core of the City. (LP-45)

The Target store would be the largest retail establishment ever built in Scotts Valley and the City's General Plan requires it to be placed in or alongside the commercial center of Scotts Valley, i.e. Mt. Hermon Rd. near King's Village and the Safeway Center or Scotts Valley Dr. with it's long stretch of commercial businesses.

The environs of Gateway South is not the "urban core of the City". Historically, the area has always been rural and suburban. Residences in Manana Woods and along La Madrona Rd. are some of the oldest in the Scotts Valley area. The majority of the surrounding area is zoned as rural, low-density residential and estate, with only a small strip by the freeway rezoned for commercial service and professional use (**NOT commercial shopping center use**). Although the development of the Hilton and Scotts Valley Corners has modified the rural character of the area, the area is still country-

suburban. The surrounding neighborhoods have had negative traffic impacts because of these developments, but have been able to absorb these businesses without a radical change of atmosphere or lifestyle. Another office building or some small retail businesses could fit in well with the neighborhood. **However, the proposed new development is of a scale and character that is completely unsuited to its environment and will irreparably damage the quality of life in these neighborhoods.**

General Plan Mandate #2 Protect Against Negative Impacts

*LP-25 The City **shall prohibit** new land use activities within and in close proximity to residential zones that **generate undesirable impacts which cannot be mitigated**.*

*LA-26 Through the environmental and permit review process, the City shall identify projects which could **impact residential zones in a negative manner**, and if such impacts cannot be mitigated, **the City shall deny the project**.*

*LO-37 **Ensure compatibility** between commercial development and surrounding land uses.*

*LP-38 Land uses located adjacent to commercial uses should be **protected from excessive noise, unsightliness, offending odors and other nuisances.***

The City could simply use common sense to determine that this project is highly inappropriate. We do not need an environmental impact report to tell us that the Target superstore will "generate undesirable impacts which cannot be mitigated". How can the City mitigate the following impacts?

1. **Aesthetics**
   THE prominent landmark visible from Highway 1 will be Target. The sheer size of the 155,000 sq. ft. building and 44 ft. tower (70 ½ ft. as seen from La Madrona Dr. and higher than allowed by city ordinance) is out of character with both the surrounding environment and as a welcome to our city. Scotts Valley will become known as "the place where that big Target is". Clearly Target wants this location so it can be seen from the freeway, but Target's objective is in opposition to the City's objectives to:
   1. *Establish, maintain and enhance the scenic beauty of those roads, streets and/or highways which are significant to the planning area, and to enhance the aesthetic and visual qualities of those portions of the planning area visible from major transportation corridors. (CG169*
   2. *Encourage the preservation and enhancement of the scenic beauty of all roads, streets and highways within the Planning Area as part of any road improvement or construction project. (CO-170)*
   3. *Prohibit the placement of unsightly advertising and street and directional signs along roadways.* (CP-180)

Scotts Valley needs and wants a City Center. The Target development, on the edge of town, is **urban sprawl**. First the City allowed the Hilton and Scotts Valley Corners, despite neighborhood opposition, arguing in the 1995 Gateway South EIR that the mix of residential and CS would result in LESS TRAFFIC because CS businesses would provide services to the surrounding residents. Although these developments clearly brought more, not less traffic, at least the current businesses do serve the **local residents** and fit in the CS designation. If you push Target through, you open the floodgates for classic urban sprawl and a serious challenge to Highway 17's designation as a scenic highway. What could come next? Annexing the county properties along La Madrona Dr. and building an Outlet Mall? The General Plan is supposed to protect us from urban sprawl: *The City shall discourage scattered development or urban sprawl which may be detrimental to the City's visual beauty and increase significantly the cost of providing city service. (OSP-381)*

2. **Property Values**
   It is well-established that residential properties surrounding big-box retailers lose value. Considering any development that will lead to reduced property values seem incredibly insensitive at a time when so many people are already struggling with reduced values and are unable to sell their homes or refinance. Furthermore, the drop in property values in these well-established neighborhoods will likely have a ripple effect on housing values in all of Scotts Valley as comparables are lowered.

3. **Traffic Congestion and Safety**
   The impact of Target traffic is staggering and frightening, particularly on two-lane La Madrona Dr.

- The proposed development puts tremendous pressure on the Santa Cruz County section of winding two-lane La Madrona Dr., and also adds traffic to Sims Rd. and Graham Hill Rd. First, there is nothing to prevent departing Target patrons from making an (easier) right-hand turn and traveling south on La Madrona Dr. to seek an alternate entrance to Highway 1 S or a connection to Graham Hill Rd. Second, many Santa Cruz residents may choose to travel to Target via. Graham Hill Rd., Sims Rd. and La Madrona Dr. **It seems unlikely that narrow, winding, pot-holed La Madrona Dr. can accommodate this traffic.**

According to the General Plan, you MUST work with Santa Cruz County on this issue. *Maintain the City street and highway system to integrate with the road system already established by Santa Cruz County. The Public Works Director shall ensure a coordinated system design. (CA-142)* **Did the County receive the draft traffic report at the same time the developer and Target did? How have you communicated with the County about this critical issue?** If the County doesn't think La Madrona Dr. can accommodate this traffic, this is a deal-breaker for the project and we should save Target's and the public's money on the EIR.

- The only way to enter Scotts Valley from my neighborhood is to turn left from the stop sign at Altenitas on to La Madrona Rd. According to the draft traffic report, the level of service at this stop sign will degrade to "F" at peak times. In contradiction to any rational thinking, the report proceeds to say that this "F" degradation will have not have any significant impact. Let me highlight the impact: **Manana Woods residents and Hilton patrons will be unfairly trapped in our own neighborhood, denying safe and efficient travel as established in the General Plan:** *The present street and highway system shall be improved and maintained to provide **safe and efficient travel** between various parts of the planning area and **to individual properties.** (CP-123)*

- La Madrona Dr. serves the needs of many, many residents who travel between Mt. Hermon Rd. and Sims Rd. **Please ensure that the EIR includes a traffic sensor on La Madrona Dr. DURING THE SCHOOL YEAR to determine what are local peak times. Local peak times include school starting and ending times and not just evening rush hour.** La Madrona Dr. is the most direct route between Brook Knoll Elementary and Scotts Valley Middle School. Since the elementary and middle school dismissal times are the same, many people depend on La Madrona Dr. to reach SVMS as quickly as possible after picking up younger children at Brook Knoll. The proposed development will burden many Scotts Valley families with congestion and delays and will prevent them from picking up their Middle School students on time. *The City shall identify and improve congested and critical traffic locations. (CP-146)*

- Some SVMS students from the La Madrona, Manana Woods and Monte Fiore neighborhoods walk and bike to school. The drastic increase in traffic, and particularly in non-local traffic that is not aware that this is primarily a residential setting, **will make it more dangerous to walk or bike to school.** *The City shall ensure that school children are provided safe pedestrian and bicycle travelways to and from schools. (PSP-548)*

- To me, one of the saddest degradations of my and my neighbor's lifestyle would be the loss of a safe and aesthetically-pleasing place to bike, walk and jog. Many people bike, walk dogs and push strollers or jog along La Madrona, through Monte Fiore and through Manana Woods. Although there is traffic along La Madrona, it is generally local traffic: mostly people who drive with respect for their neighbors. **The proposed development will disrupt the pedestrian access between the communities of La Madrona Rd., Monte Fiore and Manana Woods, disconnecting and isolating these neighborhoods.** *In order to reduce automobile related pollution, the City will plan for and encourage the use of transit, bicycles and walking as alternatives to automobile travel. (OSP-357)*

4. **Crime**
   The City needs to assess the potential impact of increased crime in Scotts Valley. Big box stores like Target attract criminals. A concentrated increase in crime in the proposed location unduly jeopardizes the surrounding neighborhoods, which will have to worry more about the safety of their persons and properties. Fleeing criminals might also pose a hazard if they attempt to escape through Monte Fiore or Manana Woods, both of which have no back outlet. Fast-moving vehicles are particularly dangerous on La Cuesta Dr. because it is a very narrow street. *The City shall require that all new development proposals and/or changes in land use be referred to the police department for law enforcement evaluation and to the fire department for evaluation of fire and life safety issues. (PSP-533)*

5. **Environmental Impacts**
   The proposed Target brings up many environmental concerns:
   - increased air pollution from more automobile traffic
   - increased noise pollution from automobile traffic and delivery trucks. The surrounding residential area will be subject to early morning (deliveries before opening at 8:00 a.m.) and evening noise (Target stays open until 10:00 p.m)
   - increased nighttime light pollution. The surrounding neighborhoods will lose some clarity in the night sky because of the additional security lights surrounding Target.
   - All the geological, erosion and groundwater concerns set forth in the 1995 Gateway South EIR still apply.
   - The lot is in an environmentally sensitive area. There are June Beatles in Manana Woods.

I urge the Scotts Valley City Council to focus on serving the needs of its own area residents. The Town Center has so much support because it is a QUALITY idea that sets us on track for a bright future. Instead of letting a big-box store use our community to draw customers on and off the freeway for a one-stop-shopping experience, let's serve our own residents and draw people INTO our town with our aesthetics and our many retail choices. We need a good quality book store. We need several clothing retailers. We need quality shoe stores. We need more restaurants. It is completely unrealistic to think that Scotts Valley can draw such businesses to the center of town with a megastore at the edge of town. We cannot have both Target and the Town Center.

The surrounding residents would welcome an assisted living facility or office building on this lot. A retail center that fits within the CS designation, with a mix of small businesses and restaurants would also be welcome. What about a craft store as an anchor? Beverly's is the only full-size craft store in the county and many Scotts Valley residents make frequent trips there. What about a sporting goods store? Scotts Valley is a very sporty town and residents have to travel to Capitola for sporting goods. What about Trader Joes? Many, many Scotts Valley residents travel to Santa Cruz every week to shop at Trader Joes.

It must be said that the price of the land for the Target proposal seems very high compared to other commercial parcels, such as where the Hilton was built. At the moment, Target is probably one of a very few corporations who could recoup costs on such an expensive parcel. Therefore, the landowner, the developer and Target have a very high incentive for this development to be approved. The City Council must use extra caution to stay objective stewards of the public trust and avoid any appearance of responding to pressure from the private enterprises involved in this real estate and development transaction. For example, at the Brook Knoll Walkathon, Mayor Johnson responded to my traffic concerns by saying that I should put up with the Target traffic because he has high school traffic near his residence. His response inadvertently implied that the Target proposal was a done deal. A more appropriate response from a public servant would be to say that the City is very concerned about traffic nuisances to residents. If he feels that the high school traffic issues in his neighborhood were not properly evaluated, he should express extra determination that the City do a better job with this project.

I urge the City Council to be visionary rather than reactionary. Let your legacy be your courage and intelligence as you work for the ultimate good for our community rather than reduced property values, lost local businesse, heavy traffic congestion and being known to the world as the non-descript town with the big Target you can see from the freeway.

Sincerely,

Laura Gonzalez

Taylor Bateman

From: Kerrie Pipal [kerriekayaker@yahoo.com]
Sent: Wednesday, April 30, 2008 8:08 AM
To: tbateman@scottsvalley.org
Cc: swestman@scottsvalley.org;mfodge@scottsvalley.org;bstevens@scottsvalley.org
Subject: Gateway South Retail Store (SEIR comments)

Mr. Bateman -

I am writing to provide a few comments regarding items that I feel should be included in the Supplemental Environmental Impact Report for the proposed Gateway South Retail Store.

Carbonera Creek runs just east of Highway 17 and is directly across the highway from the proposed Target store development. Carbonera Creek supports a population of steelhead (Oncorhynchus mykiss) which are the anadromous form of rainbow trout. This population of steelhead is included in the Central California Coast Distinct Population Segment which is listed as "Threatened"
under the Federal Endangered Species Act (ESA) (NMFS 2006). Groundwater extraction in Scotts Valley has a significant effect on stream flow and water levels in Carbonera Creek, which in turn has a direct effect on steelhead populations and juvenile steelhead rearing. Water quality is another important factor in maintaining sustainable steelhead populations. Fish need clean stream water to feed, grow and reproduce. With these steelhead populations already in trouble, I do not see how further developing an area (leading to increased groundwater extraction and more polluted run-off) adjacent to a stream considered Critical Habitat (NMFS 2005) is going to help rebuild the Carbonera Creek steelhead population.

1. Please include effects of increased groundwater extraction from the proposed Target store development on the ESA-listed population of steelhead in nearby Carbonera Creek.

2. Please include impacts on Carbonera Creek steelhead populations from increased run-off from the parking lot and increased truck and vehicle traffic on Hwy 17 and La Madrona drive due to the proposed Target store development.

Thank you for your consideration of these comments.

Sincerely,
Kerrie Pipal
6023 Scotts Valley Drive

Reference:
National Marine Fisheries Service (NMFS). 2005. ESA critical habitat designation regulations for central California coast steelhead. Federal Register [Docket No. 70FR52488-52627; September 2, 2005].

National Marine Fisheries Service (NMFS). 2006. Endangered and Threatened Species: Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead. Federal Register [Docket No. 051216341-5341-01; I.D. No. 052104F; January 5, 2006].

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_ylt=Ahu06i62sR8HDtDypao8Wcj9tAcJ

Taylor Bateman

From: Veronica [gerbs-sv@pacbell.net]
Sent: Wednesday, April 30, 2008 7:13 AM
To: 'Taylor Bateman'
Cc: 'Lawrence Fogel';'Jackie Heald';'Deborah A. Muth';'Todd Ritchie';'Michael Shulman';'Steve Ando';'Chuck Comstock';'Tracy Ferrara';'Kirsten Powell';'April Wooden';'Stephany E. Aguilar';'Cliff Barrett';'Dene Bustichi';'Randy Johnson';'Jim Reed'
Subject: RE: Gateway South Retail STore

-Subject: Gateway South Retail STore

April 30, 2008

Taylor Bateman
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066
831.440.5633

Subject: Gateway South Retail Store

RE: Notice of Preparation - Draft Supplemental Environmental Impact Report
Gateway South Retail Store

Mr. Bateman:

I believe this proposed Target Shopping Center project is a bad idea for the City of Scotts Valley and its citizens. This project would have significant traffic, water and environmental impacts which cannot be readily mitigated.
In addition, I believe the net economic impacts of this project would be negative for both the local economy and the finances of the city. This city, and its citizens, should not be subjected to subsidizing a multi-billion dollar international retail operation. Also, purely from an aesthetics and visual impacts perspective, a big-box store at the Southern Gateway entrance to Scotts Valley is not an appropriate fit for this city. Finally, a Big-Box Store highly visible from Hwy 17 is inconsistent and incompatible with the County of Santa Cruz's designation of Hwy 17 as a scenic route.

Please feel free to contact me if you have any questions about my concerns or comments. My contact information is below.

Veronica Gerber
204 Silverwood Drive
Scotts Valley CA 95066
831-439-9990

Taylor Bateman

From: graeagle@aol.com
Sent: Wednesday, April 30, 2008 6:17 AM
To: john@scottsvalley.com
Cc: tbateman@scottsvalley.org;jen@scottsvalleytarget.com
Subject: Target insight

My name is Charles Welch and my wife, Katy and I live in the Manana Woods area of Scotts Valley near the proposed Target store. I am opposed of the plan to bring the proposed Target to my neighborhood.

A specific traffic report is being developed to review issues and improvement measures as part of the environmental review. Existing data shows, however, that a Target store this size typically draws about 4,000 visits daily. Some of these visits are pass-by trips, with guests stopping to shop as part of their normal driving routine. For smaller shopping trips, the project proposal also provides bicycle access and parking.
You may think that the 4500+ in and out cars is not to big a concern because **you** are not impacted by them. You will have employees coming to work in most likely two different shifts, which will have an impact at specific times during the day. How many of these 4500 cars will be checking out our neighborhoods because they happen to be in our area and want to see what lies behind the Hilton or the gates of Monte Fiore? I can assure you that some, and it doesn't take many, of these "unwanted" visitors will have other than sight seeing in mind.
You can not blame Target alone for the high level of crime that is mentioned for that Watsonville shopping center. Using the fear tactic is wrong. (From your web site) This is not a "fear tactic" I speak of... it is a reality.
If you have ever had your car or home broken into, perhaps you will understand my concern. I for one have, and it didn't occur until the area around my old home in Mountain View became more visible to the influx of traffic to my area. I even had the less than envious experience of having a gun put to my head as I lay on the ground during a robbery. I for one, do not want to live with the fear of my property or family and neighbors being violated because of some big company wanting to take root in what is still a quiet and peaceful area.
I grew up in Mountain View back when it was mostly orchards. Acres and acres of orchards. As a child it was the perfect place to be a child. Fields of fresh fruit and nuts to play in and seasonal jobs when I grew older. Not too unlike Scotts Valley in it's infancy. The orchards are gone and housing tracts, condos, apartments and Silicon Valley commerce arose from it all. Progress is unavoidable and in many instances a necessity for cities to prosper. Sometimes in their zeal to move ahead, people (planners and city councils and big corporations) loose sight of what needs to be protected. If it can't be protected, perhaps something helpful to the community can arise in it's place. My parents took a house that sat on land that is now over 100 years in our family and turned it into a small apartment complex. They created something good for our family and provided a nice location for the tenants that have come and gone the past 50 years.

I use this analogy because this is how I think and feel. I fee the land should be used for something more than some big corporations scheme of expansion into our quiet neighborhood. If the council and fellow citizens of Scotts Valley are forward thinking, than start with place that will care for our elderly, or a school for developmentally challenged people. Find a business that doesn't need 150,000 square feet of building and asphalt space to accomplish something good for Scotts Valley residents and their future. Does everything that is considered for this plot of land have to involve some enterprise that is open 7

days a week from morning until evening??? Has any consideration been given to some form of business that will have less of an impact on the neighborhoods that surround it and the land it would sit upon? C-S allows retail stores and shops, food and motel/hotel establishments and commercial services. Are you really looking beyond your $money$ sniffing noses for other possibilities? I really think there needs to be more discussion on what would be a good alternative for the property. I feel I am being railroaded by this whole situation.

Respectfully,
Charles Welch
Manana Woods resident

Plan your next roadtrip with MapQuest.com: America's #1 Mapping Site.

Taylor Bateman

From: Frank Z. Kertai [fkertai@pacbell.net]
Sent: Wednesday, April 30, 2008 6:12 AM
To: Taylor Bateman
Cc: Lawrence Fogel;Jackie Heald;Deborah A. Muth;Todd Ritchie;Michael Shulman;Steve Ando;Taylor Bateman;Chuck Comstock;Tracy Ferrara;Kirsten Powell;April Wooden;Stephany E. Aguilar;Cliff Barrett;Dene Bustichi;Randy Johnson;Jim Reed
Subject: Gateway South Retail STore

Attachments: 20080329TargetNoticeOfPreparationDSEIR.pdf; 20080430KertaiCommentsToPreliminaryDraftSEIR.pdf

20080329TargetNoticeOfPreparat... 20080430KertaiCommentsToPrelim...

April 30, 2008

Taylor Bateman
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066
831.440.5633

Subject: Gateway South Retail Store

RE: Notice of Preparation - Draft Supplemental Environmental Impact Report
Gateway South Retail Store

Mr. Bateman:

Attached you will find my detailed comments and concerns relating to this proposed project. I would appreciate having each of these comments and concerns addressed specifically. However, I would like to summarize my thoughts about this project in this cover letter.

I believe this proposed Target Shopping Center project is a bad idea for the City of Scotts Valley and its citizens. This project would have significant traffic, water and environmental impacts which cannot be readily mitigated. In addition, I believe the net economic impacts of this project would be negative for both the local economy and the finances of the city. This city, and its citizens, should not be subjected to subsidizing a multi-billion dollar international retail operation. Also, purely from an aesthetics and visual impacts perspective, a big-box store at the Southern Gateway entrance to Scotts Valley is not an appropriate fit for this city. Finally, a Big-Box Store highly visible from Hwy 17 is inconsistent and incompatible with the County of Santa Cruz's designation of Hwy 17 as a scenic route.

I also object to the City's not extending the comment period because we were given access to the preliminary traffic report half-way (fifteen days) through the comment period. Another fifteen days would have been reasonable not only for our local community's input, but also for other governmental agencies.

Please feel free to contact me if you have any questions about my concerns or comments. My contact information is below.

Frank Z. Kertai
516 Shasta Park Court
Scotts Valley, CA 95066
831.439.0940
HUfkertai@pacbell.netU

NOTICE OF PUBLIC MEETING
&
NOTICE OF PREPARATION

TIME/DATE: 4:00 p.m., Wednesday, April 16, 2008

PLACE: City Council Chambers, One Civic Center Drive, Scotts Valley

SUBJECT: Notice of Preparation of a Draft Supplemental Environmental Impact Report

The City of Scotts Valley will be preparing a Supplemental Environmental Impact Report (SEIR) for a proposed one story 155,000 square foot retail store and 517 associated parking spaces on a17.62 acre site on the West side of State Route 17 on La Madrona Drive. The project description and location are contained in the attached Notice of Preparation.

A public meeting will be conducted on Wednesday, April 16, 2008, at 4:00 p.m. in the Scotts Valley City Council Chambers, One Civic Center Drive, to receive public comment and recommendations as to the scope and content of the environmental information to be discussed in the SEIR that will be prepared for the proposed project. The SEIR is intended to serve as an informational document to inform decision-makers and the general public of the environmental consequences of the proposed project.

You are encouraged to submit written comments and recommendations as to the scope and content of the environmental information to be discussed in the SEIR that will be prepared for the proposed project. The 30-day public comment period shall begin on April 1, 2008, and end at 5:00 p.m. on April 30, 2008. All comments regarding this Notice of Preparation must be received by this ending date/time.

Comments and recommendations may be directed to Taylor Bateman, Associate Planner, City of Scotts Valley, One Civic Center Drive, Scotts Valley, CA 95066, (831) 440-5630, FAX (831) 438-2793, or email tbateman@scottsvalley.org by specifying "Gateway South Retail Store" in the subject line.

Notice of Preparation

To: State Clearinghouse
(Agency)
1400 Tenth Street, Suite 212
(Address)
Sacramento, CA 95814

Subject: Notice of Preparation of a Draft Environmental Impact Report

Lead Agency:

Agency Name City of Scotts Valley

Street Address One Civic Center Drive

City/State/Zip Scotts Valley, CA 95066

Contact Taylor Bateman

Consulting Firm (If applicable):

Firm Name ESA

Street Address 225 Bush Street, Suite 1700

City/State/Zip San Francisco, CA 94104

Contact Karl Heisler

The City of Scotts Valley will be Lead Agency and will prepare a supplemental environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description and location are contained in the attached materials. An Initial Study is **not** attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but **not later than 30 days** after receipt of this notice.

Please send your response to Taylor Bateman
at the address shown above. Please include the name of a contact person in your agency.

Project Title: Gateway South Retail Store

Project Location: La Madrona Drive and Silverwood Drive — Scotts Valley (City (nearest)) — Santa Cruz (County)

Project Description: (brief)

The proposed project would entail the construction of a 155,000-square foot retail store and 517 associated parking spaces in the City of Scotts Valley. The approximately 17.62-acre project site is located on the west side of State Route 17, on La Madrona Drive, generally southwest of the Mt. Hermon Road / La Madrona Drive exit. The proposed project would require an amendment to the *Gateway South Specific Plan* for allowable building coverage.

Date 03/27/08

Signature

Title Associate Planner

Telephone 831.440.5630
email tbateman@scottsvalley.org

Project Location and Site Description: Scotts Valley is located along State Route (SR) 17 within Santa Cruz County, in the south-central Santa Cruz Mountains. The City is located approximately six miles north of the City of Santa Cruz and 25 miles south of the City of San Jose.

The area surrounding the project site is predominately service commercial, residential, and open space. The project site is bounded on the east by La Madrona Drive, on the north by the Hilton Hotel, on the west by the Monte Fiore community residential uses and to the south by Silverwood Drive. La Madrona Drive is a frontage road along SR 17. Located further to the east is the southbound on-ramp to SR 17, and SR 17 itself. See **Figure 1: Site Location**.

The approximately 17.62-acre project site is an undeveloped meadow of native and non-native grasses that slopes upward to the west. Steeper slopes on the western portion of the site are vegetated with a mature, mixed coniferous forest.

Project Characteristics: The proposed project would construct a 155,000-square foot retail store on the west side of SR 17. The one-story store would be located on the southern portion of the project site at the corner of La Madrona Drive and Silverwood Drive. The front of the store would face the northern portion of the site where patron parking would be provided. The retail footprint would occupy approximately 20 percent of the site. See **Figure 2: Site Plan.**

Vehicle access would be taken from two full-access driveways on La Madrona Drive. Parking for approximately 517 vehicles, including 13 disabled-accessible spaces, would be provided in a two level parking structure on the northern end of the project site. Parking aisles would be constructed parallel to the store entrance to facilitate optimal visibility for pedestrian flow. Sidewalks would be constructed along the project frontage. The primary pedestrian access would be taken from La Madrona Drive. Parking and circulation would occupy approximately 24 percent of the site.

The loading area would be located on the northwestern side of the building, and would not be visible from public roads or the store entrance.

Landscaping would consist of perimeter trees and low lying plantings along the entire project frontage, on the upper level of the garage, and along the project boundary with the Hilton to the north. Landscaping along the project frontage would be terraced in two levels. Landscaping would comprise approximately 16 percent of the site.

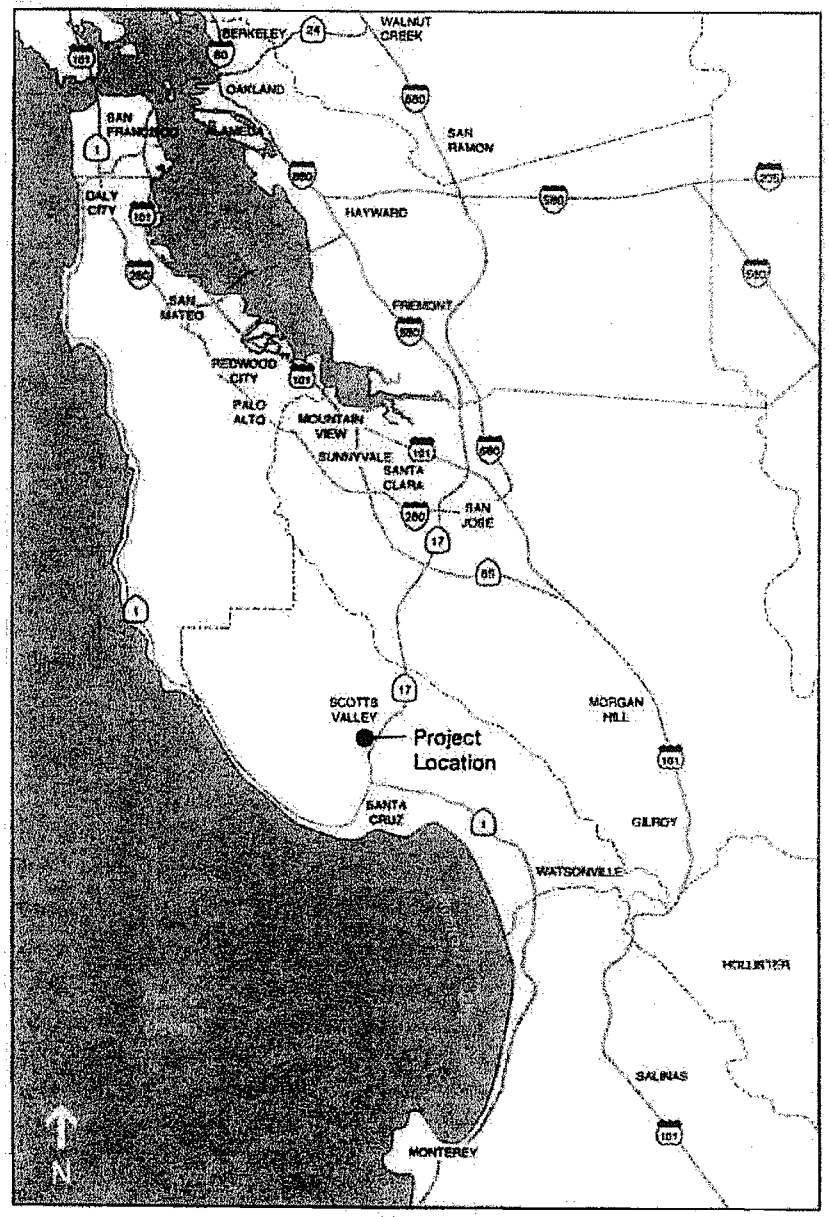
In addition, the project would construct a retaining wall below the 40 percent slope line just to the west of the development to protect the remaining open space, which would constitute approximately 40 percent of the project site. On the west side of the open space, the project would restore native vegetation and plant a new redwood grove.

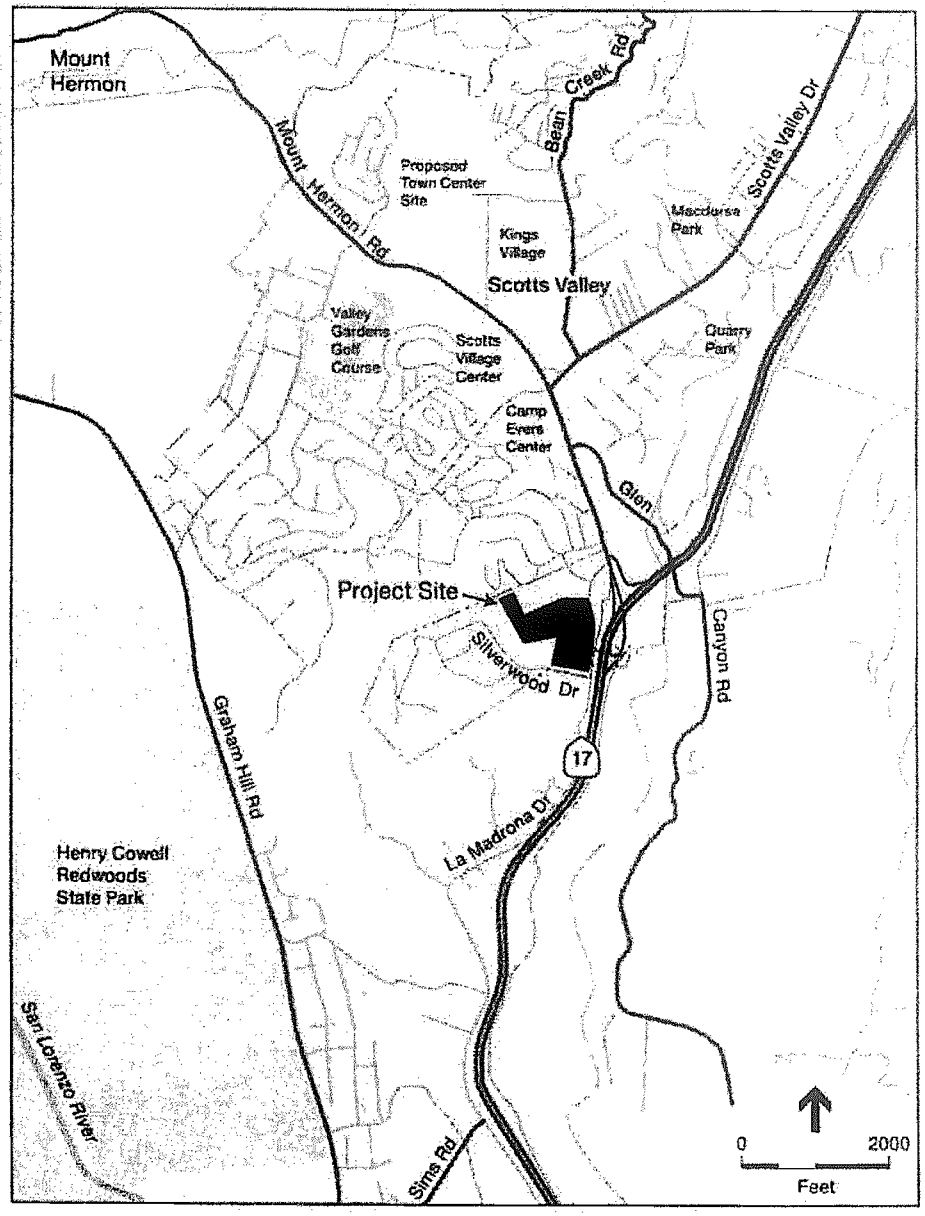
The proposed project would require an amendment to the *Gateway South Specific Plan* for allowable building coverage.

Probable Environmental Affects to be Discussed in the EIR: Aesthetics, Air Quality, Biology, Economic, Hydrology and Water Quality, Land Use and Planning, Noise, Public Services, and Transportation.

Public Review Period: Notice is hereby given that a public meeting will be conducted on Wednesday, April 16, 2008, at or after 4:00 p.m., in the Scotts Valley Council Chambers, One Civic Center Drive, to receive public comment and recommendations on a Supplemental Environmental Impact Report (SEIR) prepared for the proposed Gateway South Retail Store pursuant to the guidelines and procedures of the California Environmental Quality Act. The required 30-day public comment period shall begin on April 1, 2008 and end at 5:00 p.m. on April 30, 2008. All comments regarding the Notice of Preparation must be received by this ending date/time.

You are encouraged to submit written comments and recommendations. Comments and recommendations may be directed to Taylor Bateman, Associate Planner, City of Scotts Valley, One Civic Center Drive, Scotts Valley, CA 95066, telephone (831) 440-5630, fax (831) 438-2793, or e-mail: **tbateman@scottsvalley.org** by specifying "Gateway South Retail Store" in the subject line.

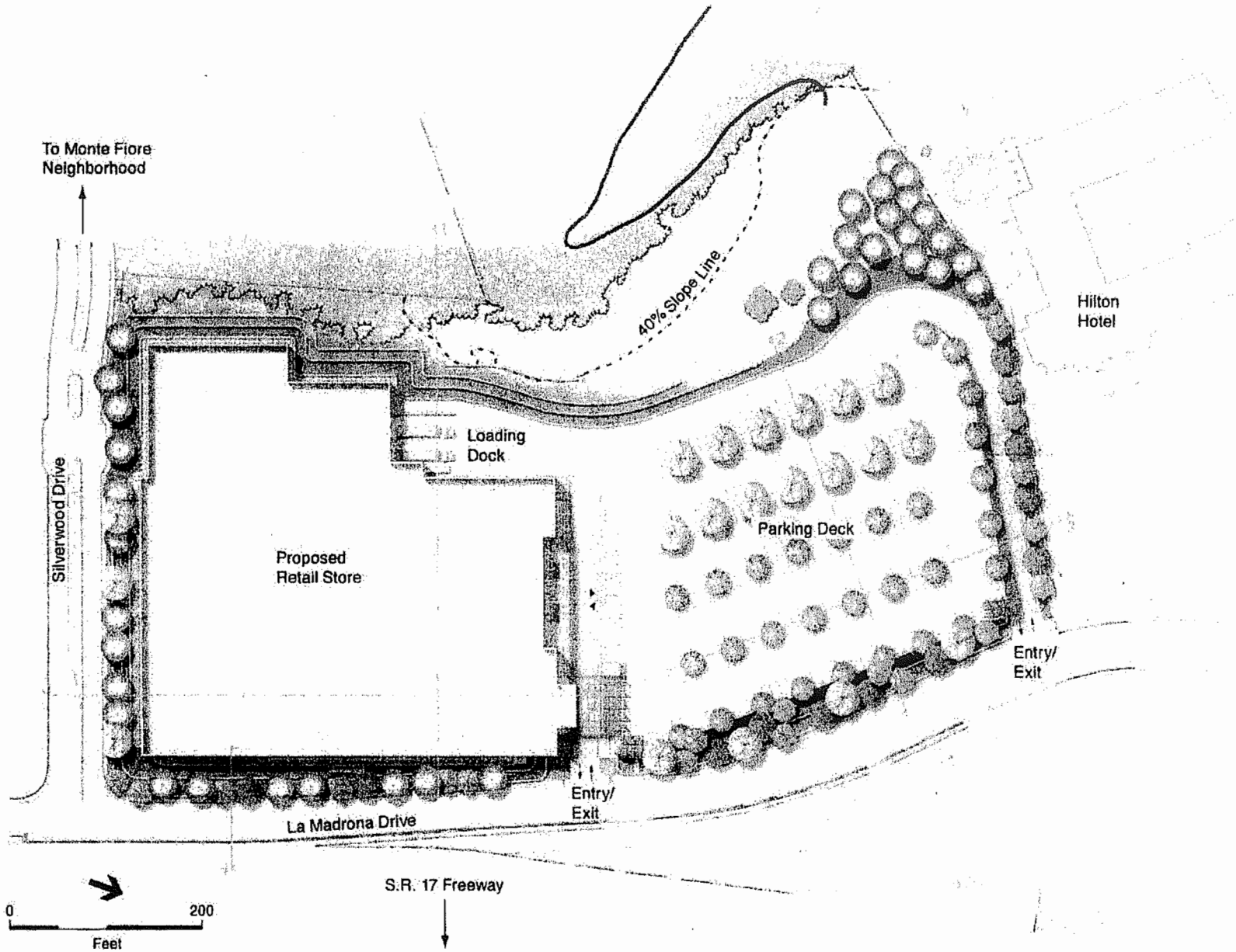




SOURCE: Thomas Bros. Maps; ESA

Gateway South Retail Store . 207755

Figure 1
Project Location



SOURCE: DES Architects & Engineers

Gateway South Retail Store . 207755

Figure 2
Site Plan

April 30, 2008

Taylor Bateman
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066
831.440.5633

Subject: Gateway South Retail Store

RE: Notice of Preparation – Draft Supplemental Environmental Impact Report
Gateway South Retail Store

Mr. Bateman:

Attached you will find my detailed comments and concerns relating to this proposed project. I would appreciate having each of these comments and concerns addressed specifically. However, I would like to summarize my thoughts about this project in this cover letter.

I believe this proposed Target Shopping Center project is a bad idea for the City of Scotts Valley and its citizens. This project would have significant traffic, water and environmental impacts which cannot be readily mitigated. In addition, I believe the net economic impacts of this project would be negative for both the local economy and the finances of the city. This city, and its citizens, should not be subjected to subsidizing a multi-billion dollar international retail operation. Also, purely from an aesthetics and visual impacts perspective, a big-box store at the Southern Gateway entrance to Scotts Valley is not an appropriate fit for this city. Finally, a Big-Box Store highly visible from Hwy 17 is inconsistent and incompatible with the County of Santa Cruz's designation of Hwy 17 as a scenic route.

I also object to the City's not extending the comment period because we were given access to the preliminary traffic report half-way (fifteen days) through the comment period. Another fifteen days would have been reasonable not only for our local community's input, but also for other governmental agencies.

Please feel free to contact me if you have any questions about my concerns or comments. My contact information is below.

Frank Z. Kertai
516 Shasta Park Court
Scotts Valley, CA 95066
831.439.0940
fkertai@pacbell.net

Aesthetics and Visual Impacts

Please explain how the city justifies a big-box store at the Southern Gateway entrance to Scotts Valley as aesthetically appropriate for this city.

Please explain how the city justifies a big-box store on a La Madrona Drive, a frontage road to Highway 17 when the July 1995 Final Environmental Impact Report for Gateway South notes that the County of Santa Cruz has designated Highway 17 as a scenic highway. Specifically, I quote:

> "The County has designated Highway 17 as a scenic highway, with the policy that the public vistas from these roads are to be afforded the highest level of protection. The County policies call for development to be sited, designed and landscaped to improve the visual quality of the road corridors in urban areas, and to minimize visibility of development in rural areas."

The Scotts Valley General Plan also contains several policies that direct that the scenic characteristics of roadways be protected and enhanced. The EIR should evaluate the impacts of the projected development on this scenic roadway, and the adequacy of the Specific Plan to guide development to accomplish the protection and enhancement of the scenic quality of the public vistas in the corridor.

Please explain the city's acceptance of the incompatibility of the proposed design of the Target Shopping Center with the "Chalet" look of existing development in the Scotts Valley Corners and the Hilton Scotts Valley.

Please explain the how the city justifies acceptance of the proposed design of the Target Shopping Center when that design includes a Target Tower that will literally tower 70 feet above La Madrona Drive and approximately 100 feet above Hwy 17.

Please explain the how the city justifies acceptance of the proposed design of the Target Shopping Center when that design effectively turns Silverwood Drive into a back-alley entrance to the Monte Fiore residential development.

Please address the inappropriate scale of the proposed project. The proposed size of 155,000 sq. ft. with a two story parking structure will dwarf all other existing developments in the area. In fact, the proposed plan will require variances to code as currently planned with virtually no setback from Silverwood Drive or from La Madrona Drive.

Please address the inappropriate architecture elements for the Gateway South Entrance to City of Scotts Valley. Please address the following:

1. **The planned architecture does not match Hilton Scotts Valley or Scotts Valley Corners look and feel**

2. **The Target Store Building has a minimal planned setback from the streets – the current plan is to build to the edge of the property (La Madrona Drive and Silverwood Drive)**

Picture Worth A Thousand Words

As they say, pictures can often say so much more than words alone. Below you see the Silverwood Drive entrance to the Monte Fiore development of 81 homes. La Madrona Drive is at the beginning of this entrance. This view is looking east. This entrance to the Monte Fiore residential community would effectively become a back alley. The trees on the left would be displaced as the back of the proposed Target Shopping Center would face west on Silverwood Drive. This bright open street would effectively become a dark, back alley.

Silverwood Entrance to Monte Fiore – Back of proposed Target store on left side

Please explain how turning Silverwood Drive, a residential street, into a back alley of a retail store is acceptable to the planning department and City Council of Scotts Valley.

Please address any significant shadow impact of the proposed project on all the properties near and around the premise of the store.

Please explain how the lack of ANY buffer zone between the single largest retail project in the city and an 81 home residential area is acceptable given the city's published Land Used Plan which specifies the requirement of such buffer zones.

Please explain how the city planning department and the city council would allow the application of such an inappropriate development to proceed given such incompatible land usage with no buffer zones between the uses.

Air Quality

Greenhouse Gas Emissions

Please address how this project plans to address greenhouse gas emissions that would result from approval of this Target Shopping Center. The effects that should be addressed include:

- **effects resulting from building of the project**
- **on-going effects from additional traffic generated by this project**
- **on-going effects from delivery trucks resulting from this project**
- **on-going effects from operation of the building created**
- **on-going effects from parking structures created**

For possible mitigation of these effects, please see:

http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf

The Opportunity

Many agencies have questions about how to address global warming through the CEQA process. These may include:

"How do we prepare an inventory of baseline greenhouse gas emissions?"
"How do we model future emissions?"
"What kinds of mitigation must we consider?"

While each agency initially must answer these questions for itself, agencies can learn from each other.

With these questions in mind the Local Government Commission will host a series of workshops entitled "CEQA and Climate Change: Partnering with Local Agencies to Combat Global Warming." Speakers will leaders from the Governor's Climate Action Team and modeling experts from around the State. The material covered at each workshop will be similar, but will be tailored to highlight innovative approaches in each region. These aim to provide concrete tips for addressing global warming in CEQA documents, and to foster discussion about experiences so far. Workshop dates are:

May 15, Los Angeles
May 23, Monterey

Information about the workshops and registration is available at

www.lgc.org

Biology

Please address how this project plans to address Biologic issues related to this site resulting from approval of this Target Shopping Center.

Specifically, please address the following issues:

CEQA compliance measures required of adjoining or other projects in proximity shall be compiled and related to the proposed project. For example, a nature preserve area in the Monte Fiore residential area may have impacts to the native red-legged frog mitigation.

Clearly state, with numerical quantification, thresholds of significance for:

a) wetlands impacts
b) grasslands impacts
c) raptor foraging habitat impacts [Note: Golden Eagles in area]
d) Mt. Hermon June beetle habitat impacts
e) all other biological, hydrological, and other impacts.

Please provide quantifiable evidence based on data and relevant case studies.

Please quantify numerically the percent cover of native species and native species richness of all grassland types on the property and compare these data with that of other sites with similar soils, slopes and aspects so as to determine the relative rarity of these grassland types.

Please address any significance effect on ecological functioning due to the permanent shadow cast by the building?

Economic

Economic Impacts

A newly constructed superstore cannot increase the amount of money that local residents have to spend. In fact, retail sales are often modeled as a "zero-sum" phenomenon. As a result, sales gains at stand-alone, destination superstores are invariably mirrored by an equivalent drop in revenue at existing businesses. In the case of Scotts Valley, we can likely expect reductions in sales at grocery stores (Target is planning a grocery component in their store), gas stations (destination stores do not encourage shoppers to travel downtown) and mom and pop stores (the Dollar Store). K-Mart, a long time Scotts Valley store, may actually have to close as a result of Target's operations.

Due to the drop in the Level of Service (LOS) to a level of "F" at the intersection of Altenitas and La Madrona resulting from increased traffic, the Hilton Scotts Valley may also experience a significant negative economic impact. Currently, this hotel is a larger source of tax revenue to the City of Scotts Valley than the planned Target Shopping Center.

Numerous economic studies cite the overall negative economic impacts of large, big-box retail operations on a local economy. One example is a study titled "Understanding the Fiscal Impacts of Land Use in Ohio" by Randall Gross, in Development Economics, August 2004. This report summarizes the findings of fiscal impact studies conducted in eight central Ohio communities between 1997 and 2003 that showed in seven of the eight communities, large retail development created a drain on municipal budgets (i.e., it required more in public services, such as road maintenance and police, than it generated in tax revenue). A Barnstable, Massachusetts study that found Big Box retail generates a net annual deficit of $468 per 1,000 square feet of development.

Numerous economic studies have been performed by highly respected academic institutions that show the negative impacts of "Big-Box" stores on local economies and local governments. As a result, a number of governments have codified size limitations for retail operations in their jurisdictions. These include the cities of Agoura Hills California and Ashland Oregon. Other examples include Toulumne County California, the island of Kauai and the countries of Ireland and Norway.

Given this background and these likely scenarios, please estimate the following:

1. **What is the expected estimated net economic impact of this project on the local business community (positive or negative)**
2. **What is the expected estimated net economic impact of this project on the local city government (positive or negative)**
    a. **Identify the additional costs from providing needed city services (e.g. police, maintenance)**
    b. **Identify the initial building costs to the city**
        i. **Sewer**
        ii. **City streets, intersections, and traffic control lights**

iii. **Traffic impacts during building**

c. **Identify the on-going infrastructure support costs**

i. **Street maintenance**

ii. **On-going police services**

d. **Identify the impact fees needed to cover these costs**

3. **Please identify what businesses will likely benefit from this project**
4. **Please identify what businesses will likely be impacted negatively by this project**
5. **Please identify the economic impacts on the Hilton Scotts Valley**
6. **Please identify the economic impacts on the businesses in Scotts Valley Corners**
7. **Please identify the economic impacts on the nearby residential communities**
8. **Please identify and quantify the economic impact on the future development of the town center**
9. **Estimate, if any, of the decrease or increase in property values and the net impact financially to the city.**
   a. **Identify impacts on commercial properties in the immediate area**
   b. **Identify impacts on residential in the immediate area.**
      i. **Identify additional private road repair costs (Monte Fiore)**
      ii. **Identify additional cost from crime**
      iii. **Identify additional costs from traffic delays**
10. **Estimated retail sale tax generated.**
    a. **Identify if the sales tax is net additional sales tax or if sales taxes from other local businesses are reduced**
    b. **Estimate net additional sales tax**
11. **Evaluate how this project measures up to the City Council's 2007 Economic Plan**
12. **Economic impacts from additional traffic**
    a. **Impacts to the City of Scotts Valley**
    b. **Impacts to the County of Santa Cruz**
    c. **Impacts on local residential communities**
    d. **Impacts on local businesses**
    e. **Impacts on commuters**
13. **Given the estimate of an excess of 9,000 daily trip visits to the Target Shopping Center project, please identify the economic impact to the county of the cumulative traffic impacts on La Madrona Drive between Silverwood Drive and Simms Road.**
14. **Target plans to include a grocery component that will encompass approximately 15% of the planned floor-space. Estimate the economic impact on existing grocery business from established merchants and the impact of this available grocery component on discouraging grocery and other shopping downtown**
15. **Estimate the economic impact of the proposed Target Shopping Center as a destination location located immediately off of Highway 17 off-ramp Estimate the economic impact this will have on downtown businesses and**

identify the economic impact this will have in terms of discouraging shopping downtown.

16. **Local, established merchants will lose business to Target – possibly go out of business. Identify local business that would be at risk.**
17. **Sales Tax Gains will be offset by additional economic costs to community. Estimate these costs.**
18. **Need for additional Police Resources (due to increased crime rate). Estimate these costs.**
19. **Need for additional street maintenance (10,000 car visits per day will wear out roads quicker). Estimate these costs.**
20. **Loss of sales tax revenue from established local businesses. Identify this loss of revenue.**
21. **Please explain why the City of Scotts Valley is willing to subsidize Target Corporation to the tune of millions of dollars given the facts that:**
    a. **the midtown interchange will likely cost in excess of $40 to $50 million dollars for buildout**
    b. **the bulk of these funds are not available**
    c. **the priority for this interchange on the regional and CALTRANS hit list is not very high**
    d. **grant money will not cover the deficit**
    e. **the likely impact fees from the Target Center Project will *not* cover the deficit**
    f. **the midtown interchange is cited as a traffic mitigating factor for the Target Center Project**

In January 2004, the Bay Area Economic Forum, a partnership of the Bay Area Council and the Association of Bay Area Governments, completed an economic study titled "SUPERCENTERS AND THE TRANSFORMATION OF THE BAY AREA GROCERY INDUSTRY: *Issues, Trends, and Impacts"*. This economic study specifically examined the impacts of big-box retail stores with grocery service, such as Target, on local economies. This report is designed to provide decision makers with the information and analytical tools needed to make sound decisions regarding the possible development of supercenters in their communities. This economic study can be accessed in its entirety at the following website: http://www.againstthewal.com/studies/norcalstudy.pdf

The study concluded that the primary impacts of these big-box supercenters were:

- Lower prices charged for grocery goods,
- Lower wages and benefits paid to grocery workers, and
- An array of local development issues, such as traffic and fiscal effects.

This report thus had two primary purposes: To profile this trend, by estimating these impacts for the region, and to clarify their relevance and complexity at the municipal level. It also outlines a checklist of costs and benefits for communities considering supercenters. This study arrived at the following conclusions:

- **The entry of supercenters into the Bay Area market will exert substantial downward wage and benefit pressure in a sector that currently is a source of high-wage entry-level jobs.**

- **Supercenters will affect land use and traffic. Consumers will likely drive longer distances to shop at supercenters as compared to neighborhood supermarkets. Local governments and regional agencies will have to weigh the impact of that extra driving.**

- **Supercenters might also impact land use plans by competing with smaller shops located in more dense downtown areas. To the extent that market transition leaves older, abandoned retail or grocery sites in its wake, issues of local blight and community health might become a concern, particularly where conventional grocery stores serve as anchors for community shopping centers.**

- **The fiscal impacts of supercenters are likely less beneficial to local governments than is commonly assumed. Municipal governments should assess whether supercenter revenues represent increased taxable sales, or a shift of sales within the municipality.**

- Supercenters will result in reduced prices for grocery items, with significant benefits to consumers. Lower grocery prices are a considerable benefit in high cost-of-living regions, such as the Bay Area.

- **The costs of supercenters are likely to be concentrated on supermarket workers (in terms of wage and benefit impacts) and at particular locations (in terms of traffic impacts), while the benefits are more widely distributed and diffuse. Mediating this distribution of costs and benefits is an appropriate issue for public concern.**

Supercenters present challenges that will require such public sector attention. The apparent familiarity of big-box retail and grocery shopping belies the complex issues municipalities will soon face if, as expected, supercenters enter the Bay Area market. **That day has arrived in Scotts Valley with the application for the building of this Target Shopping Center.**

A checklist for local officials

The main purpose of this report is to identify the range of impacts likely associated with these trends. Given these, what should local officials do? In practice, each project is best addressed by a case-by-case systematic review of each category of impact and the tradeoffs those impacts often imply. **To facilitate that approach, the report provides the following check list of impacts and the primary specific tasks required.** This list of key considerations is neither complete nor fully detailed. Neither are all list items

equally important. It does, however, indicate the scope and scale of the challenge faced by local decision makers.

A. Economic and Employment Impacts

- **How much will the supercenter change grocery prices and selection locally?**

TASKS:

- **Need an estimate of the average grocery purchase mix of items**
- **Need an estimate of the price changes for those items**
- **Calculate ripple (i.e., multiplier) effects of consumer prices on local economy**

- **How much will the new supercenter displace existing local retail market share?**

TASKS:

- **Need to inventory the local retail base**
- **Assess market areas and market impacts**

- **What will be the impacts on the local work force?**

TASKS:

- **Assess impact on existing retail**
- **Calculate direct impact of job changes, lower wages and benefits**
- **Calculate impact on net employment**
- **Calculate ripple (i.e., multiplier) impacts of wages, benefits and employment changes on local economy**

- **Will the new supercenter lead to vacancies or changes in local land use?**

TASKS:

- **Inventory vacant land and commercial properties.**
- **Assess re-use or redevelopment possibilities for competing sites.**

B. Municipal Finance Impacts

- **How much will the new development require in public services?**

TASKS:

- **Services and capital expenditures: Calculate cost of infrastructure & utilities**
- **Traffic and other service impacts?**
- **Calculate the cost of associated economic development incentives, such as tax credits (e.g. building midtown interchange)**
- **Assess the impact of redevelopment zone tax-increment financing.**

- **How much will the new development change local tax revenues?**

TASKS:

- **Assess net changes in local retail sales**
- **Calculate net changes in sales and property tax revenue.**
- **Examine the stability of the retail sales tax revenue over time.**

C. Community Impacts

- **Will a given big-box footprint possibly expand in the future? In the same line of business?**

TASKS:

- **Ask about future plans up front**
- **Examine industry trends**
- **Plan for expansion contingencies**

- **What localities will benefit from and/or be disadvantaged by supercenter development.**

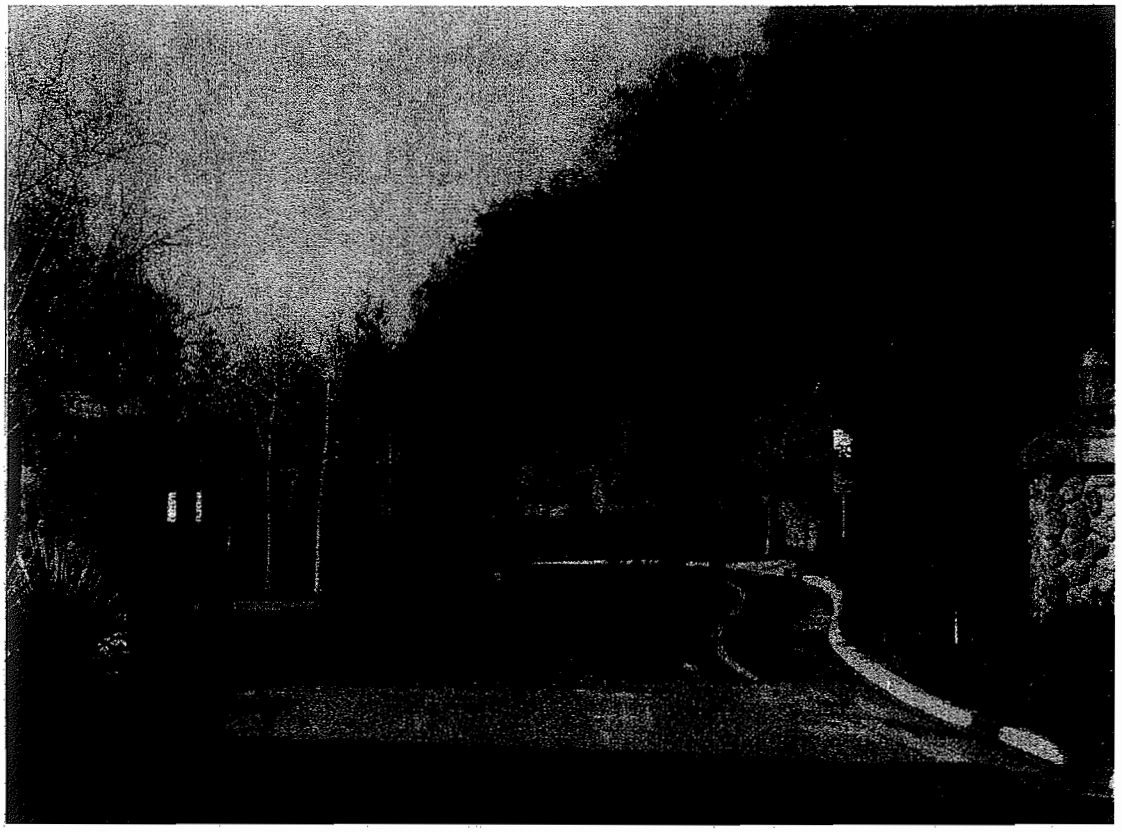
TASKS:

- **Assess the differences between local and regional impacts.**
- **Are local gains at the expense of losses in other cities? Must these be mitigated?**

- **How will the new retail outlet affect our community's quality of life? For example, will it reduce the appeal of a downtown core that we are trying to preserve or revitalize?**

TASKS:

- **Inventory locations of competing retailers.**
- **Assess impact on existing local retailers**



This is a picture of the Entrance to the Monte Fiore residential community.

What will be the economic impacts of the proposed Target Shopping Center on this community?

Estimate the economic impact on home values in Monte Fiore as a result of this project

Estimate the economic impact on home values in Scotts Valley as a result of this project.

Please explain how the city of Scotts Valley planning department and City Council can allow significant negative economic impacts to an existing residential community by allowing incompatible development of immediately adjacent land.

Hydrology and Water Quality

The conceptual plans for the proposed Target Shopping Center currently paves over wetlands at the site! What is the plan to mitigate this?

Below is a view north from Silverwood Drive. The Hilton Scotts Valley can be seen in the distance between the two trees. This is property is currently a 17 acre glen. A bubbling spring is on the property – a sure sign of this property's role as a recharge site for the Santa Margarita Groundwater Basin aquifer.

Proposed back of the 155,000 sq. ft.Target store on Silverwood Drive.

Please address how this project plans to address Hydrology and Water Quality related to this site resulting from approval of this proposed Target Shopping Center.

The analysis of effects should be addressed include the following:

Clearly define baseline conditions for:

a) water infiltration from site
b) provision of clean water from site

Clearly state thresholds of significance for:

a) wetlands impacts
b) grasslands impacts
c) raptor foraging habitat impacts [Note: Golden Eagles in area]
d) Mt. Hermon June beetle habitat impacts
e) all other biological, hydrological, and other impacts.

We want quantifiable evidence based on data and relevant case studies.

Any mitigations should be proven feasible through demonstrable success at comparable sites.

Costs, timelines, and success criteria shall be made clear and compared to successful mitigation measures that have been similarly documented for comparable sites.

Efficacy of storm water treatment systems shall be demonstrated in comparison to similar projects with similar soils, climates, slopes, aspects and with similar pollutant loading and discharge requirements.

Efficacy of biotic mitigations shall similarly be demonstrated in comparison to similar projects with similar conditions where long-term self-sustaining populations of plants and animals have been established and maintained with similar success criteria, funding, and oversight arrangements

Cumulative impact analysis shall consider all proposed projects that would impact similar habitats, the same or adjacent aquifers, add to traffic loading, and use hydrological modeling to calculate increased peak flow discharges downstream in relevant receiving waters.

Alternatives analysis shall include alternate sites as well as no other site (disapproval of project).

Analysis shall include how considered project impacts regional transportation plans for all of Scotts Valley, Hwy 17 and Hwy 1.

Analysis shall include how considered project impacts any storm water management plans or other plans addressing water discharge or supply for the groundwater or storm water basins, including but not limited to Regional Water Quality Control Board permits that have been adopted, are in consideration, or are mandated in the near future.

Analysis shall include impacts to waters of the state as well as waters of the U.S.

Analysis shall include threshold limits of change to atmospheric Nitrogen deposition impacts to nearby Scott's Valley sensitive grassland biota.

Any proposed buffer distances for species occurrences *or* biotic systems shall be clearly demonstrated to be effective using published scientific information in as similar situations as possible.

CEQA compliance measures required of adjoining or other projects in proximity shall be compiled and related to the proposed project. For example, a nature preserve area in the Monte Fiore residential area may have impacts to the native red-legged frog mitigation.

Expect demonstrated pre-DEIR consultation with other agencies such as:

1. **CalFire**
2. **Cal Fish and Game**
3. **US Fish and Wildlife**
4. **National Marine Fisheries**
5. **State Water Resources Control Board**
6. **Monterey Bay Regional Air Quality Control Board**
7. **CalTrans**
8. **local water districts, etc.**

Water Impacts

The last official water study for Scotts Valley was the May 2006 Final Report of the Groundwater Modeling Study of the Santa Margarita Groundwater Basin prepared by ETIC Engineering, Inc. for the Scotts Valley Water District. This study water selected years 1985 through 2004 as the base period for the updated Santa Margarita Groundwater Basin model.

Previous water basin-wide safe yield estimates based on a water-balance approach have been estimated at approximately 4,200 acre-feet (Todd, 1998). These estimates are accurate within the limits of a water balance-based approach, but do not account for localized affects on storage. Additionally, this previous estimate of the basin-wide safe yield does not account for the actual spatial distribution of water supply wells within the basin.

The study's model results suggests that pumpage at 3,320 AFY from existing well locations across the basin will yield a zero net change in storage. Using the rates of total basin pumping estimated for 2004 (approximately 4,000 AFY) across the basin, this value is exceeded. While the current pumping remains below the overall safe yield of the basin (i.e., 4,200 AFY), this exercise allows for identification of management measures such as potential redistribution of pumpage across existing well locations and potential new well locations. These concepts were evaluated further through the subbasin analysis

below and through ongoing work currently underway in support of the next Annual Groundwater Management Report published by the Scotts Valley Water Department.

In conclusion, the study's model identified that annual pumping of water from the basin exceeded the sustainable rate by approximately 20%! This conclusion reinforces the LAFCO 2005-0605 Water Services study that concluded: "It is estimated that extractions from this sub-unit may exceed recharge rates by 500-600 acre-feet per year."

What additional water impacts would a 155,000 sq. ft. retail store have on this already overtaxed water basin? With up to 10,000 store visits per day by shoppers, one must conclude that there would be significant additional water usage impacts by this size project!

In addition, if one examines the topography of the area, the southern portion of Scotts Valley stands out as an import recharge area for the Santa Margarita Groundwater Basin. If this 17 acre property is developed and covered by a building footprint and asphalt parking lot, the recharge capability of this site will be lost!

The Scotts Valley Water District cost per acre-foot delivered water is in excess of $2,600 per acre foot. This is $1,100 per acre-foot higher (over 40%) than the average for the county! The bi-monthly Residential Charge for Average Scotts Valley Customer is in excess of $90 per month, third highest of eight water districts in the county!

What would be the water usage impacts of this project?

What would the cumulative impact of this project be combined with the planned Town Center project?

What would be the impacts of the recharge aquifer of this project?

What would be the water pollution impacts of this project? What are the plans to mitigate these effects?

> Note: it is estimated that a twelve acre parking lot will generate in excess of 300,000 toxic gallons of runoff per one inch rain storm. The average rainfall for Scotts Valley is 41 inches per year.

Land Use, Planning and Zoning

Improper Zoning for Project

This proposed development appears inconsistent with the City of Scotts Valley 1994 General Land Use Plan. Please explain how the city justifies these inconsistencies.

According to the city, the parcel targeted for this development is zoned "Service Commercial", which has the following definition:

> **Service Commercial** - retail stores and shops, food and motel/hotel establishments, services such as printing shops and electrical repair shops, heating and ventilating shops. High density residential is conditionally permitted, providing adjacent uses are compatible and the residential use is secondary to the retail use.

As this is the single largest proposed retail development in the history of the city, why does the city not require the location of such a project in an area zoned "Shopping Center Commercial"? This zoning is defined as:

> **Shopping Center Commercial -** retail and service establishments for the development of community and/or regional shopping centers. Examples of uses in this category would include stores, shops, and offices included in the professional office and service commercial categories, providing adjacent uses are compatible.

Incompatibility with City of Scotts Valley Land Use Plan

Please explain the incompatibility of this Target Shopping Center project with the city's published Land Use Plan.

Specifically, note the bolded section below:

> The land use plan is intended to protect the hillside forests which provide the essential character of the Valley, **develop the urban core near major transportation corridors**, and foster a healthy business community which can provide most of the goods and services for the City and ensure a broadly based housing supply.

Please explain the incompatibility of this Target Shopping Center project with the city's published Land Use Plan as it relates to the long proposed MidTown Interchange.

Specifically, the 1992 Land Use Plan projected the completion of this by 2007. Obviously, this planned building schedule is running late. The Land use plan notes:

The MTISTA includes properties east and west of State Highway 17, located half way between the Granite Creek and Mt. Hermon Road overpasses. The Circulation element proposes a new interchange to be developed in this area within the next 5-15 years to provide direct access to Green Hills Road and alleviate congestion on Mt. ·Hermon Road and Scotts Valley Drive. The current access to properties on' Green Hills Road *is* from Mt. Hermon Road to Glen Canyon Road to Green Hills Road. Access from the north *is* barricaded for emergency access only. Future development of the vacant properties on Green *Hills* Road must include design and development of an alternative access to alleviate the congestion on Mt. Hermon Road and Glen Canyon Road. Land use designations for the properties in the MTISTA will not be changed until the midtown interchange is ensured.

Please address the following concerns related to the midtown interchange:

1. **Where are the funds that have been collected from impact fees from prior projects specifically for the midtown interchange?**
2. **How much of these impact fees have been spent on other projects instead?**
3. **What other projects have these funds been spent on?**
4. **How much funds are still available for the midtown interchange?**
5. **How much would the midtown interchange cost to build now?**
6. **Would eminent domain need to be used to build the midtown interchange?**
7. **What specific properties would need to be obtained via eminent domain?**
8. **Would any current housing be displaced as a result of the building of the midtown interchange?**
9. **Would any recent business relocations be affected by the building of the midtown interchange? (e.g., recent Propane company relocations)**
10. **Would non-city funds (e.g. state, federal, private) need to be obtained to build the midtown interchange?**
11. **How much non-city funding would be needed to build the midtown interchange?**
12. **What are the non-city sources of funds that could be obtained to build the midtown interchange?**
13. **How long would it take to obtain viable funding to build the midtown interchange?**
14. **Are impact fees still being collected for the midtown interchange?**
15. **If this Target Shopping Center project were approved, how much in impact fees would be collected for the midtown interchange?**
16. **How long would these impact fees need to be collected to make a viable difference in the budget for building of the midtown interchange?**
17. **What is the soonest amount of time that the midtown interchange project actually could be built?**

18. **Is it realistic to expect the building of the midtown interchange within the next decade? In our lifetimes?**
19. **Given how long it would take to collect funds for and/or obtain funding for the midtown interchange, is it realistic to expect the midtown interchange to be a mitigating factor in the potential traffic impacts of an approved Target Shopping Center at the La Madrona location?**
20. **Is the proposed Target Shopping Center viable at its proposed location should the midtown interchange never get built?**

Please explain the city's justification for the incompatibility of this project with sections LO-24 through LA-26 of the city's Land Use Plan.

Portions of this section are provided below:

> **Objective**
> **LO-24 Ensure compatibility between residential development and surrounding land uses.**
>
> **Policy**
> **LP-25 The City shall prohibit new land use activities within and in close proximity to residential zones that generate undesirable impacts which cannot be mitigated.**
>
> **Action**
> **LA-26 Through the environmental and permit review process, the City shall identify projects which could impact residential zones in a negative manner, and if such impacts cannot be mitigated, the City shall deny the project.**

Please explain the city's justification for the incompatibility of this project with sections LP-28 of the city's Land Use Plan.

> L-28 The City shall promote availability of commercial sites to accommodate a mix of professional office, service commercial, and shopping center developments consistent with the environmental, service, and economic goals of the City.

Please explain the city's justification for the incompatibility of this project with sections LO-32 through LA-36 of the city's Land Use Plan.

> **Objective**
> **LO-31 Ensure that commercial developments maintain the City's aesthetics.**
>
> Policy

LP-32 Commercial developments shall be designed and screened *in* an attractive manner and thereafter maintained so as to integrate the entire development visually with the overall natural beauty of the Planning Area.

Actions
LA-34 Commercial development shall be conditioned to install landscaped areas on no less than 10% of the total site area. Landscape maintenance agreements shall be made a condition of permit issuance. This shall be added to the Design Review guidelines.

LA-35 The City's *Mission* Statement describing the character of the City and design standards associated with that character shall be incorporated into the Design Review Guidelines. The Design Review Guidelines shall be approved by the Council and Planning Commission.

LA-36 The City shall pursue a program of amortization and require abatement of those designs not in conformance with the ordinance.

Please explain the city's justification for the incompatibility of this project with sections LO-36.1 through LA-36.3 of the city's Land Use Plan.

Policy
LP-35.1 Commercial development should include public art. *(Reso 1119.15)*

LA-36.1 Actions Commercial development should incorporate artistic elements and/or treatments into the architecture, landscape design, and infrastructure where appropriate. *(Reso 1119.15)*

LA-36.3 Public art shall become part of the design review guidelines and made available to developers, architects, landscape designers, city committees and commissions. All public art shall be reviewed by the Planning Commission. *(Reso 1119.15)*

Please explain the city's justification for the incompatibility of this project with sections LO-37 through LA-44 of the City's Land Use plan.

Objective
LO-37 Ensure compatibility between commercial development and surrounding land uses.

Policy
LP-38 Land uses located adjacent to commercial uses should be protected from excessive noise, unsightliness, offending odors and other nuisances.

Actions
LA-39 Amend the Zoning Ordinance to encourage transportation management, trip reduction and alternative transportation in all new commercial development.

LA- 41 During the environmental and development review process, identify potential impacts that commercial developments will have on other community land uses. Require mitigation of such impacts.
LA- 43 Lighting of commercial areas shall be carefully controlled to the extent necessary for security, safety and identification without interfering with adjoining land uses. Lighting shall be directed away from public rights of-way and adjacent residential land uses. Include these requirements in the Design Review Guidelines.

LA-44 New commercial developments shall be required to provide to the City a trip generation and distribution analysis as part of the project plans. The City should review and evaluate this analysis for impacts to residential zones.

Please explain the city's justification for the incompatibility of this project with sections LP-45 of the City's Land Use plan.

LP-45 Commercial land uses should be concentrated along the urban core of the City.

Please explain why the city is contemplating allowing an amendment to the *Gateway South Specific Plan* for allowable building coverage given the numerous incompatibilities previously cited above, as well as the significant probable traffic impacts identified in the preliminary traffic report for this project.

Please explain the city's justification for the incompatibility of this project with sections LO-71 through LA-81 of the City's Land Use plan.

Specifically,

Objective
LO-71 Ensure the comprehensive and long-range preservation and conservation of open space land.

LA-75 **Except where identified as a required circulation improvement in an adopted Specific Plan, during redevelopment review, hillsides with 40% slope or more shall be left undisturbed and undeveloped after project is complete.*

LA- 77 Maintain riparian corridors as open space.
[Note: Golden eagles and hawks have been photographed overflying this site]

LA-78 During development review, consider habitat migration paths and corridors and provide protection as appropriate.

LA-79 As part of the environmental review process for new developments identify native plant communities or rare or endangered species habitats that would be significantly adversely impacted. Where appropriate, designate those areas as open space.

LA-81 Prominent Ridges and Features identified in figure OS-l of the Open space and Conservation Element of the General Plan shall be designated open space ***during*** development of the sites.

Inconsistency with Local and Regional Plans

Please explain the city's justification for the incompatibility of this project with the Santa Cruz County designation of Highway 17 as a scenic route.

The following facts seem incompatible with this designation:

1. **The Target Shopping Center would be highly visible from Highway 17.**
2. **The Target Tower would be nearly 100 feet above Highway 17 and highly visible from the highway**
3. **The design of the Target Shopping Center is incompatible with the area**

Noise

Proposed back of the 155,000 sq. ft.Target store on Silverwood Drive.

What are the plans to mitigate noise during construction a 155,000 sq. ft Target Shopping Center and 517 space parking structures at this site?

What are the plans to mitigate operational noise of the building (air conditioners, refrigerators, fans, compressors, compactors, etc)? The planned building will be located adjacent to Silverwood Drive, the entrance to an 81 home residential community.

What are the plans to mitigate truck delivery noise at this site?

What are the plans to mitigate trash truck pick-up noise at this site?

What are the plans to mitigate site cleaning services at this site? (Vacuuming trucks)

What are the plans to mitigate landscaping services at this site? (Lawn mowers, leaf blowers, etc)

What are the plans to mitigate the noise from 8,000 to 10,000 car trips per day to this site? (The preliminary traffic report estimates over 9,000 trips per day).
What are the plans to mitigate people noise at this site? Please address:

1. **Noise during operating hours**
2. **Noise during non-operating hours**

Public Services

Please identify the cost of city services needed to support this project on an on-going basis. Please include estimates for such things as:

1. **Police services**
2. **Infrastructure support**
    a. **Street paving**
    b. **Sewer improvements/maintenance**

Please identify the planned impact fees for this project to be paid by the developer and/or property owner.

Please identify any incentives to be provided by the city for this planned Target Shopping Center development.

Crime Impacts

Scotts Valley had only 515 arrests in all of 2006. A 2006 Crime Study documented an average of 170 crime incidents per Target store. The proposed Target Store will possibly increase the number of Scotts Valley arrests by one-third (33%).

How much will this change our community and how much will it cost tax payers and the city?

How many additional police officers will need to be employed to appropriately deal with the additional crime impacts resulting from this proposed Target Shopping Center project?

Transportation and Traffic

Please identify and address traffic impacts on City and County Roads and State Highways.

Clearly state, with numerical quantification, thresholds of significance for traffic.

Traffic Impacts
Scotts Valley City Parcel # 021 141-05 is approximately 17 acres in size and located on La Madrona Drive, a two lane country frontage road to Hwy 17 off of Mt. Hermon Rd. (Hwy 9). Mt. Hermon Road is currently the third highest traveled route in the county of Santa Cruz. The proposed 155,000 sq. ft. retail store proposed by Target for this site falls in the retail category of General Merchandise. According to traffic estimates derived from the Institute for Transportation Engineers' Trip Generation Manual (used nationally to estimate traffic), a store this size can generate up to 10,000 store visits per average weekday (weekend counts are higher). This is nearly equivalent to the entire city of Scotts Valley traveling daily on a two lane country road!

If one were to assume that the retail store hours of operation were ten hours per day, this translates to 1,000 additional cars per hour on the third highest corridor in Santa Cruz County. Reality dictates that instead of this even additional flow, there would be peak hours of operation and business. Thus it would not be unrealistic to expect two, three or even four thousand additional car trips per hour during peak shopping periods. Unfortunately, the likely peak hours would coincide with existing peak traffic pattern periods (noon and evening rush hour). This would effectively result in gridlock on the Mt. Hermon Rd. (Hwy 9) on/off ramps to Hwy 17, Mt. Hermon Rd. itself and on La Madrona Dr.

In addition to the likely traffic impacts from this proposed retail project, the City of Scotts Valley plans to add over 170,000 additional sq. ft. of retail space as part of the planned Town Center development. The combined affects of these two projects will have even larger impacts during peak traffic periods (rush hour, prime shopping periods, etc.).

The City of Scotts Valley has recently approved some high density housing units on both the Mt. Hermon corridor and on La Madrona. Please revise the traffic report to include an examination of the cumulative traffic impacts of these projects with the Target Center Proposal.

Please update the traffic report to include the cumulative traffic impacts of the proposed Oak Creek Park Development with the Target Center Proposal.

The preliminary traffic study is flawed on its face as it was performed during summer time, when local schools were not in session. La Madrona Drive is a frontage road to State Route Highway 17 and is highly used local route for transporting children to and from local schools in Scotts Valley (such as the Brook Knoll School). Because of this, traffic effects on La Madrona Drive should be

analyzed between Mt. Hermon Road and Sims Road, including the impacts on the Sims Road ingress / egress to Hwy 17. Also, peak lunch period level of service needs to be analyzed (e.g. 11:30 am to 2:00 PM).

There are significant traffic impacts that occur during other times of the year that should be analyzed relative to this proposed Target Shopping Center Development. These include beach traffic, various local festivals (e.g. Garlic, Wine, Arts, etc.) Please examine the cumulative traffic impacts of these events combined with this proposed Target Shopping Center Proposal.

Please update the preliminary traffic report to take into affect these conditions noted below. Specifically:

The preliminary traffic report assumes only 150,000 sq. ft of retail space in the proposed town center. Update the traffic report to reflect the impact of 174,000 sq. ft. of retail space in the town center.

Please update the preliminary traffic study to include the traffic impacts of the following schools being in session:

1. **Local grade schools**
2. **Scotts Valley Middle School**
3. **Scotts Valley High School**
4. **Cabrillo Community College**
5. **California State University Monterey Bay**
6. **California State University San Jose**
7. **California State University San Francisco**
8. **University of California at Santa Cruz**
9. **Santa Clara University**
10. **Stanford University**
11. **University of California at Berkley**

Please evaluate the traffic implications of this proposed project as it relates to safety of school children traveling to and from local schools through the La Madrona corridor.

Please explain the city's plan to mitigate the level of service (LOS) "E" at Mt. Hermon Road and Scotts Valley Drive as a result of this project. Please address the cumulative and progression traffic impacts on this intersection resulting from this project.

Please explain the city's plan to mitigate the level of service (LOS) "E" at Mt. Hermon Road / La Madrona Drive-SR 17 SB off-ramp.

Please explain the city's plan to mitigate the level of service "(LOS) "F" at La Madrona Drive / Altenitas Road.

Given the congestion likely to occur based on the decreased level of service (LOS) at Mt. Hermon Road and La Madrona Drive, please explain why/how the intersection of La Madrona Drive / Silverwood Drive would not be significantly impacted.

Given the estimate of an excess of 9,000 daily trip visits to the Target Shopping Center project, please identify the cumulative traffic impacts on La Madrona Drive between Silverwood Drive and Simms Road.

Please address how Monte Fiore ingress/egress on Silverwood Drive would be mitigated from earthquake impacts to the Target Building in the event of a major earthquake given the minimal setbacks planned.

Please update the preliminary traffic report to include the cumulative traffic impacts of the estimated additional 9,000 car trips per day. Please include the estimated downstream traffic impacts from this proposed project. Please include

1. **Impacts on Hwy 1**
2. **Impacts on Highway 17**
3. **Impacts on the fishhook (Hwy 1 to Hwy 17 interchange)**
4. **Impacts on Granite Creek on/off ramps to Highway 17.**
5. **Impacts on traffic on Scotts Valley Drive**
6. **Impacts on traffic in surrounding rural areas (e.g. Felton, Boulder Creek, Ben Lomond)**

Please explain and elaborate about directed link trips as noted on page 20 of the April 4, 2004 Traffic Study.

This is the single largest retail project ever proposed in the history of the City of Scotts Valley at a proposed 155,000 sq. ft. with 517 parking spaces. This traffic study uses a piecemeal approach in its analysis. The Traffic Study should really analyze the impacts on all intersections of the city because this is such a large project that it will have city wide impacts as well as regional impacts. It should also review cumulative traffic impacts downstream from each intersection. The last complete citywide traffic analysis was performed in 1988.

This project will also have regional implications because of it close proximity to Mt. Hermon Road ingress/egress to Hwy 17. The project is also expected to have significant traffic impacts on the Hwy 17 / Hwy 1 fishhook since it is expected to draw traffic from that portion of the county. Please evaluate these impacts and identify the planned mitigation thereof.

This project is also expected to have impacts on current peak traffic flows on the Mt. Hermon Road / Hwy 9 corridor, which is already the third highest traveled corridor in the County of Santa Cruz. Please analyze these impacts and identify the planned mitigation thereof.

The traffic report also proposes mitigation from the long planned Midtown Interchange, which is not a high priority item in the regional or state transportation plan. The likelihood of this becoming a mitigating factor for this or any other project in the next decade is likely nil

Also, the traffic study does not really address the impacts of the two La Madrona Drive driveways to the proposed Target Shopping Center on La Madrona Drive. The ingress / egress to this property will likely have significant impacts on traffic on La Madrona Drive, Silverwood Drive, Altenitas Road, Mt. Hermon Road, Sims Road, Scotts Valley Corners ingress/egress, Hilton Scotts Valley ingress/egress and Hwy 17 ingress/egress. This analysis should include a review of the circulation pattern of traffic.

Please examine the safety, and legality, of large 18-wheel delivery trucks taking wide turns into on-coming traffic lanes for the purpose of ingress for delivery into the proposed Target Shopping Center. Please evaluate this using the AASHTO (American Association of State Highway and Transportation Officials) "Greenbook",

Preliminary investigations indicate that, based on established practices and recent research as presented in the AASHTO (American Association of State Highway and Transportation Officials) "Greenbook", the southern driveway will not permit the entrance of Type WB-62 or larger interstate semi-trailers without riding over both curbs of the driveway. The headroom under the pedestrian bridge is also inadequate. The northern driveway is adequate for passenger cars and similar size vans only; even single unit trucks "Type SU" will block the path of on-coming traffic exiting from the parking area. To correct the above unsafe conditions, both driveways need to be widened, thereby reducing the 517 parking spaces currently provided.

Please examine the quantitative traffic impacts of a new planned fire station to be located next to Scotts Valley Corners, directly across from the Hilton. These impacts should be included in the traffic study for this planned Target Shopping Center.

The initial Traffic Study indicates that the planned 517 parking spaces for this Target Shopping Center project will likely be short by nearly 50% during holiday shopping season. How will this be addressed? Specifically:

1. **What is the plan to mitigate this parking shortage?**
2. **How will shoppers be prevented from parking in Scotts Valley Corners parking and shopping at Target?**
3. **How will shoppers be prevented from parking in the Hilton Scotts Valley parking lot and shopping at Target?**
4. **How will shoppers be prevented from parking in the Monte Fiore residential streets and shopping at Target?**

With respect to parking, the current planned 90 degree parking plan does not seem viable with the planned 517 spaces. How many of these spaces are planned for compact cars? How wide are the planned lanes in the parking area? Were the AASHTO "Green Book" Layout requirements considered? If not, why not?

Please address the following concerns related to the proposed midtown interchange as a mitigating factor for traffic for this project. Clearly state, with numerical quantification, thresholds of significance for these impacts.

1. **Where are the funds that have been collected from impact fees from prior projects specifically for the midtown interchange?**
2. **How much of these impact fees have been spent on other projects instead?**
3. **What other projects have these funds been spent on?**
4. **How much funds are still available for the midtown interchange?**
5. **How much would the midtown interchange cost to build now?**
6. **Would eminent domain need to be used to build the midtown interchange?**
7. **What specific properties would need to be obtained via eminent domain?**
8. **Would any current housing be displaced as a result of the building of the midtown interchange?**
9. **Would any recent business relocations be affected by the building of the midtown interchange? (e.g., recent Propane company relocations)**
10. **Would non-city funds (e.g. state, federal, private) need to be obtained to build the midtown interchange?**
11. **How much non-city funding would be needed to build the midtown interchange?**
12. **What are the non-city sources of funds that could be obtained to build the midtown interchange?**
13. **How long would it take to obtain viable funding to build the midtown interchange?**
14. **Are impact fees still being collected for the midtown interchange?**
15. **If this Target Shopping Center project were approved, how much in impact fees would be collected for the midtown interchange?**
16. **How long would these impact fees need to be collected to make a viable difference in the budget for building of the midtown interchange?**
17. **What is the soonest amount of time that the midtown interchange project actually could be built?**
18. **Is it realistic to expect the building of the midtown interchange within the next decade? In our lifetimes?**
19. **Given how long it would take to collect funds for and/or obtain funding for the midtown interchange, is it realistic to expect the midtown interchange to be a mitigating factor in the potential traffic impacts of an approved Target Shopping Center at the La Madrona location?**
20. **Is the proposed Target Shopping Center viable at its proposed location should the midtown interchange never get built?**
21. **Identify the projects used to establish Tables E1 and E2 of the Preliminary Traffic Report. Display these projects pictorially on a map to show impacts. Provide tabular documentation to support assumptions and or conclusions. In particular, we are interested to see how the Town**

Taylor Bateman

From: GLENN GOEPFERT [ggoepfert@sbcglobal.net]
Sent: Wednesday, April 30, 2008 12:19 AM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store - SEIR Comments

Taylor,
I believe that the time for comment on the scope of the SEIR for the Gateway South Retail Store (Target) should have been extended, especially since the Fehr & Peers draft TIA was not available until after the April 16 meeting. There was general agreement on this among the standing room only crowd that attended.

Please forward these comments to the Environmental Review group, Planning Commission, and City Council prior to any workshop, deliberation, or action that they take related to this project.

I am a resident of the greater Pasatiempo area a bit under two miles from the project site along La Madrona Drive and Sims Road, having lived there almost 20 years. I have also been a practicing civil engineer for 25 years, and currently serve as the Assistant Director of Public Works for a Silicon Valley municipality. I have dealt with many projects similar to the proposed Target development, and must say that I have rarely, if ever, seen a project more inappropriate for a proposed site, or with impacts so profoundly significant and, I believe, damaging to the local community. And this comes from someone who is only too familiar with the attraction that a big sales tax generator holds for a municipality.

Among the environmental factors to be considered by the SEIR are
1.Aesthetics
2.Biological Resources
3.Hydrology/Water Quality
4.Noise
5. Recreation
6.Air quality
7.Geology/soils
8.Land use/Planning
9.Population/housing
10.Transportation/ Traffic

I don't have sufficient time to comment in depth on all the above, but some of the specific items that should be included in the scope are.

Aesthetics: The proposed building/parking lot complex is totally out of scale with the surrounding natural and developed environment. It should be developed in a less intense, more aesthetically appropriate manner, as with the other smaller scale commercial developments in the special planning area across La Madrona Drive.

Hydrology/Water Quality: Covering virtually the entire site below the 40% slope line with impervious area will have a very significant impact on water quality. Although detention/retention, grassy swales, and the like are often proposed as mitigations, I have found that such measures are only marginally effective. The best mitigation is to eliminate the significant source of the impact by developing the site less intensely with considerably less impervious area. The no project/alternative C-S zoning project will

have a significantly lower, and mitigatable impact.

Air Quality: The addition of 9,000 additional vehicle trips per day from the project (which appears to be a 25% increase of the daily trips on Mt. Hermon Road) will have a very significant impact on air quality. And there really is no adequate mitigation available.

Land use/Planning: The special planning area in which the proposed will be sited is zoned for a less intense use. A zoning overlay to allow the more intense use will subvert the previous land use plan and be out of scale with the surrounding residential, commercial, and transportation uses. Adoption of a zoning overlay that would allow the coverage proposed by Target would violate General Plan LO-24, LP-25, and LA-26.

Transportation/Traffic:
The TIA scope should be amended to include analysis of the La Madrona/Sims Road/Hwy 17 ramp/intersection, the El Rancho/Carbonera intersection, the El Rancho/Pasatiempo/Hwy 17 ramps/intersection, and the Sims Road corridor. The Fehr & Peers draft TIA recognizes that Hwy 17 operates at LOS F during peak hours from at least the Mt Hermon ramps south, and would need to be widened for any mitigation at all. Because of this, the TIA distribution of the project and cumulative traffic vastly underestimates the volume of traffic that will be added to La Madrona Drive, El Rancho Drive, Sims Road, the Pasatiempo/Hwy 17 ramps/intersection, and the El Rancho/Carbonera intersection. An in depth analysis of the more likely distribution of traffic to the to the south of the site down La Madrona and the cut through traffic to the neigborhoods in that vicinity must be included in the TIA. Also lacking in the draft TIA is an adequate analysis of the storage available on the Mt. Hermon/Hwy 17 ramps, especially southbound, under the cumulative impact of the traffic added by the project, approved but unbuilt projects, and future growth. New traffic counts should be performed that consider various peak traffic besides the traditional am and pm weekday commute hours; there is school commute traffic, shopping commute traffic, and intense summer beach commute traffic that makes Hwy 17 unavailable for distribution of additional traffic. The draft TIA conclusion that the peak hour traffic LOS at the Mt Hermon/La Madrona/Hwy 17 ramps remains at E with or without the project is difficult to believe, even though an almost 20 increase in delay in the critical movement at the intersection is predicted with the project.

Please let me know if you have questions.

Thanks for the opportunity to comment.

Glenn Goepfert
(831) 426-0688

Taylor Bateman

From: Jeff Hill [jhill@cruzio.com]
Sent: Tuesday, April 29, 2008 7:50 PM
To: tbateman@scottsvalley.org
Subject: Say No To Target

Dear Mr. Bateman,

I write tonight to express my opposition to the Target Store proposed for the land on La Madrona Drive in Scotts Valley. This is an inappropriate commercial development that will change forever the character of the primary entrance to our city. I also believe it will lead to increased traffic hazards and draw more crime into our community. We already have a K-Mart in town, and have little or no need for a Target Store. Perhaps Target could negotiate to purchase the store from K-Mart? At least it's in a shopping center.

--

Jeff Hill
Scotts Valley, California
831-438-5735 - home
408-859-2103 - cell
jhill@cruzio.com
AIM jeffreywhill
http://members.cruzio.com/~jhill

Taylor Bateman

From: Jack Nelson [333nelson@baymoon.com]
Sent: Tuesday, April 29, 2008 6:35 PM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store (Target) EIR, with letter attachment

Attachments: Target EIR, JN comments.pages.zip; ATT_2.txt

Target EIR, JN comments.pages....

ATT_2.txt (2 B)

Hello Taylor Bateman:

Here is an attachment, using Apple's "Pages" program, of comments I wish to make. I would appreciate hearing back from you as to whether you have any problem opening and reading the document, since I imagine you are most likely using Word software. I have also mailed the letter to you via USPS. Thanks,

Jack Nelson
429-6149

Taylor Bateman

From: Jack Nelson [333nelson@baymoon.com]
Sent: Tuesday, April 29, 2008 6:29 PM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store (Target) EIR

Hello Taylor Bateman:

Here are the comments I wish to make regarding the preparation of the Target EIR, pasted into this e-mail. I have also mailed this to you on signed letterhead via USPS. Thank you.

Jack Nelson
127 Rathburn Way, Santa Cruz CA 95062
(831) 429-6149 / 333nelson@baymoon.com

Taylor Bateman
Scotts Valley Planning Department
One Civic Center Drive
Scotts Valley CA 95066

Re: Gateway South Retail Store (Target), EIR preparation

Dear Taylor Bateman:

Here are some comments for the referenced EIR preparation. First, to state what principally concerns me about the project: I believe that the core concept of a Target Superstore sited near a freeway interchange in Scotts Valley, isolated from existing urban development and drawing in regional automobile traffic, would be contrary to the legislative intentions and statutory requirements of the State of California's Global Warming Solutions Act of 2006 (a.k.a. AB 32). Personally, from my own current studying of the fast-moving science of climate change, I cannot imagine a more crucial 21st-century environmental and societal issue than what AB 32 seeks to address. I am writing to you because my conscience compels me to act.

CEQA and AB 32

Detailed CEQA guidelines for addressing AB 32 in an EIR have not yet been adopted, but local agencies are not temporarily relieved of addressing climate change as a significant cumulative impact under CEQA. There is one very clear quantified criterion established under AB 32: roll back greenhouse gas emissions (GHG) to 1990 levels, by the year 2020. The proposed project would move in the opposite direction of that statutory criterion, and to make matters worse, would weaken the prospects for alternate future development which does move in the right direction.

Vehicle Miles Travelled

A Target Superstore at the proposed location in Scotts Valley would do business based on drawing shoppers by automobile from a wide geographic area. This would draw consumers away from other existing (or potential future) more-localized or clustered shopping, inducing increased vehicle miles travelled (VMT) while economically sabotaging the present and the future of other more environmentally-sound land-use patterns of commercial development. In other words, the proposed project would reinforce an existing paradigm of land use which is high-VMT and high-GHG. AB 32 unmistakably requires local land use planning to move away from that model.

In 2006 Cal EPA and the Climate Action Team reported that 41% of California's climate change emissions come from the transportation sector. My understanding is that locally the percentage is yet higher than that; this is a key GHG arena where progress can and must be made when major new development is allowed.

Transportation of Goods

Target's mode of operation is based on centralized distribution of large volumes of identical retail goods, involving relatively high distances travelled (and embedded GHG) on the goods arriving at any given store. Retail goods sold at Target largely consist of goods manufactured in China and other distant countries, involving increased transportation GHG; rarely are goods sold at Target which were produced or value-added locally. In the grocery sector at a Target Superstore, a similar effect is in play. I would compare that to a locally-oriented grocery like New Leaf, where three grocery categories of Santa Cruz Local, Buy Fresh/Buy Local, and Eco-Regional are identified on a selection of products, which have less embedded transportation GHG.

Big-Box Site Development

Big-box stores tend to have the very least of any building type in the way of passive solar heating, natural ventilation, and natural light; they instead

depend on energy-intensive comprehensive HVAC systems and artificial lighting. This is an additional GHG concern, notwithstanding Target's stated policy of minimizing energy consumption. Also, large parking lots in a totally car-oriented development like this typically have relatively high albedo (absorption of solar radiation on pavement).

Employee Commuting

Target is based on lowest-wage retail employment. Few Target employees will be able to afford housing in Scotts Valley. Further, the isolated location is not practically accessible by public transportation or bicycle or walking. Employees, like the customers, will almost universally drive increased distances to the store.

Scotts Valley Town Center

The long-dreamed-of goal of a pedestrian-friendly downtown and civic center for Scotts Valley may be dealt an economic death blow by approval of a Target Superstore at this location. Target's power to draw vital economic lifeblood away from the Town Center project (as well as away from existing local businesses), before the Town Center can even get off the ground, seems unmistakable and obvious to me. The Town Center concept alternatively has potential merit with respect to reducing GHG consistent with AB 32, and that consideration needs a very close look.

I request that the City of Scotts Valley, in the EIR for this project, address the concerns raised in this letter. Thank you for your time and attention!

Sincerely,

Jack Nelson

Taylor Bateman

From: Dave Sprague [dsprague2003@yahoo.com]
Sent: Tuesday, April 29, 2008 5:38 PM
To: info@scottsvalleytarget.com
Cc: tbateman@scottsvalley.org;jen@scottsvalleytarget.com
Subject: Target - not on La Madrona

To whom it may concern - My neighbors remain in shock horrified that Scotts Valley is still considering allowing a (mid-sized) big-box store such as Target into Scotts Valley's Gateway South development on La Madrona (see SV Press Banner, June 13, 2007, page 4, "Target mulls La Madrona").

Are Target and the Scotts Valley City Council so short sighted or desperate for tax revenue that it would consider blighting the Manana Woods neighborhood. Has the city (of Scotts Valley) really taken time to determine the impact of such as decision.

Obviously, the city has considered the revenue impact associated with a corporate giant entering Scotts Valley. But have they (city officials) examined the other side of the coin. For example, the property owners (Title Two Investment Corp.) have been very thoughtful with respect to the shopping center's design and its look and feel. It is also apparent they have spent considerable resources to mirroe the design of the Hilton. Should a Target go into Gateway, the whole charm of an upscale, woodsy, neighborhood shopping center would be lost.

Allowing a retail store, such as Target, into the Manana Woods neighborhood will also undoubtedly drive home values down and its current residents out. As a resident of Manana Woods, I absolutely have no requirement or desire to have a Target in walking distance from my home.

I surely hope Title Two Investment Corp. will consider taking the proper amount of time to bring in smaller retailers that deliver goods and services that match market demands thus ensuring the community maintains its current charm and appeal.

And more importanlty, for those in favor of Target in Scotts Valley, please consider an alternate location such as those that have been undeveloped for several years. Please consider the site that was once home to Santas Village Scotts Valley that was abandoned in 1978. Please also consider lots on Scotts Valley Blvd adjacent to McMahon's RV on Scotts Valley Blvd.

Deeply concerned,

Dave Spague
Manana Woods resident

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Taylor Bateman

From: Tracy Ferrara [tferrara@scottsvalley.org]
Sent: Tuesday, April 29, 2008 4:25 PM
To: tbateman@scottsvalley.org
Subject: FW: **SPAM** Target Center Project Input

Tracy A. Ferrara, City Clerk
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066
Tel 831-440-5600
Fax 831-438-2793
Email: tferrara@scottsvalley.org
Website: www.scottsvalley.org

-----Original Message-----
From: David Jensen [mailto:ds_jensen@yahoo.com]
Sent: Tuesday, April 29, 2008 3:56 PM
To: Frank Z. Kertai
Cc: Lawrence Fogel;Jackie Heald;Deborah A. Muth;Todd Ritchie;Michael Shulman;Steve Ando;Taylor Bateman;Chuck Comstock;Tracy Ferrara;Kirsten Powell;April Wooden
Subject: **SPAM** Target Center Project Input

Taylor et al,

Thank you for taking the time to read my email. As a Scotts Valley resident I am writing you to voice my concern for the proposed Target store in our City.

My concerns are for the following items:

1. The traffic will be horrible for everyone in every direction. Adding as many cars as there are people in Scotts Valley will make Mount Hermon look like 41st street at Christmas time.

2. I am concerned about the viability of this store. With the the economic downturn I believe consumer spending will decrease greatly and the retailers will get hit hard. Without any stores around the Scotts Valley Target, they may decide that this is location is no longer profitable and we are left with an abandoned shell of a building.

3. Sales tax benefit is not there. The recession and cannibalization of existing retail will seriously affect any sales tax advantage coming from this store.

4. I do not understand the location. All Target stores in California are on 4 lane roads with good in/out. I also have never seen a Target without companion stores that this one will never have because of the location. I fear that this is an experimental venture for Target.

5. I also wanted to mention the arguments made in favor of this project. I have read the correspondence in the papers and what strikes me is the arguments in favor are first about the sales tax revenue and a distant second place are thoughts about how "it would be nice to have a

convenient store close by". I have already mentioned the sales argument above so addressing the convenience factor I think people are not taking into consideration how much environment damage a new store will cause esp when they can get most of what they need already in Scotts Valley and Santa Cruz. These days when we are measuring carbon footprints etc... is a project of this size really worth the environmental cost? This is not a hospital or community service so I do not expect to see many people enthusiastically in favor of it where they would show up with pro-Target signs at City Hall but I do see many people with important objections.

Sincerely,

David Jensen
Scotts Valley, Ca.

Taylor Bateman

From: Laura and Gary Rockow [gary_rockow@yahoo.com]
Sent: Tuesday, April 29, 2008 3:39 PM
To: tbateman@scottsvalley.org
Subject: Target Store proposal

Hi Taylor,

I'm writing to let you know that the 29 residents of County Terrace HOA on the north end of town are opposed to the Target Store in Scotts Valley.

It is our understanding that the traffic impact report was performed during the summer. If this study had been done during the school year I'm sure the results of the traffic study alone would stop this project. Just yesterday, driving southbound on SV Drive going to Walgreens, the traffic was backed up to the RV dealership from Mt. Hermon. Add a Target to this mess and it's going to be like Los Angeles. What a way to ruin our city.

Aside from traffic, my greatest concern is how the projected homes and the building of the town center will drastically impact water supply. Adding the Target to this drain on our water is a bad idea. Already, our leaders haven't given much thought to what will happen in a serious drought, yet the town center will proceed and the leaders have decided to worry about the water "later". There won't be any magic spell or rain dance they can perform when the water is gone...but maybe they can buy bottled water at the Target! Shower with a friend!

Corporate Target people will tell us they'll replace wetlands with other habitat - but it will never really happen. It won't be good. They'll tell us whatever they think we need to hear so they get their building full of imported merchandise.

It's all a bad idea. Our children are ***never*** going to thank us for trashing the land so they could shop or work at a Target store, of that you can be sure.

Scotts Valley, the new SoCal.

Laura Rockow
Scotts Valley
Country Terrace HOA

Be a better friend, newshound, and know-it-all with Yahoo! Mobile. Try it now.

Taylor Bateman

From: Scott Bailey [sbailey@liveops.com]
Sent: Tuesday, April 29, 2008 10:10 AM
To: tbateman@scottsvalley.org
Subject: Not just Monte Fiore

In all this protest/defense against/for Target, no one seems to think of the Manana Woods neighborhood behind the Hilton.

In addition to Monte Fiore dealing with traffic, this neighborhood will also suffer. I live in this neighborhood. The only way to get into Scotts Valley is via Altenitas. This road is a left hand turn onto the small 2 lane La Madrona.

Do you have any idea how 4000 + cars a day will impact this intersection?
What about Target goers coming from Scotts Valley who don't want to wait for the light at Mt Hermon and LaMadrona, and take a shortcut through our neighborhood?

So in addition to Monte Fiore, there is an entire other neighborhood affected.

I am not against having a Target in Scotts Valley, but placing in essentially on a 'dead end' 2 lane road is just stupid. Location is not good.

Scott in Scotts Valley

Taylor Bateman

From: Bob White [motox8r@comcast.net]
Sent: Monday, April 28, 2008 5:00 PM
To: tbateman@scottsvalley.org
Subject: Fw: gateway south retail store

Taylor I am resending this email because I want to make sure that the questions regarding the issues during excavation and construction are addressed on the upcoming report. All the questions from TRAFFIC SAFETY up to Aesthetics need to be included. Plus we would like to see a preconstruction elevation rendering physically put on site. This request meets the April 30 cutoff. Thanks W.R. and G.A. White
----- Original Message -----
From: Bob White
To: tbateman@scottsvalley.org
Sent: Monday, April 14, 2008 12:33 PM
Subject: gateway south retail store

Mr. Bateman, This letter is intended to communicate our opposition to the proposed Target project on La Madrona Drive, or quite frankly anywhere else in Scotts Valley. Our detail will be simple since we realize there is much opposition to this project and others will cover in detail all the facets of opposition. We won't cite codes or laws since others will be doing so. As we refer to the negative impacts please understand that you would be burdened with a long letter if we explained in detail every aspect of our concerns. First, it seems incredulous that a study even needs to be done and that the City is even entertaining the thought of a project the size of Target for La Madrona road. Our main concerns are: TRAFFIC SAFETY : Will traffic altercations within a one mile radius of the Proposed Target location increase 100% or more?. What about grid lock, air pollution from exhaust, water pollution from parking lot water runoff , noise pollution, light pollution. How would traffic be managed during excavation and building? How many trucks will be entering and leaving the two lane road during construction? How will they enter and leave the area? How much delay for residents will be involved? Would restrictions be imposed for hours of construction. Would they coincide with residents leaving for work and school? How will emergency service to the residents in the La Madrona, Silverwood, Altenitas area be affected during and after construction? AESTHETICS: Acres of asphalt and a monolith of cement in a country-rural, residential area. How could this even be mitigated? Isn't the maximum allowable building height 35 feet???? CRIME: be it shop lifting, purse snatching, car break-ins, robbery, all these incidents happen at other Target Stores. This one would be no exception.As a matter of fact due to the affluence of the area, it may increase at this store. What are estimated crime increase statistics? How will this affect our police department? ECONOMY: Money spent at local merchants stays in Scotts Valley and gets reinvested in our community. Money spent at Target will go to Minneapolis Minnesota. It gets siphoned out of the community. Target does not bring more jobs to a community. They bring low paying positions that are filled by our existing work force leaving local jobs. How will we attract new local merchants and keep our existing small businesses viable ? We would like all these topics addressed. We will see you at the meeting on Wednesday. We hope you have wheelchair access. The White Family, 308 Silverwood Drive

Taylor Bateman

From: David Jensen [ds_jensen@yahoo.com]
Sent: Monday, April 28, 2008 4:12 PM
To: tbateman@scottsvalley.org
Subject: voicing my concerns about the Targt project

Taylor,

Thank you for taking the time to read my email. As a Scotts Valley resident I am writing you to voice my concern for the proposed Target store in our City.

My concerns are for the following items:

1. The traffic will be horrible for everyone in every direction. Adding as many cars as there are people in Scotts Valley will make Mount Hermon look like 41st street at Christmas time. Also curious why Target is in favor of subjecting their customers to this. Maybe I should ask John Dewes about it but I imagine that Target wants their customers to have a good shopping experience and getting in and out will cause anxiety and stress.

2. I am concerned about the viability of this store. With no end in sight to the economic downturn I believe consumer spending will decrease greatly and the retailers will get hit hard. Without any stores around the Scotts Valley Target, they may decide that this is location is no longer profitable and we are left with an abandoned shell of a building.

3. Sales tax benefit is not there. The recession and cannibalization of existing retail will seriously cripple the sales tax advantage coming from this store.

4. I do not understand the location. All Target stores in California are on 4 lane roads with good in/out. I also have never seen a Target without companion stores that this one will never have because of the location.

5. I also wanted to put a bug in your ear about the arguments made in favor of this project. I have read all the correspondence in the papers and what strikes me is that the arguments in favor are first the sales tax revenue and a distant second place are thoughts about how "it would be nice to have a convenient store close by". I have already mentioned the sales argument above so addressing the convenience factor I think people are not taking into consideration how much environment damage a new store will cause esp when they can get most of what they need already in Scotts Valley and Santa Cruz. These days when we are measuring carbon footprints etc is a project of this size really worth the cost? This is not a hospital or community service so I do not expect to see many people enthusiastically in favor of it where they would show up with pro-Target signs at City Hall but I do see many people with important objections.

I have an idealist sense that you all in local government are there to not just run the day to day affairs but to also look out for us residents and our interests by considering all aspects of this project and not just the perceived financial gain.

Sincerely,

David Jensen
Scotts Valley, Ca.

Taylor Bateman

From: Roddy, Virginia [Virginia.Roddy@plantronics.com]
Sent: Monday, April 28, 2008 2:48 PM
To: tbateman@scottsvalley.org
Subject: No No to Target

I wish the City of Scotts Valley would look before they leap. We don't have a town center, and now, we have yet another "area" of Scotts Valley with the advent of Target. What a nightmare that would be. We, have so far the following "areas" of SV:

1. Nob Hill
2. Scotts Valley Market
3. Scotts Valley Drive
4. K-mart
5. Safeway
6. Skypark
7. Starbucks, ABC Restaurant
8. Surf City Area which includes the Hotel and now Target

Sit still and make some decisions about how we want our city to be and not just from a revenue generating standpoint.

I think the best thing that's happened to this town in a long time is Bustichi. Love his new building on SV Drive. We could definitely make this a destination stop if we tried; however, once again we're going in several different directions.

Oh, we've lived in Scotts Valley for over 20 years, so I feel my opinion is worth something.

Thanks for listening, and don't let Target in.

John and Virginia Roddy
Bean Creek Road
Scotts Valley
438-5692

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Taylor Bateman

From: Mike Archer [marcher007@sbcglobal.net]
Sent: Monday, April 28, 2008 1:58 PM
To: tbateman@scottsvalley.org;Scotts Valley City Hall
Subject: Proposed Target Store

Sirs:

I am opposed to the plan for a Target Store here in Scotts Valley.
I lived next door to a Target store in Mtn View for a few years while my son attended the University near by.
It was noisy. Lights were on 24/7 - it was never dark at night!
Cars were abandoned in the parking lot and not removed promptly.
Unsavory individuals frequently gathered in the parking lot. We observed them selling drugs.
Diesel smoke from the delivery trucks left a layer of soot on the patio furniture and the draperies on our windows.
Traffic was manageable there but I do not believe that it will be here. I expect that each evening the the off ramp from Hwy 17 onto Mt Hermon will be backed up for at least a mile onto the freeway! Isn't traffic bad enough on Mt Hermon now without adding hundreds of additional cars?
In my opinion the Target proposal is a bad idea for our little merchants here in the valley. I can not imagine anyone would honestly believe it will not drive out many of the small businesses.
The Target proposal is just a bad idea.

Mike Archer
Robert Archer
8 Morgan Court
Scotts Valley, CA. 95066-4767

Taylor Bateman

From: Rebeca Finn [rebeca.finn@sbcglobal.net]
Sent: Monday, April 28, 2008 1:24 PM
To: tbateman@scottsvalley.org
Cc: ccomstock@scottsvalley.org;tferrara@scottsvalley.org;cliffbarrett1@sbcglobal.net;seajems@pacbell.net;dene@bustichi.com;jimreedsv@gmail.com;rlj12@comcast.net
Subject: letterforabetterscottsvalley
Attachments: letterforabetterscottsvalley.doc

Good afternoon,
Attached please find a public comment letter or proposed project at Gateway South.

Regards,
Rebeca Finn

May 13, 2008

Taylor Bateman
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066
831.4440.5633

Re: Public Comment / **Scoping SEIR for planned Target Project / Gateway South Retail Store**

Dear Ms. Bateman:

As a lifelong resident of Scotts Valley and a former elf at Santa's Village please consider the following thoughts. What is the future of Scotts Valley what was the past? I still smile when I see the mushrooms from Santa's Village around various parts of town. I brag to my visitors when we are at Gilroy Gardens that these circus trees originated in Scotts Valley. When you go shopping, which are your favorite local spots from an aesthetic perspective? Downtown Los Gatos, Carmel and Capitola, would be the top 3 on most peoples lists. Why not try to emulate those great towns? We are blessed with a beautiful backdrop; let's not turn our Scotts Valley into a mini San Jose.

I believe this proposed Target Shopping Center project is a bad idea for the City of Scotts Valley and its citizens. This project would have significant traffic, water and environmental impacts which cannot be readily mitigated. In addition, I believe the net economic impacts of this project would be negative for both the local economy and have a greater burden on the finances of the city then you estimate (even given the perceived increased revenue). Also, purely from an aesthetics and visual impacts perspective, a big-box store at the Southern Gateway entrance to Scotts Valley is not an appropriate fit for this city. Also a Big-Box Store highly visible from Hwy 17 is inconsistent and incompatible with the County of Santa Cruz's designation of Hwy 17 as a scenic route.

In closing, a Target can be reached by driving either North or South in approximately 20 minutes. Think Locally, Plan Long-term, Support the Town Center, Act With Character and Grace.

Sincerely,

Rebeca S. Finn
Concerned Citizen

221 SILVERWOOD DRIVE, SCOTTS VALLY, CA 95066
PHONE: 831.439.8636 • FAX: 831.430.9925

Taylor Bateman

From: Tracy Ferrara [tferrara@scottsvalley.org]
Sent: Monday, April 28, 2008 8:19 AM
To: tbateman@scottsvalley.org
Subject: FW: **SPAM** Target

Tracy A. Ferrara, City Clerk
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066
Tel 831-440-5600
Fax 831-438-2793
Email: tferrara@scottsvalley.org
Website: www.scottsvalley.org

-----Original Message-----
From: Virginia [mailto:ginnyhooper@excite.com]
Sent: Sunday, April 27, 2008 4:27 PM
To: cityhall@scottsvalley.org
Subject: **SPAM** Target

I join those who oppose Target coming to Scotts Valley. I do so because of the increase in traffic and because it does not suit the image of Scotts Valley.

Virginia Hooper

552 Bean Creek Rd. #129

Scotts Valley CA 95066

Join Excite! - http://www.excite.com
The most personalized portal on the Web!

aaaaaaa

Taylor Bateman

From: George Ann White [georgiew@comcast.net]
Sent: Saturday, April 26, 2008 10:29 AM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

Mr. Bateman: We have already written a list of concerns. An additon is this request: We want to see what the actual height of the proposed Target Box will actually be. I think it's called a topography report. Forgive me if I don't know the actual term. A simulation is made that shows the height so neighbors and interested parties can see the impact of the size and height. Orange mesh like material is used along with poles. That way the size will be evident and not an abstract figment of everyone's imagination. This simulation is done on the exact site and it is to actual size. (height) Thanks. This will be a reality check. Georgeann White

Taylor Bateman

From: Mark Ransler [markransler@comcast.net]
Sent: Monday, April 21, 2008 1:21 PM
To: Taylor Bateman
Cc: Mark Ransler
Subject: Economic Impact on La Madrona Site

Hello Taylor & SV Planning Dpt.

I would like to add to the Economic list, items to review during the processes of evaluation for the Target project. "IF" the Target super store was to be approve on La Madrona Drive, please put into the economic scope what would happen:
1: If Target Corporation went bankrupt?
2: If Target store on La Madrona failed and was closed by Target?
3: If Target needed additional space?
4; If Target moved to another location?

What would be the impact to the city and economy? What would the building and property be converted into?

Thank You,

Mark Ransler

Taylor Bateman

From: Gene Michalak [genemich@gmail.com]
Sent: Sunday, April 20, 2008 11:15 AM
To: tbateman@scottsvalley.org
Cc: pbeditor@pressbanner.com
Subject: Gateway South Retail Store

Dear Mr. Bateman,

I have a few concerns/comments regarding the proposed Target store especially as it relates to the new Scotts Valley's Town Center in particular. My fear is that it could compromise our overall success on the project in a number of different ways.

First of all. What if Target goes in and taxes our water resources to the point where we cannot fully develop the Town Center as we had envisioned? I think then, most would say that the trade-off was not worth it. If we cannot predict water tables in advance, might it not be more prudent to err on the side of caution?

Second. Wouldn't it make more sense to have Target as one of the Anchor tenants for the Center thus enhancing the project with their presence instead of competing with its roll out. It might be the case that many who are currently voicing their opposition to Target in that particular location might actually welcome the store as part of the new Town center.

Next. I feel that The SV Hilton is architecturally the crown jewel of SV. It serves as a wonderful welcome to SV for those getting off 17 at the Mt. Hermon Rd. exit. To compromise that beauty needlessly would be a shame and not in the best interest of SV as we attempt to draw tourists from other areas.

Finally. If the traffic coming off 17 starts backing up, especially onto the Highway, then we not only have potential safety concerns but this in fact would serve as a big negative for those wanting to reach the new Town Center. Some out of town residents may attempt the journey once or twice and choose not to repeat that exercise in frustration.

I suspect that one option being discussed is a mid-city off ramp..... I am opposed to that solution for the following reason: It would be too close to the SV Middle School. The additional traffic coming onto SV Drive would expose our kids to increased risk. Many of the school children walk or bicycle to school daily and often can be seen clowning around, as kids do, and not being as observant of traffic as they should be. We need to take their well-being into consideration.

Thank you for 'listening'.

Sincerely,

Gene Michalak
Scotts Valley

Taylor Bateman

From: Paula Phelan [paula@nadelphelan.com]
Sent: Sunday, April 20, 2008 10:27 AM
To: tbateman@scottsvalley.org
Cc: swestman@scottsvalley.org;fkertai@pacbell.net;pbach@rldpac.org
Subject: Elements to include in the scoping of the SEIR

Elements to include in the scoping of the SEIR for the proposed Target store in Scotts Valley.

TRAFFIC
- Include impact of 804 units of high density housing approved 9/07 after the traffic study was completed

- Impact of commuting Target employees on traffic

- Include traffic flow during hours when schools are in session

- Provide review of similar sized stores put on a two lane (vs. four lane) road anywhere in the U.S. and the impact it had on traffic

ECONOMIC
- Itemize what local businesses will be impacted by Target, i.e., the proposed store will include an optometry center which will impact the two optometrists in SV

- Determine the amount of federal/state funding lost by not meeting the requirements of the state highway beautification act

- Coordinate with Santa Cruz County Sheriff department, paramedics and Caltrans regarding impact of development to area of road between proposed site and Sims Road

- In depth analysis of reduction of housing value within one mile of proposed big box store

- Salary analysis of SV Target employees

- Crime analysis of other similarly sized stores and neighborhoods

ENVIRONMENTAL
- Coordinate with the costal commission regarding run off from parking lot

- Impact on bird population specifically predatory birds in the area
  Please include input from Santa Cruz Predatory Bird Research Group at Long Marine Lab, UCSC

Thank you for your consideration.

Paula Phelan
Scotts Valley Resident and Employer

--

Paula Phelan
NADEL PHELAN, Inc. / NPI PR
Strategic * Technology * Communications
Direct: (831) 440-2410

Cell: (831) 234-4334
http://www.NPIpr.com

Taylor Bateman

From: Fred Nadel [fred@nadelphelan.com]
Sent: Sunday, April 20, 2008 10:13 AM
To: tbateman@scottsvalley.org;swestman@scottsvalley.org
Cc: Dene Bustichi;Randy Johnson;Jim Reed;Frank Z. Kertai;Paul Bach
Subject: Scoping for SEIR - Public comment

April 20, 2008

Susan Westman
Taylor Bateman
Scotts Valley Planning Department

Re: Scoping SEIR for planned Target Project

Dear Ms. Westman and Mr. Bateman:

I'm writing this letter to add my concerns to those voiced at the Scoping Meeting of April 16, 2008, 4:00 pm. The scope of the investigation of the impact of the Target project needs to be expanded to include the topics below.

For the SEIR report please cover the following topics and related details.
o **Impact of 804 residential units approved in September 2007** on the traffic flow (and especially in the already overloaded Altenitas Road vicinity). These unit were not accounted for in the draft Traffic study report provided by the city to residents. Therefore the report is incomplete and inaccurate.

o Re-examination of baseline traffic figures and creating a new study if necessary to **include measurement of traffic when schools are in session and during pickup and drop off times.** The traffic load from schools being in session was not accounted for in the draft traffic report.

o Accounting for additional traffic loads from Target employees.
o **Response times from Fire Station for Fire and EMT services** which include the fully loaded traffic projections from **all** the approved projects - residential units and schools in session mentioned above- plus the Target store traffic (with employees). Please look at average and worst case scenario traffic loads when all these consideration are loaded into the baseline figures.
I also wanted to voice my concern about completeness in the scoping process for the SEIR. I've noticed that there can be a tendency to lump concerns together into a single bucket like, 'traffic'. While procedurally this may be expedient, we have already seen how a 'traffic' study can be incomplete even on the day it is released to the public. So I would urge you to preserve the specific concerns I have voiced here and address each one of them in the SEIR. If the firms performing the SEIR (and the traffic study) do not address these specifics and instead, accept and issue a traffic report that lumps traffic issues together and does not include the specifics, then the SEIR process is rendered meaningless by virtue of a 'procedural dilution'. Please keep this from happening. It will preserve the integrity of the review process.

Sincerely,

Fred Nadel
625 Lassen Park Court
Scotts Valley, CA 95066

--

Fred Nadel
NADEL PHELAN, INC.
Strategic * Technology * Communications
Direct: 831-440-2400
fax: 831-439-5575

Taylor Bateman

From: zzotcase [zzotcase@sbcglobal.net]
Sent: Thursday, April 17, 2008 10:28 PM
To: john@scottsvalley.com
Cc: Taylor Bateman
Subject: Re: Economic research regarding Target stores

Mr. Dewes, I previously sent the following message to the email address listed on your business card. Please pardon the duplication – if that indeed has occurred.

Hello Mr. Dewes,

It was a pleasure meeting you at the Scotts Valley City Council meeting yesterday. I have some questions regarding Target in general and the Scotts Valley proposal in particular.

1. It's easy to find plenty of peer-reviewed research on the web regarding the negative economic effects of large-scale retail development. I have also found some research that points to potentially positive effects, but primarily with respect to global economies; i.e. the provision of work (albeit not to Western standards) in foreign countries. Can you direct me to any peer-reviewed research that would show positive economic effects for large-scale retail in local and regional economies, or before-and-after case studies that examined the economy of a town prior to and after the arrival of large-scale retail?

2. Target has built a variety of store designs to accommodate community standards. I note that there are solar installations on some buildings, non-polluting membrane roofs on others, and even "living roofs" covered with soil and planted with sedum, on a few. There are facades designed to mimic the varying roof heights and store fronts that would be found in an urban setting. The proposed Second Street Crossing Target development in Davis, California, has included 200 foot-plus setbacks, including tree-planted, landscaped berms to better isolate the store and parking areas from the neighboring community. In other words, from what I've found, Target exhibits some flexibility and has begun to integrate more environmentally conscious design in their stores. Could you direct me to other alternative Target installations nationally and globally? What criteria would Target use to consider alternative ideas to single-story warehouse design?

My preference would be that the Target replace the Kmart complex downtown, which I recognize may not be possible, due to current ownership and/or lease agreements. Nevertheless, that's where a Target should go, based on the City's General Plan, and in order to most fully complement the planned Town Center. That location would also supply the most reasonable access to the store with regard to traffic and public safety needs. A two-story Target at that location, with a tiered parking garage, would satisfy Target's desire for retail space.

However, if the Target were built at the La Madrona site, it could follow precedents Target has set for itself in other locales. It could be two stories, to reduce the building footprint, and to permit far more generous setbacks from La Madrona and Silverwood drives, and the Hilton Hotel. If the Target tower is intended to be visible from SR17 and the Mt Hermon intersection, a two-story building would achieve the same goal, while providing deeper buffer zones to mitigate the close-range aesthetic, and long-term environmental impacts of the store. It could incorporate rainwater capture systems (with potentially vast storage tank capacity under the parking area) to provide landscape irrigation and to reduce aquifer recharge impacts. It could include a solar installation to defray power use. The second story of the parking area could be roofed, to minimize production of polluted groundwater, and that roof could also be used for rainwater and solar capture. These ideas would obviously cost more that the proposed one-story structure. However, Target claims their buildings are constructed for a fifty-year lifespan. In view of the potential longevity of the stores and their high profitability I think Target could afford, and should build, the most resource-efficient and minimal impact installations it can, in any locale, and by doing so show that it is possible to be even more than the extraordinary retailer it has become, particularly in contrast to the blunderbuss approach taken by Wal-Mart, which appears to be generating increasingly considerable

backlash. Target has shown itself to be enormously successful and has an enviable record of charitable contributions. Currently, in some locations Target exercises flexibility and a willingness to work with communities concerning design. They could further differentiate themselves from other retailers by building markedly more "green" installations everywhere a new store is built.

Lastly, I have a question regarding the marketing side of large-scale retail. Economic data shows unprecedented displacement of US manufacturing by foreign sourcing of all manner of goods. That displacement has brought tremendous economic change to the poor and middle class throughout the US. It has increased our dependence on oil to transport goods from further away, causing more pollution, and has accelerated the environmental degradation of other countries by production not regulated to the extent US manufacturers were or are. Our growing awareness of the global ramifications of industry and commerce is changing our perceptions of what we need to do to ensure a viable future for ourselves and future generations. Large-scale retail has the power to affect an enormous shift in the sourcing of goods, and I would suggest that one market they have completely overlooked to date is that for US-manufactured goods and locally-produced inventory, admittedly, at this point, a niche. Target could have a section in all their stores dedicated to US and locally-produced goods. Has there been any attempt by Target or any large-scale retailer to include such a niche in their stores? If Target would lead, the US could regain a small portion of that manufacturing economy – and the skilled, higher-paying jobs that accompanied it. If Target would lead, supporting some local production in every region across the US, imagine the impact on local, regional, and the US economy. Imagine national support Target might garner, particularly if others did not follow suit.

If you could, would you please comment on my suggestions and questions?

Thank you,

Doug Wood

Taylor Bateman

From: zzotcase [zzotcase@sbcglobal.net]
Sent: Saturday, April 19, 2008 7:23 AM
To: john@scottsvalleytarget.com
Cc: Taylor Bateman
Subject: Re: Economic research regarding Scotts valley Target

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Mr. Dewes, I previously sent the following message to the email address listed on your business card. Please pardon the duplication – if that indeed has occurred.

Hello Mr. Dewes,

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1. It's easy to find plenty of peer-reviewed research on the web regarding the negative economic effects of large-scale retail development. I have also found some research that points to potentially positive effects, but primarily with respect to global economies; i.e. the provision of work (albeit not to Western standards) in foreign countries. Can you direct me to any peer-reviewed research that would show positive economic effects for large-scale retail in local and regional economies, or before-and-after case studies that examined the economy of a town prior to and after the arrival of large-scale retail?

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However, if the Target were built at the La Madrona site, it could follow precedents Target has set for itself in other locales. It could be two stories, to reduce the building footprint, and to permit far more generous setbacks from La Madrona and Silverwood drives, and the Hilton Hotel. If the Target tower is intended to be visible from SR17 and the Mt Hermon intersection, a two-story building would achieve the same goal, while providing deeper buffer zones to mitigate the close-range aesthetic, and long-term environmental impacts of the store. It could incorporate rainwater capture systems (with potentially vast storage tank capacity under the parking area) to provide landscape irrigation and to reduce aquifer recharge impacts. It could include a solar installation to defray power use. The second story of the parking area could be roofed, to minimize production of polluted groundwater, and that roof could also be used for rainwater and solar capture. These ideas would obviously cost more that the proposed one-story structure. However, Target claims their buildings are constructed for a fifty-year

lifespan. In view of the potential longevity of the stores and their high profitability I think Target could afford, and should build, the most resource-efficient and minimal impact installations it can, in any locale, and by doing so show that it is possible to be even more than the extraordinary retailer it has become, particularly in contrast to the blunderbuss approach taken by Wal-Mart, which appears to be generating increasingly considerable backlash. Target has shown itself to be enormously successful and has an enviable record of charitable contributions. Currently, in some locations Target exercises flexibility and a willingness to work with communities concerning design. They could further differentiate themselves from other retailers by building markedly more "green" installations everywhere a new store is built.

Lastly, I have a question regarding the marketing side of large-scale retail. Economic data shows unprecedented displacement of US manufacturing by foreign sourcing of all manner of goods. That displacement has brought tremendous economic change to the poor and middle class throughout the US. It has increased our dependence on oil to transport goods from further away, causing more pollution, and has accelerated the environmental degradation of other countries by production not regulated to the extent US manufacturers were or are. Our growing awareness of the global ramifications of industry and commerce is changing our perceptions of what we need to do to ensure a viable future for ourselves and future generations. Large-scale retail has the power to affect an enormous shift in the sourcing of goods, and I would suggest that one market they have completely overlooked to date is that for US-manufactured goods and locally-produced inventory, admittedly, at this point, a niche. Target could have a section in all their stores dedicated to US and locally-produced goods. Has there been any attempt by Target or any large-scale retailer to include such a niche in their stores? If Target would lead, the US could regain a small portion of that manufacturing economy – and the skilled, higher-paying jobs that accompanied it. If Target would lead, supporting some local production in every region across the US, imagine the impact on local, regional, and the US economy. Imagine national support Target might garner, particularly if others did not follow suit.

If you could, would you please comment on my suggestions and questions?

Thank you,

Doug Wood

Taylor Bateman

From: dtnorth@comcast.net
Sent: Thursday, April 17, 2008 8:22 AM
To: tbateman@scottsvalley.org
Cc: srnorth@comcast.net
Subject: Gateway South Retail Store-Notice of Preparation

Hello There,

Just wanted to take the opportunity to comment on the Notice of Preparation of the Gateway South Retail Store. The topics identified in the probable environmental affects section seem appropriate for this development at this location; however, I do not see mention of the Cumulative and Growth Inducing Impacts associated with this proposed development. Please ensure these topics are adequately covered in the Supplemental EIR.

Also, where can I get a copy of the original EIR? Was this an evaluation of another PD development or on the General Plan review?

Kind Regards,

David North

Taylor Bateman

From: Jerry.J.Weingord@seagate.com
Sent: Wednesday, April 16, 2008 3:39 PM
To: tbateman@scottsvalley.org
Cc: Frank Z Kertai;Paul Bach
Subject: DEIR Meeting 4/16

Attachments: JW_Response_Draft Transportation Impact Analysis_04_16_08.pdf

JW_Response_Draft Transportati...

Taylor,

Please make my comments below public record for todays meeting.

Regards,

Jerry

(See attached file: JW_Response_Draft Transportation Impact Analysis_04_16_08.pdf)

Good Afternoon,

My name is Jerry Weingord, and I work and live in Scotts Valley.

I became aware last evening that the Draft (TIA) for Gateway South was made public in the afternoon of April 15, and request that the 30 days for review and comments, from the general public begin effective today, and end May 27, 2008 to give the larger population the opportunity to respond.

In the few hours I had to review the report, I came to my own conclusions based on the data provided and have also identified some key findings from the report as noted below:

1-The construction of a 162,000 sq-ft retail store on La Madrona Drive will require, tens of millions of dollars in roadway construction to enable the flow of traffic to an acceptable Level of Service. Knowing the budget problem for both the town of Scotts Valley as well as the State of California, I don't see any viable method to fund the required construction.

2-In the unlikely case that these projects due get funded, the proposed retailer needs to be informed that it will most likely take 5-10 years to complete the required construction to enable the flow of traffic to support a Big Box Store.

3-The data for the existing traffic volumes was conducted in July and August 2007, which is the time when most residents take vacation, hence not representing the **"true"** traffic volumes for the associated intersections. I request that a new study be taken when most residents are **not** on vacation.

4-The intersection of La Madrona and Altenitas Road will exhibit a 10X increase in wait time from the current 14.2 sec to 140.5 sec. **There was no mitigation plan proposed regardless of new road infrastructure to solve this problem.** This is an **unacceptable** condition with **no** solution.

5-I do not accept the analysis that shows that the baseline plus project wait time at La Madrona and Silverwood Drive will exhibit no change to the baseline from the current 10.0 sec. This suggests that no cars will be traveling sound bound on La Madrona Drive to avoid the bottle- neck at La Madrona and Mt Hermon Rd. This is an **incorrect** assumption, and requires further analysis. I request a new study be performed to correctly analyze this intersection, along with the intersections Southbound on La Madrona drive.

5-An additional traffic study is required on La Madrona drive during peak drop off and pick up times at Brook Knoll Elementary school to more accurately represent the baseline conditions.

6-Every evening you can see families with their kids, out walking on the sidewalk immediately in front of the proposed site. It's quiet, beautiful, and adds to the quality of life in living in Scotts Valley. This reality was not considered in the report.

During the complete process of evaluating the viability of a Big Box store in Scotts Valley, and also determining if its in the best interest of the residents of Scotts Valley, I got the impression that it's the residents of Scotts Valley against the Mayor and City Council, which is ironic, because we elected **you,** to represent **our** best interests.

I request that this study be the turning point in our relationship, and that the City Council and the Mayor start to represent the interests of its residence.

I thank you for your time.

Taylor Bateman

From: Tim Butler [tim@tjbco.com]
Sent: Wednesday, April 16, 2008 11:58 AM
To: tbateman@scottsvalley.org
Subject: Today's meeting re: TARGET

Dear Mr. Bateman,

My wife and I are unable to attend the meeting today at 4:00 p.m. but wish to express a **negative vote** on La Madrona Drive as the building site for TARGET. While we might benefit from having a TARGET store closer to us than Watsonville, we are completely opposed to having it on La Madrona Drive. We use that road several times a week and the attendant traffic would be horrendous! PLEASE--find another site more conducive to the heavy traffic and environmental issues that would result in our community.

Sincerely,

Tim and Sandra Butler
281 Civic Center Drive

Taylor Bateman

From: Paul Bach [pbach@rldpac.org]
Sent: Wednesday, April 16, 2008 11:52 AM
To: Taylor Bateman
Subject: Oral comments for Todays DEIR Meeting at 4:00
Attachments: Oral Comment.pdf

Hello Taylor,
Since it is my understanding that the oral comment period for todays 4:00 pm meeting will be limited to 5 minutes for groups and 3 minutes for individuals I have had to limit my comments considerably. Attached is a pdf document of what I intend to say at the meeting. I will of course provide you with a more substantial written comment regarding the DEIR before the public comment period ends. Please let me know if you have any difficulty opening the attached. Thanks.....Paul Bach. www.rldpac.org

Good Afternoon.

My name is Paul Bach, I am a local homeowner, local business man and President of the Scotts Valley Responsible Local Development PAC.

At 4:07 pm yesterday afternoon we were informed by the City Attorney Kirsten Powell that the draft traffic report had indeed been shared with both Target Corporation and Title II despite previous assertions to the contrary by City officials, including an April 11th assertion to that effect by Mayor Johnson. Until yesterday afternoon the City was refusing to release this same information to the public yet we now know it was given to the proponents of the Target development. As a result of this action the general public has been denied an even playing field in the review and comment process.

As a result of this breach by the City and their consultants we are requesting that the Public comment period be extended by an additional 28 days (the time period from when an official California Public Information Request was submitted to the City and when the data was finally made available to the public.). This will extend public comment until Wednesday May 28th, 2008.

We have just begun to review the Traffic draft study. The study incidentally is dated November 9th, 2007 a date that precedes the City of Scotts Valley receiving a filing from Target. We are also reviewing the April 4th version.

Several facts immediately jump out of the reports:

- "The proposed Project is estimated to generate 9,075 net new daily trips per day" this is during non-holiday periods. The vast majority of this traffic passes through the intersection of Mt. Hermon Road and La Madrona Road.

- The Traffic Study indicates that Level of Service (LOS) at the Mt. Hermon Rd./La Madrona intersection will drop to LOS (E) with PM delays during rush hour of approximately 79.4 sections. Let me remind the City that the Scotts Valley General Plan requires that this intersection remain at no less then Level C service.

- The intersection of La Madrona and Altenitas Rd. next to the Hilton Hotel will drop to (LOS) F effectively bottlenecking the residents of Manana Woods.

- Highway 17 both North and South currently operate at (LOS) F the lowest level of performance even without the addition of the Target Shopping Center – Caltrans will need to analyze this increased impact.

- Since a significant number of Target customers are expected to come from Santa Cruz County the impact on Highway 1 and the fishhook will also need to analyzed by Caltrans

- The report offers the Mid-town interchange as a mitigating factor for some of these statistics. Where is the estimated $30 million dollar funding for this project? Since the City has not reserved money for the Mid-Town interchange and unless Caltrans is willing to provided this funding then this is an unrealistic smoke screen to achieve a LOS fantasy.

- Even if funding could somehow be found for the Mid-Town Interchange please identify which residents of Scotts Valley will have their homes taken by the City under Eminent Domain?

- Apparently unsignaled intersections were counted when Brook Knoll School was in recess. Since La Madrona is a major access point by parents dropping off or picking students up from the school the traffic studies must be redone at a time period when the school is in session. Anything less would be suspect.

- La Madrona Road is used not only by parents bringing their children to and From Brook Knoll School but also by students walking or biking to the Middle School on Scotts Valley Drive. The project must take into consideration the safety of these children in the EIR

- The proposed Target Shopping Center will be setback just 22 feet from La Madrona. Because of the proposed grading on the site the 44 foot tall Target tower will rise 70 feet 6 inches from the road elevation. The building not counting the tower will rise 66 feet 6 inches from the road elevation. Aesthetically this is unacceptable and inconsistent with neighboring architecture.

- The proposed Target Shopping Center will effective annex all residents to the South and West of the Building from the rest of the City.

Since the public comment time today has been limited, a more complete list of comments will be submitted before the closing of the written Public Comment Period.

Taylor Bateman

From: Sherrie McMahon [sherriemcmahon@mac.com]
Sent: Wednesday, April 16, 2008 10:49 AM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

I don't know whether this is possible, or if the information is already available, but I would like the Supplemental Environmental Impact Report for the proposed Gateway South project to differentiate between total vehicle traffic related to the project and the net increase in vehicle traffic related to the project.

For example, a parent or teacher who is already driving to and from Brook Knoll Elementary School each day, and who stops at the proposed
Target en route, is not adding to the traffic on that road.
Similarly, a person who lives near the proposed development and who replaces a longer trip to Kmart with a shorter trip to Target, then we have actually reduced the total amount of traffic in the City.

Thank you,

Sherrie McMahon
268 Bluebonnet Lane, Scotts Valley

Taylor Bateman

From: Ryan Gilliam [ryangilliam@sbcglobal.net]
Sent: Tuesday, April 15, 2008 10:39 PM
To: tbateman@scottsvalley.org
Subject: Proposed Target Store

Mr. Bateman:

For 6 years since moving into our new home, my wife has enjoyed her daily walks past the Hilton hotel and through Monte Fiore. She now takes those walks with our 3 year old daughter, or sometimes with our 6 month old son.

I am afraid that she will no longer be safe doing so if you allow the Target store to be built on La Madrona, as such a large store visible from the freeway will entice criminals to make a detour.

Traffic is so heavy on Mt. Herman road that we have to drive down Altenitas and make a left on La Madrona to access the stoplight in order to safely cross. With Target on the street, it will not be safe to make the turn. We have the right to safely travel from our home.

I find it ironic that the city is trying to remove obstacles (propane businesses) to their new downtown area while at the same time promoting the death nail to downtown shopping in the form of a new Target store.

Our town already has the reputation for being a cluster of strip malls and fast food restaurants. Having a Target store at the gateway to Scotts Valley will only solidify that tarnished image.

My neighbors and I wish you will reject the proposed development.

Sincerely;

Ryan Gilliam
26 Torrey Oaks Court

Taylor Bateman

From: Jan Wagner [jansantacruz@cruzio.com]
Sent: Tuesday, April 15, 2008 10:08 PM
To: tbateman@scottsvalley.org
Cc: Jan Wagner
Subject: Gateway South Retail Store

Dear Mr. Bateman,

I am very opposed to the "Big Box" coming to Scotts Valley. ie: Target

I have just returned from a family visit to the Midwest. I was shocked and dismayed to see their small town of 5,000 people lose all their downtown businesses in the old town center....All the stores are empty.and crumbling....
.because Big Box Stores had been built on the freeway just outside the town. The small, ma & pa businesses could not compete !

I hope all the Scotts Valley business' owners realize that this can happen to them. too.... when Target comes to Scotts Valley....
The money...expected from the Big Boxes ....will be minimized by the loss of revenue from the rest of the businesses..
..
Why is the Chamber of Commerce not speaking out against Target ?

The noise & polution factor should be evaluated....The delivery trucks at 4-5 AM ..with their "beeping" and truck noises...will not be welcomed by the occupants of the Hilton Hotel....

The roads ...quiet little La Madrona...cannot handle any additional traffic. ...

If Target needs to come to Scotts Valley....It should go in the middle of other businesses.....ie: King's Village....Scotts Valley Drive.....Victor Square....So that at least the nearby stores "might" get some overflow...

Jan Wagner
204 Camino Sinuoso
Scotts Valley
438-2628

Taylor Bateman

From: srnorth@comcast.net
Sent: Tuesday, April 15, 2008 5:58 PM
To: tbateman@scottsvalley.org;jimreedSV@gmail.com;jimreedSV@gmail.com;rlj12@comcast.net;rlj12@comcast.net;cliffbarrett1@sbcglobal.net;cliffbarrett1@sbcglobal.net;dene@bu
Subject: "Gateway South Retail Store"

Dear Mayor Johnson, Vice Mayor Barret, Council Members, Reed, Aguilar and Bustichi and Mr. Bateman,

My name is Sonia North and I live in the Rolling Woods neighborhood. Although I am officially a Santa Cruz County resident, I have two children that go to Scotts Valley schools, and am an active member in the PTA and the SVEF. I shop regularly in Scotts Valley for groceries, gas, specialty items, eating out etc., and I am also opposed to Target in Scotts Valley

We are trying to build a Town Center in Scotts Valley to create a central place to call our own, to make this an even more solid community and to bring needed revenue in a unique, small town way. Building a "big box store," such as Target, would directly draw business away from the smaller stores that hopefully will occupy the Town Center space and that currently occupy Scotts Valley.

For example:
Bookstore
Hardware
Automotive
Stationary
Beauty supplies
Bicycle Shop
Toy Store
Clothing Store
Cooking/Kitchen Store
Art Shop
Furniture Store
Wonderful Gift and Specialty shops

All of these wonderful and unique shops will bring people from neighboring towns, along with our own, to shop and buy!

Target will sell similar items from the list above of lesser quality that are mass produced and that will definitely draw business away from our much needed Town Center and current businesses. This is unacceptable and severely poor judgment by Scotts Valley Town Leaders! I am opposed to building a Target in Scotts Valley!

Kind Regards,

Sonia North
143 Montclair Drive
Sanat Cruz, CA 95060

Taylor Bateman

From: Carter Potts [carter@rattlebrain.com]
Sent: Monday, April 14, 2008 3:23 PM
To: tbateman@scottsvalley.org
Subject: Fw: Gateway South Retail Store

Dear Taylor,

I'm afraid I jumped the gun on my last email to you. There's scores of well-meaning people in this town terribly afraid that we're going to have a big ugly target unless we "do something" about it. After reading Dene Bustichi's letter to the Press Banner about going through the due process as required by law, I'm a little embarassed to have overreacted by sending you another anti-Target blah blah letter.

I definitely DONT like Kerzai and Bachs hints at sneaky underhandedness with regard to the City council, which I believe has our best interests at heart. I'll be at the 4pm meeting on Wednesday, but not to support fear mongering and suspicion, just to explore the facts involved.

thanks for your patience,

Carter Potts.

----- Original Message -----
From: Carter Potts
To: tbateman@scottsvalley.org
Sent: Thursday, April 03, 2008 9:03 AM
Subject: Gateway South Retail Store

Dear Taylor Bateman,

I'm not convinced that Scotts Valley is the right place for a Target store. I'm actually a Target customer, I think they're great, I have them ship items right to my house. But when I envision what I'd like Scotts Valley to look like, I'd prefer to see something like downtown Los Gatos or Saratoga. Please can't we do something more upscale, more old world? Something we can all feel good about and be proud of? Guess I'll come to the public meeting on April 16th,

Sincerely,
Carter Potts

Taylor Bateman

From: Bob White [motox8r@comcast.net]

Sent: Monday, April 14, 2008 12:33 PM

To: tbateman@scottsvalley.org

Subject: gateway south retail store

Mr. Bateman, This letter is intended to communicate our opposition to the proposed Target project on La Madrona Drive, or quite frankly anywhere else in Scotts Valley. Our detail will be simple since we realize there is much opposition to this project and others will cover in detail all the facets of opposition. We won't cite codes or laws since others will be doing so. As we refer to the negative impacts please understand that you would be burdened with a long letter if we explained in detail every aspect of our concerns. First, it seems incredulous that a study even needs to be done and that the City is even entertaining the thought of a project the size of Target for La Madrona road. Our main concerns are: TRAFFIC SAFETY : Will traffic altercations within a one mile radius of the Proposed Target location increase 100% or more?. What about grid lock, air pollution from exhaust, water pollution from parking lot water runoff , noise pollution, light pollution. How would traffic be managed during excavation and building? How many trucks will be entering and leaving the two lane road during construction? How will they enter and leave the area? How much delay for residents will be involved? Would restrictions be imposed for hours of construction. Would they coincide with residents leaving for work and school? How will emergency service to the residents in the La Madrona, Silverwood, Altenitas area be affected during and after construction? AESTHETICS: Acres of asphalt and a monolith of cement in a country-rural, residential area. How could this even be mitigated? Isn't the maximum allowable building height 35 feet???? CRIME: be it shop lifting, purse snatching, car break-ins, robbery, all these incidents happen at other Target Stores. This one would be no exception.As a matter of fact due to the affluence of the area, it may increase at this store. What are estimated crime increase statistics? How will this affect our police department? ECONOMY: Money spent at local merchants stays in Scotts Valley and gets reinvested in our community. Money spent at Target will go to Minneapolis Minnesota. It gets siphoned out of the community. Target does not bring more jobs to a community. They bring low paying positions that are filled by our existing work force leaving local jobs. How will we attract new local merchants and keep our existing small businesses viable ? We would like all these topics addressed. We will see you at the meeting on Wednesday. We hope you have wheelchair access. The White Family, 308 Silverwood Drive

Taylor Bateman

From: Dan deGrassi [dan.degrassi@baymoon.com]

Sent: Thursday, April 10, 2008 10:01 AM

To: 'Allison Niday';'John Leopold';'Kathy Frandle';'Responsible Local Development';'San Lorenzo Valley Chamber';'Santa Cruz County Regional Transportation Commission';'Santa Cruz Cycling Club';'Scotts Valley Chamber';'Scotts Valley City Administrator';'Steve Robbins';'Sue Roth';'Supervisor Jan Beautz';'Supervisor Mark Stone';'Susan Mauriello';'Susan Silver';'Susan Westman';'Taylor Bateman';'Tom Bolich';'Tom Burns'

Subject: Comments on Supplemental EIR for Proposed Target Store

Attachments: TARGET EIR LETTER.doc

Ladies and Gentlemen,
Please consider the attached comments for the scoping of the Supplemental EIR for the proposed Scotts Valley Target Store.
Thank you,
Dan deGrassi

April 9, 2008

City Council
City of Scotts Valley
1 Civic Center Drive
Scotts Valley, CA 95066

RE: SEIR Recommendations for Gateway South Retail Store – Target

Dear Councilmembers,

Please accept the following comments and recommendations for analysis in the Supplemental EIR for the Gateway South Retail Store – Target.

Traffic

1. The impact of increased traffic on the intersection of La Madrona Drive and Mt. Hermon Road needs to be examined in regards to the stacking lane for vehicles on La Madrona Drive turning right (southbound). The stacking lane now can accommodate 5 vehicles before the Scotts Valley Corners shopping center exit adjacent to Surf City Coffee is blocked. With an estimated 15,000 vehicles per day (1250 vehicles per hour on average) leaving the proposed Target store, it is certain that this stacking lane will always contain more than 4 vehicles, thus effectively closing off this exit.
    a. What economic impact will this have on the businesses in the Scotts Valley Corners shopping center?
    b. How will the closure of this exit impact the other entrance/exit from the shopping center?
    c. Will a stoplight be required at this other entrance/exit which is directly across from Altenitas Rd?
    d. How many vehicles are estimated to be backed up at the La Madrona Drive/Mt. Hermon Road intersection on La Madrona during the day and evening? Provide an hourly estimate, for left turns and right turns.
    e. Will this backup extend into or past the Altenitas Rd intersection with La Madrona?
    f. What economic impact will this backup have on the Hilton Hotel?

2. With 1250 vehicles per hour average for the 12 hours of store operation leaving the store parking lot, and likely most of the customers coming from the City of Santa Cruz and other communities to the south and east, it is certain that many of these vehicles will choose to travel from the store back south by turning right from the store parking lot and driving south along La Madrona Drive in order to avoid the traffic backup at the LaMadrona/Mt. Hermon intersection. If only 10% of such customers make this choice, that is 125 vehicles per hour. La Madrona Drive is a County-maintained road and is in very poor condition with cracked pavement, inadequate drainage, narrow curves and no shoulders.

a. Provide an estimate (including methodology) of the number of vehicles per hour likely to turn south on La Madrona Drive from the project. Include peak hour loadings.
b. Identify (characterize) the existing roadway condition (i.e., pavement, drainage, width, etc.) on La Madrona Drive south of the project in the context of this increased use.
c. What will be the impacts of 125 (or number identified in Item a.) additional vehicles per hour daily usage of La Madrona Drive on the pavement condition? On the drainage? How will this be mitigated?

3. La Madrona Drive, south of the proposed Target store, is used by County residents living along the street and by City residents living in Monte Fiore for access to schools- Brook Knoll Elementary, Scotts Valley Middle School and Scotts Valley High School. It is also used by County residents to access shopping and other services in Scotts Valley and is designated as an Alternate Bike Route.
   a. What will be the impact of an additional 125 (or number identified in Item 2a., above) vehicles per hour on the safety of La Madrona Drive for schoolchildren traveling on foot, bicycle or by car to school (Brook Knoll, Scotts Valley Middle School and Scotts Valley High School)? How will these increased traffic hazards be mitigated?
   b. What will be the impact of an additional 125 (or number identified in Item 2a., above) vehicles per hour on the safety of La Madrona Drive for other vehicles traveling northbound? For residents enterting and exiting driveways along La Madrona? How will these increased traffic hazards be mitigated?
   c. What will be the impact of an additional 125 (or number identified in Item 2a., above) vehicles per hour on the safety of La Madrona Drive for bicyclists? How will this increased traffic hazard be mitigated?

4. The intersection of La Madrona Drive and Mt. Hermon Rd is one of the busiest in the county. During the evening commute hours northbound traffic sometimes backs up from the intersection onto the northbound lanes of Highway 17.
   a. What will be the impact of an additional 1250 vehicles per hour using the Target store on this intersection and on Highway 17? How will this increased traffic hazard be mitigated?

5. The pedestrian access at the intersection of La Madrona Drive and Mt. Hermon Rd. is very limited. Currently employees of the Hilton Hotel have to walk along Mt. Hermon without sidewalks or attempt to cross four lanes of the intersection in a brief amount of time. The closest public transit stops are across the freeway (a pedestrian has to walk across the overpass) and ¼ mile away near Scotts Valley Drive.
   a. How many Target employees are estimated to walk to work? What will their pedestrian access be from public transit stops?
   b. What will be the effect of an increased 1250 vehicles per hour on pedestrian (employee and customer) access to the Target store from residents living in Scotts Valley?

Noise

1. With 15,000 vehicles per day, an increase in noise levels will occur from customer vehicles and truck deliveries.
    a. What will be the increase in noise levels for residents to the south of the Target store, in particular those along La Madrona Drive and in Monte Fiore where there is a direct line of sound travel (i.e., no topographical barrier)?
    b. How will this be mitigated?
    c. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to any policies, measures and activities to avoid this negative neighborhood impact

Visual Pollution

1. At present residents to the south of the Target store, in particular those along La Madrona Drive and in Monte Fiore experience a night sky. At nighttime it is dark; one can look up and see stars. Store and parking lot security and street lighting will destroy this night sky.
    a. Provide an estimate of the amount of glare to be experienced by various adjacent areas.
    b. Indicate how this will be mitigated.
    c. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to any mitigation policies, measures and activities to avoid this negative impact.

Crime

1. No doubt with the thousands of customers coming to the Target store day and night and drawn from all over the county and certainly from out-of-county travelers on Highway 17, there will be some number of miscreants who will see an opportunity to explore new ground, especially adjoining neighborhoods, for petty crime activity. Given the rural character of the adjacent unincorporated areas along La Madrona Drive, the likelihood for an increase in such crime will be significantly increased as a result of this project. The unincorporated county is not served by the City of Scotts Valley Police Department, rather by the Santa Cruz County Sheriff's Department which is understaffed, facing budgets cuts and able to provide only very sparse patrols in this area.
    a. What are the estimates of increased crime resulting from this project; estimate additional County patrol hours (and costs) need to counter this neighborhood threat.
    b. Indicate other mitigations proposed and their costs?

Habitat Destruction

1. The meadow on which the Target store is proposed to be located is one of the last remaining grassland habitats in the area. While degraded with invasive exotics, this grassland does still provide foraging grounds for several raptors, including Red-tail hawks, Merlins and Kestrels.
    a. What will be the immediate and cumulative impacts of this habitat destruction on the viability of these species continued presence in the local area?

Litter

1. There will be thousands of plastic bags generated daily by the operations of the Target store. No doubt a good number of these will end up as wind blown litter, in the parking lot, on the hillside above the parking structure, on the Hilton property, along La Madrona Drive and elsewhere.
    a. Provide an estimate of the number of plastic bags to be generated daily by the store operations, an estimate of the quantity to be discarded as litter on the store property or from vehicles along La Madrona Drive and an estimate of the likely locations for these wind blown objects to end up.
    b. Indicate mitigations for this significant impact. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to these policies, measures and activities.

Solid Waste

1. A 155,000 square foot retail store will generate a very significant amount of solid waste. The City of Scotts Valley uses the County's Buena Vista Landfill which is very close to capacity with no new landfill alternative available. Refuse from the City of Scott's Valley that is transferred out of county incurs an additional and significant economic and environmental cost.
    a. Provide an estimate of the quantity of refuse generated daily, by material type. Provide an estimate of the additional economic costs for out-of-county transfer of the additional refuse to be generated from this project. Describe and quantify the associated incremental environmental costs (e.g., air pollution, CO2 emissions, traffic) resulting from out-of-county transfer of the additional refuse to be generated from this project.
    b. Provide an estimate of landfill space consumed daily as a result of the disposal amounts generated by this Target store operation.
    c. Indicate waste reduction programs to be required by the City as a permit condition including reduction, reuse, recycling and composting. Provide specifics including number and types of recycling containers, locations, capacity, service frequency.
    d. Indicate number of refuse containers including size and service frequency as a comparable measure of waste diversion intentions of the project.
    e. Indicate staff persons responsible for waste management and waste reduction. Indicate employee training programs and incentives for reducing and diverting waste.
    f. Indicate programs for capturing food scraps generated by the store's operation and diversion programs to which this material will be directed.
    g. Provide an estimate of the quantity of goods discarded daily from the Target store as "unsellable", "damaged" or otherwise "not to be sold", but which are still in usable condition. Indicate methods to be employed to minimize this type of waste, including corporate policies.
    h. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to these waste reduction mitigation policies, measures and activities.

Global Warming

1. Placement of this large high-volume retail store far from the city's business district and public transportation hub will encourage more automobile use than if placed close in, thus resulting in increased automobile emissions and contributing to further warming of the earth's atmosphere.
    a. Provide an estimate of the quantity of CO2 emissions resulting from this project, both construction phase and operations phase.
    b. Indicate mitigations for this significant impact.

2. A retail facility of this size will have a significant energy consumption impact resulting from in-store lighting, outside security lighting, air conditioning and in-store refrigeration. Production of this required energy has bounce back impacts to atmospheric warming.
    a. Provide an estimate of the quantity of energy consumed daily and an estimate of the atmospheric warming contributions from these activities.
    b. Indicate corporate energy conservation policies and programs to be applied to this project, such as all-night lighting.
    c. Indicate energy conservation measures to be required of the project by the City's development permit for the project.
    d. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to these mitigation policies, measures and activities.

Water Consumption

1. The water supply for the City of Scotts Valley is the Santa Margarita Sandstone Formation, an EPA-designated Sole Source Aquifer. It is the only supply of water for the City of Scotts Valley. This aquifer is also the water supply for many residents of the unincorporated county living in the surrounding area. This aquifer is heavily overdrafted (more water is being taken out than is being replenished).
    a. Provide an estimate of the daily water usage for this project. Indicate project usage amounts by type of use, e.g., in-store, landscaping, refrigeration, etc.
    b. Indicate the overdraft status of the Santa Margarita Sandstone Formation and comparative usage amounts for the Sole Source Aquifer, i.e, this project in relation to other users.
    c. Indicate corporate water conservation policies and water conservation measures to be applied by the City of Scotts Valley as conditions on the development permit to be issued for this project, including water use requirements, water saving devices, and landscaping.
    d. Indicate who on the Target store staff and who on the City staff will be responsible for monitoring adherence to these mitigation policies, measures and activities.

Hydrologic

1. The parcel in questions is underlain by a number of subsurface seeps. Well after rainfall events water can be seen draining onto the sidewalk with the rust stains characteristic of local groundwater iron content.
   a. Indicate how subsurface flows will be affected by the project.
   b. Indicate how the conversion of about 8 acres of open land to impervious surface will impact groundwater recharge for the Santa Margarita Sandstone Sole Source Aquifer.
   c. Indicate how the conversion of about 8 acres of open land to impervious surface will impact surface drainage. Estimate increases of stormwater runoff and the ability of existing drainage conveyances serving the area to handle these increased flows, including for 100-year storms and lesser storms of high intensity which are predicted to occur as a resulting of weather changes resulting from global warming.
   d. Indicate the amount of stormwater to be discharged to the drainage running south along La Madrona Drive into the unincorporated county and the ability of drainage conveyances in that area to handle increased flows.

Grading

1. Construction of the store structure and the parking structure will require extensive grading and earth removal.
   a. Estimate the quantity of excavated soil to be removed from the site.
   b. Indicate where the excavated soil is to be taken; estimate the impact on the County's nearly at-capacity landfill in terms of number of disposal days consumed by this volume of excavated soil.
   c. Estimate the air quality impacts from earth moving equipment and truck removal of the excavated spoil, both in terms of pollutants (e.g., diesel particulates) and CO2 emissions.

Local Economy

1. What will be the economic impact of this large high-volume low cost retail store on other retail stores, many of which are small businesses selling the same products, which are located in the central Scotts Valley business district.
   a. Estimate the loss of sales to such small businesses and the concomitant loss of jobs.
   b. Estimate the number of such businesses, by business type, to close and the resultant local sales tax loss.
   c. Estimate the loss in commercial property rental income, reduced property valuations from increased vacancies and concomitant reduction in local property tax revenue.
   d. Indicate mitigations for these severe impacts to the local economy.

2. Provide the same analysis for similar businesses in the San Lorenzo Valley which will experience a loss in business as result of Valley bound residents stopping at the Target store on the way home rather than at Valley shops.

Thank you very much for your consideration of these comments. I can be reached at 438-2336 or dan.degrassi@baymoon.com if you have any questions about the recommendations made in this letter.

Sincerely,

Dan deGrassi
4173 La Madrona Drive
Santa Cruz, CA 95060

Cc: Supervisors Jan Beautz and Mark Stone
John Leopold
Susan Mauriello, Santa Cruz County Administrative Officer
Tom Burns, Santa Cruz County Planning Department
Tom Bolich, Santa Cruz County Public Works Department
Steve Robbins, Santa Cruz County Sheriff's Department
Allison Niday, Scotts Valley Unified School District Board of Trustees
Susan Silver, Superintendent, Scotts Valley Unified School District
Kathy Frandle, Principal, Brook Knoll School
Scotts Valley Chamber of Commerce
San Lorenzo Valley Chamber of Commerce
Santa Cruz County Cycling Club
Santa Cruz County Regional Transportation Commission
Santa Cruz Metropolitan Transit District
Responsible Local Development

Taylor Bateman

From: johng123@comcast.net
Sent: Tuesday, April 08, 2008 10:30 PM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

I cannot object strongly enough to the proposed Target store on La Madrona Drive.

I have lived in Manana Woods for 15 years. It is difficult for me to understand why the City of Scotts Valley is intent on degrading the quality of life for the area citizens.. I am a resident of the county and do not consider the city of Scotts Valley to be a responsible steward of the natural beauty of this area.

--
John Gross
159 El Sereno Dr
Scotts Valley, CA 95066
831 461 1736

Taylor Bateman

From: Shannon Campbell [campsxc@sbcglobal.net]
Sent: Tuesday, April 08, 2008 9:08 PM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

Please No Target.
I am a Scotts Valley resident, born and raised.
After finishing college and establishing careers, my husband and I chose to return to Scotts Valley to raise our children.
Our home is on Sunridge Drive.
My concerns related to this proposed Target include the grossly increased number of cars driving though, the trash, the roaming shopping carts.
The lights and noise of the parking lot will also affect our community.
We already see so much traffic pass through on Mt Herman road, I can't imagine that our infrastructure is really set up to carry the profound increases.
The location is just not appropriate; La Madrona is a 2 lane rural road, not a gateway.

Thoughtfully concerned,
Shannon Kilner Campbell

Taylor Bateman

From: Myron Tomasi [myrmar5@sbcglobal.net]
Sent: Tuesday, April 08, 2008 3:47 PM
To: tbateman@scottsvalley.org
Subject: No Target for Scotts Valley

We have children who walk home in that area from school. It will no longer be safe.

It is said Target will employ 200. These will all come from Watsonville adding even more to the congestion.

Target belongs in a shopping mall, not in an urban area.

Target will put a blight and eyesore on Scotts Valley.

We will boycott it.

It will cause local businesses to close.

That commercial area could have smaller businesses which would blend into the land.

Taylor Bateman

From: doug@driveworks.com
Sent: Tuesday, April 08, 2008 2:37 PM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

Hello Taylor Bateman.

I do not want a Target in Scotts Valley. It will increase traffic, decrease small business opportunities, and increase crime. Scotts Valley is a great community. Let's keep it that way. No Target!

Thank you,

Doug Browne
President
DriveWorks Inc
3 Camp Evers Lane
Scotts Valley, CA 95066

doug@driveworks.com

ph (831)438-4000
fax (831)438-4001

Taylor Bateman

From: Jim Brock [jbrock@attributor.com]
Sent: Monday, April 07, 2008 11:16 PM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store -- STRONGLY OPPOSED

Hello Taylor Bateman,

As a long time resident of the Scotts Valley area, and regular driver on La Madrona Road, I implore you to reject the proposal to add a Target Megastore. The congestion, crime and economic impacts would be extremely negative and enduring.

Thank you for your service -- I hope you will do the right thing by our community.

Sincerely

Jim Brock
831-239-0095

Taylor Bateman

From: Nancy Connor [nancy@toadski.com]
Sent: Monday, April 07, 2008 8:14 PM
To: tbateman@scottsvalley.org
Subject: Gateway South retail store

Dear Taylor Bateman,
It is with alarm and dismay that I have learned about all the negative ways that the proposed Target development could impact the community of Scotts Valley. Though I live in the San Lorenzo Valley, I regularly go to Scotts Valley for business and errands, and I have been an active member of St. Philip's Church in Scotts Valley for twenty years. From what I understand, this development would have far-reaching negative consequences for Scotts Valley. In addition to the unsightly 44 foot tower and sprawling building and parking lot that would be the gateway to Scotts Valley, this development would greatly increase traffic to the city and also take away from local businesses. It is also very likely to cause an increase in crime to our community. I am very concerned about all these possible consequences and am very much opposed to this planned project.

Thank you for your attention.
Nancy Connor
Mt. Hermon

Taylor Bateman

From: Amy Shull [amyshull@yahoo.com]
Sent: Monday, April 07, 2008 4:54 PM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

Hello,
I am writing in response to the proposed development of a Target retail store in Scotts Valley. I don't normally get involved with city politics and proceedings, but I feel very strongly about this. I, and my husband, are greatly opposed to building a Target anywhere in Scotts Valley.

The main concerns we have are: dramatic increase of traffic, an increase of theft and other crimes, and a huge shift from our quiet, hidden town to a busy strip mall culture. Other issues are, decreased home value (who would want to live near a Target?), environmental impact (both to wildlife and the aesthetic beauty of Scotts Valley)

I am in my mid twenties and I love to shop, especially at Target, but I don't agree with this manner of development. Target literally is a bull's eye telling people to come, loiter and drift through our community without having any investment in this city.

I have a few last questions:
1. What are the benefits of building this Target store?
2. Why can't Kmart have first dibs on revamping their store?
3. Is there not a place in Santa Cruz (like off Delaware) that we can build?
4. Do we need development in SV?

Most Sincerely,
Luke and Amy Snow
831.440.9170

You rock. That's why Blockbuster's offering you one month of Blockbuster Total Access, No Cost.

Taylor Bateman

From: Mikie [tenosce9@pacbell.net]
Sent: Monday, April 07, 2008 2:00 PM
To: tbateman@scottsvalley.org
Subject: Target store public meeting time

Dear Taylor Bateman,

This letter is in response to the proposed public meeting time of 4:00 PM on April 16th 2008 for public input on the upcoming target store development for La Madronna drive. As a resident of Manana Woods I'm concerned that the 4.00 time will obviously put many people out of the loop for input about the Target proposal; since many will be working and unable to attend.

I really question the motivation of the time and appearances would indicate that the council seemingly wishes as little public comment as it can get regarding this matter, which perhaps says volumes about the integrity and motives of those pushing this development.

Thank you,

Michael Williams

301 La Cuesta Dr.

Scotts Valley

438-4183

Taylor Bateman

From: Ann Perkins [perkinann@sbcglobal.net]
Sent: Monday, April 07, 2008 10:48 AM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

To Taylor Bateman:

My two biggest conerns re Target being built in Scotts Valley are the TRAFFIC issues!!! and the other major concern is the drain on our limited water supplies in Scotts Valley.

When I moved here ten years ago, I told my friends I would be living immediately behind a Strip Mall which extends from Scotts Valley Drive up to Lockwood Lane. I consider that to be the TRUTH.

I am surrounded by Long's, Safeway, Burger King, Taco Bell, MacDonald's, Nob Hill, Walgreen's, and K-Mart, to name a few. Interspersed are "local" boutiques, coffee houses, movie theaters, and our wonderful public library.

There was huge! consternation over the building of the (now) Hilton Hotel. Thanks to all the controversary, and discussion the project has turned out to be something of beauty!

The townhouse (apartments) which are on one's right as you exit from highway 17, were scaled back in size as planning for them also created much controversy.

As I live in Spring Lakes Mobile Home Park, the addition of Starbucks in the shopping center adjacent to our park has proved what increased traffic, and attending problems can create.
Starbucks is but one small business in this location.

TARGET WILL GENERATE A HUGE TRAFFIC FLOW!! This will occur at an intersection which can potentially back up traffic causing difficulty, risk and strong possibilty of increased accidents while exiting off Highway 17 onto Mt. Hermon Exit.

In the years I have lived here, our aqufier levels have continued to lower and diminish. Our park now buys recirculated water from our water district. While that has helped our own Park situation, WHY STRESS our WATER SUPPLY FURTHER??

I keep reading exaggerated claims on both sides, and at same time I do not see the newspapers discussing these two issues, both of which seem to me absolutely ESSENTIAL.

Sincerely,

Elizabeth A. Perkins

Taylor Bateman

From: Fawcett, Peggy [peggy.fawcett@plantronics.com]
Sent: Monday, April 07, 2008 9:34 AM
To: tbateman@scottsvalley.org
Subject: NO TARGET

Mr. Bateman,

I am not sure which fact bothers me the most concerning the proposed Target store: the giant wall with graffiti emblazoned on it as I drive into my neighborhood, the cars backed up onto 17 as I try to make it home after work, the absolute decrease in my property value, or the end of serene living as we know it in SV. I welcome the idea of new business into SV, but in the downtown (town center) area or SV drive. Target must know they are a destination store and do not have to rely on the quick on and off/visible highway signage.

I urge you to do whatever you can to not allow that Target to build as proposed.

Sincerely,
Peggy, John, Kathy and John Fawcett
Scots Valley residents for 10 years

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Taylor Bateman

From: Charles Palmer [chpirz@pacbell.net]
Sent: Saturday, April 05, 2008 4:06 PM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

April 4, 2008

Re: Gateway South Retail Store (Target)

We would like to post our comments regarding the planned Target store in our neighborhood in Scotts Valley.
A big box chain store like Target is totally inappropriate for a small town of approximately 11,600 residents. Furthermore the proposed site for this project is in a predominately residential area surrounded by open space and some commercial development. A 155,000 –square foot structure with a two-level parking garage for 517 vehicles will adversely impact the residents, small business owners, the environment and traffic flow in and out of the south end of Scotts Valley. It is already difficult at times to leave the Manana Woods neighborhood with extra traffic generated by Brook Knoll school and the Scotts Valley Corners across the street on La Madrona Drive. An earlier article in the Santa Cruz Sentinel mentions 2000 parking spots to accommodate shoppers at the Target store. Imagine a commercial enterprise a quarter of the size of the Capitola Mall!
Noise is another big factor for the residents of Monte Fiore and Manana Woods area. Typically deliveries at Target stores take place very early in the morning. Some of us will be directly subjected to the constant noise from the back-up horns of the trucks, in addition to the added noise from vehicle traffic. In other Target locations close to residential areas, home prices have declined due to noise pollution from the delivery trucks.
Target is the fifth largest retailer in the United States and a publicly traded company on the Standard and Poor's 500 Index. As such, Corporate Headquarters in Minneapolis is more interested in maximizing profits for its shareholders than in keeping smaller, local businesses competitive. Target has been criticized in the past for paying low wages to its employees.
The profits from sales at Target will not be invested in the local economy, unlike sales from locally owned retailers who have a reciprocal interest in supporting their community.
It is alleged that Target will add $ 500,000 in sales tax revenue to the City of Scotts Valley. It is also a known fact that mega stores run small, local retailers out of business, which will add to urban blight and result in a loss of sales taxes to the local government.
For all these reasons a Target store should not be located in Scotts Valley and especially not at the presently proposed location.

Charlie & Inge Palmer
Scotts Valley
438-4481

Taylor Bateman

From: Drimboden2@aol.com
Sent: Saturday, April 05, 2008 3:12 PM
To: dene@bustichi.com;jimreed@cruzio.com;cliffbarrett1@sbcglobal.net;rlj12@comcast.net;seajems@pacbell.net;tbateman@scottsvalley.org
Subject: Target

I am opposed to a Target store, both in Scotts Valley and especially in the south gate proposed area. There have been numerous reasonable factors in opposition to this project already repeatedly presented. I own a business here (which would not be affected by Target) and live here (in the north end) and I still am vehemently oppose to the development. Both my husband and I wonder exactly who it is that you are representing, because it doesn't seem to be the constituents.

Cathy Levy Imboden

Planning your summer road trip? Check out AOL Travel Guides.

Taylor Bateman

From: Carl Wakeland [cwakeland@sbcglobal.net]
Sent: Friday, April 04, 2008 9:28 PM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

Dear Scotts Valley City Planner,

As a Scotts Valley resident, I am opposed to allowing a Target store to be built at the proposed location on La Madrona.

1) The store will cause commercial traffic to bypass Scotts Valley's city center, in turn causing more of our local businesses to lose revenue and close.

2) The store will increase traffic and crime, and in the end will adversely impact the city budget due to increased overhead and closure of small business.

3) The store will destroy the character of the entire area, and will likely result in the Hilton hotel leaving Scotts Valley.

In summary, the net result of this development will be a blight on our community. The hard lessons of the negative impacts of big-box retail on small communities have already been seen in countless small towns in our country. There is no need to repeat the lesson here in Scotts Valley, a community of intelligent, creative people.

Sincerely,

Carl Wakeland
110 Caliente Dr.
Scotts Valley, CA

Taylor Bateman

From: thira wallwork [thiraelaine@yahoo.com]
Sent: Friday, April 04, 2008 8:54 PM
To: info@scottsvalleytarget.com;john@scottsvalleytarget.com;tbateman@scottsvalley.org;jen@scottsvalleytarget.com
Subject: Scotts Valley Target

Hello,

I am a resident of Scotts Valley and am concerned with Target moving in. I am concerned about the traffic and growth. Scotts Valley is small and does not seem to be able to support all of the cars and people that will be coming from all over the county and neighboring counties to come here. I feel like there is enough traffic as there is on our small streets. Also, Kmart and Long's are already here. Will they be put out of business?

Sincerely, Thira Wallwork

You rock. That's why Blockbuster's offering you one month of Blockbuster Total Access, No Cost.
http://tc.deals.yahoo.com/tc/blockbuster/text5.com

Taylor Bateman

From: Drimboden2@aol.com
Sent: Friday, April 04, 2008 8:46 PM
To: tbateman@scottsvalley.org
Subject: Target

Who in Scotts Valley besides those on the city council want the Target? I have yet to meet anyone.

I am vehemently opposed, live on the North side of town, and strongly feel that the city government is not representing its constituents.

Cathy Levy

Planning your summer road trip? Check out AOL Travel Guides.

Taylor Bateman

From: Mark Ransler [mransler@seismicwarning.com]
Sent: Friday, April 04, 2008 11:30 AM
To: tbateman@scottsvalley.org
Subject: La Madorna & Target

Taylor-

As part of the city's process of looking at the impact that Target will have on our community, I would like to make my concerns know. I live and work in Scott's Valley. My family chose to move here because we wanted to live in a community with a "Good Quality of Life". We object to the traffic impact that Target will bring to La Madorna and Mt. Herman Road. As well, concern about safety of our kids riding their bike on narrow over crowed streets. Plus, the set back and height of the store are also inappropriate for the site location. Why is Target building a 5 story tall structure? I am also concerned about water uses over time and how Target will impact the city.

Please review the impact Target will have on the citizens and city resources. Also review the location and is right area for our lovely community?

Mark Ransler

Seismic Warning Systems, Inc.
5619 Scotts Valley Drive
Scotts Valley, CA. 95066
Tel. 831-440-1122
Cell 408-234-7862
Fax. 831-440-1131
mransler@seismicwarning.com
www.seismicwarning.com

Taylor Bateman

From: George Ann White [georgiew@comcast.net]

Sent: Friday, April 04, 2008 10:58 AM

To: tbateman@scottsvalley.org

Subject: gateway South retail store

Taylor, This is another vote to keep Scotts Valley local. No Target!!!!!! No Big Box Stores!!!!! I'm concerned about crime, decreased property values, local economy (Target will rob local businesses of customers) traffic congestion, accidents at the freeway intersection at Mt. Hermon, aesthetics, pollution from water run off in the parking lot, pollution from litter, noise and light, loss of home town atmosphere. All these detriments are too high a price to pay to earn $500,000 in revenue for the city. Get our community involved in their future. Open up ideas to the many creative and foresighted community members who can contribute greatly to our community's future growth plans. The City needs to know what its citizens want before they make such big plans. You forgot to ask us. Georgeann White

Taylor Bateman

From: zzotcase [zzotcase@sbcglobal.net]
Sent: Friday, April 04, 2008 8:41 AM
To: Taylor Bateman
Subject: Gateway South Retail Store - EIR reccomendations

Dear Mr. Bateman,

I previously sent you an email concerning the proposed Scotts Valley Target, which I realize may not have been quite what you were looking for. The following commentary includes specific comments and recommendations for the SEIR.

My name is Doug Wood, and I am a resident of Hidden Hill Farms, a development at the end of La Cuesta, which passes through Manana Woods, the neighborhood closest to the Hilton Hotel. Access to our homes is either via Altenitas, which connects to La Madrona Drive, adjacent to the hotel, or (from eastbound Mt Hermon only) the old Manana Woods entrance. I am a retired geologist, having last worked as an environmental consultant on groundwater contamination issues. I supervised the drilling of the groundwater monitoring wells for the Camp Evers MTBE plume in King's Village shopping center, and constructed the small groundwater treatment plant in the Walgreens parking lot.

Our neighborhood, and adjacent residential areas, will be heavily impacted by the proposed Target development, and our quality of life and property values will likely be degraded, following the national trend when such stores are constructed near residential areas. My wife's family has lived in Hidden Hill Farms since 1959; our family purchased a home there in 2000. The Target would impact five residential areas: Manana Woods and Hidden Hill Farms, Monte Fiore, Bay Tree Apartments and Laurel Wood Townhomes, the houses along El Rancho on the east side of SR 17, and the houses along La Madrona and Sims road.

I fully realize that it is simply a matter of time before some type of development occurs at that location. I would have supported the construction of an office complex, or any type of development (such as light manufacturing, small-scale retail, electronics development, biotech, private education, senior care facilities, medical facilities, etc.) that would offer jobs paying a living wage or better, which is absolutely not the case with any large-scale retail operation with the exception of Costco, which I understand still pays above twice the minimum wage. I would support development that creates new opportunities, and Target does not. Target competes for a limited resource (our local and regional spending dollars) by maximizing sales per square foot, served by minimum-wage employees with little hope for any kind of career path.

I don't think Target would represent a step forward for Scotts Valley, but rather an invitation to large-scale retail to compete with existing and potential local and regional retailers. Existing retailers will suffer declines in sales and may fail. The infrastructure construction and infrastructure maintenance costs to build and support a Target would decrease hoped-for annual tax revenues. I believe it is imperative the City obtains a comprehensive Economic Impact Report (EIR) to assess fiscal impacts a Target would incur, both in terms of infrastructure costs and redistribution of consumer dollars and potential job and business losses that may occur as Target competes with existing businesses.

Located at the fringe of the City adjacent to SR17, Target will pull in customers, but they then may not enter the City, or having spent their money and time at Target, may have no desire to shop other City stores. The hoped-for City Town Center retail center and existing stores would need to compete with and draw from Target, a formidable competitor. Target will not attract 8,000 new customers a day to Scotts Valley; Target will cause a redistribution of customers who patronize other local and regional businesses. If Scotts Valley must have a Target, I believe the best location would be the current Kmart location. A Target there would be an anchor store for the Town Center development. A Target anywhere else will pull customers away from the commercial core.

My secondary concern would cover any large-scale retail development at the proposed location. For a major retailer, it is an ideal location: undeveloped land adjacent to major access roads. For the City of Scotts Valley, placing a Target in the midst of a residential area at the fringes of the City represents a major compromise of stated goals: to build in the commercial core of the City, and to avoid incompatible development in residential

areas.

For the residential neighborhoods surrounding the location, Target will be an enormous headache, impeding access to our neighborhoods, and vastly increasing traffic and noise, air, water, and light pollution. Target operation hours are Mon - Sat 8 a.m. to 10 p.m. and Sun 8 a.m. to 9 p.m., and restocking operations may continue through the night, accompanied by truck and forklift traffic, noise, and pollution. If the store pulls in 8000 cars a day, that would average a car about every 7 seconds passing down La Madrona, a fantastic increase over the current traffic on that road. Will the City or County bear the costs of rebuilding and maintaining La Madrona to accommodate the increased use? As traffic through Scotts valley increases, will alternate routes be used more heavily, incurring accelerated maintenance costs on those as well? An EIR should quantify construction and ongoing maintenance costs.

Nationally, development of major retail centers near residential properties degrades home values. If a million-dollar house loses 2.5% of value due to the construction of a Target nearby, that's $25,000 of taxable value lost to the County. For 100 houses, that's 2.5 million in lost taxable value, or roughly $30,000 lost to the County. An EIR should calculate the potential lost taxable realty values, for the five surrounding residential areas.

The increased traffic will also cause increased accidents and emergency responses; an EIR should quantify those additional costs. The increased crime incidents, which Target prosecutes to the fullest extent of the law, will incur costs that should be enumerated in an EIR.

The Target development will turn a groundwater recharge area within the Santa Margarita aquifer recharge zone into a point source from water pollution from building and parking lot runoff that will be directed off-site and down adjacent streams towards Monterey Bay. The EIR should calculate the lost groundwater recharge costs.

The City should prepare an EIR to carefully determine fiscal impacts a Target will have, in order to make a well-informed decision.

To summarize, I believe locating a Target in Scotts Valley, and in particular in the proposed location, will not be beneficial to the City, for the following reasons:

- Pays the lowest retail wages possible; not a living wage
- Would be sized, located, and will operate in a residential area at the fringe of the city, counter to stated City development goals
- General operations incompatible with adjacent residential neighborhoods
- Will operate during hours incompatible with residential areas
- Will degrade the surrounding residential areas with increased traffic and air, water, and light pollution
- Will degrade nearby residential property values
- Will incur infrastructure construction and maintenance costs that will reduce revenue gains
- Will reduce existing sales from competing businesses
- Will draw customers away from the existing and proposed commercial core, including the much hoped-for Town Center
- Will negate land uses that could result in better-paying jobs and career opportunities

Thank you for taking the time to read my email, and if you have any questions or comments please email in return.

Thank you,

Doug Wood
Scotts Valley

Taylor Bateman

From: billc@anastrophe.com
Sent: Friday, April 04, 2008 8:23 AM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

Dear Mr. Bateman,

As a neighbor to this proposed project, I received your notice this week of a drafting of a supplemental EIR. Does this mean an original EIR has already been written and/or published? If so, could you please forward a web link, or a copy of it to me?

I have many concerns about the Gateway South project, the overriding of which is that it seems to me so blatantly out of step and inconsistent with the surrounding environment. With the Hilton hotel on one border and the entrance to a gated community on the other, it seems like a real mismatch on so many levels. I walk or run by this sloping grassland meadow and mixed conifer forest almost every day, and have always judged that its most logical and best use, as a private piece of property, would be a condo or townhome development. I don't know how any reasonable person could argue very stridently against that use, especially with the lack of affordable housing in our area. A terraced housing development also would not require the kind of extreme excavation and leveling that is planned for this massive storefront and parking structure. In other words, it could probably be built to blend into the local environment, not disregard or destroy it.

Some other major concerns: to get the kind of store traffic this business would need to be profitable, a transportation nightmare from 9am-9pm almost everyday on La Madrona Road would be inevitable. With the new housing developments along Graham Hill Road, and via Sims Road, La Madrona has already seen a great increase in traffic and congestion for which it was never intended. This is evident to anyone who drives south on La Madrona from the proposed site. The road narrows rapidly and has many dangerously blind twists and turns. This is a major public safety issue.
La Madrona works well as a rural "country" road to serve the local ranch style neighborhoods, but not as a main artery or thoroughfare to a "big box store".

I also find it extremely curious that the City of Scotts Valley is proposing this site, when it still has not developed the open commercial space behind the SV Post Office, sports complex, and Skypark. With its proximity to the bus depot, this would be the logical site for another large retailer. Would you not agree?

Thank you very much Mr. Bateman for your time and consideration. Please let me know if I can provide additional information regarding the impact of this proposed project on our community.

Sincerely yours,

Bill Chappelear
(831)295-5757

Taylor Bateman

From: Paula Phelan [paula@nadelphelan.com]
Sent: Friday, April 04, 2008 7:51 AM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

I have been a Scotts Valley business owner on Mt. Hermon Road for the past twelve years.

I STRONGLY OPPOSE the Target development plan.

Is there any planning taking place?? Why isn't this being put in a corridor that could support it like Scotts Valley Drive or better yet Santa's Village which has its own on and off ramp.

The issues I can think of off the top of my head are the following:
- a traffic nightmare at Mt. Hermon Rd. exit
- the collapse of businesses in Scotts Valley (KMart is barely alive)
- these big box stores don't tend to last long - the eye sore when it is boarded up
- increased crime

The list goes on and on. Is anyone doing a basic studies on the negative impacts to the community. You don't have to go far on the web to see that these stores tend to be a detriment to any community they enter. I hate to say it but who is profiting from this situation? It seems very suspect. The negatives far out weigh any benefits one could imagine.

I heard a rumor that a Church tried to go in at that location and it was considered to not be appropriate because of what it would say about the community. Target says it better???

Something is very wrong with this picture.

I certainly hope you are not seriously considering this.

Regards,
Paula Phelan

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Paula Phelan
NADEL PHELAN, Inc. / NPI PR
Strategic * Technology * Communications
Direct: (831) 440-2410
Cell: (831) 234-4334
http://www.NPIpr.com

Taylor Bateman

From: Laura and Gary Rockow [gary_rockow@yahoo.com]
Sent: Thursday, April 03, 2008 4:41 PM
To: tbateman@scottsvalley.org
Subject: Gateway South/Target proposal opposition

Hi Taylor,

Laura Rockow here. I live in SV in the Country Terrace HOA at the north end of town. I don't know a soul in our neighborhood who supports the idea of a Target store in SV. We have all discussed this - there are 29 homes here - and we all want to keep SV small! ***Less is MORE***! Less Traffic is better for our town. Less litter is better for our town. Less consumerism is better for ALL. Please help us keep Target away. It's not too difficult to drive to Watsonville to use the Target if you really, truly need something from Target, but as for me and my family, we really try to buy all we need right here in town...if it's not here, we probably don't really need it, anyway. A Trader Joe's would be nice to help save on our grocery bills - but I can get to Santa Cruz if I really need to - but usually, you'll find me at SV market, Nob Hill or Safeway.

No Target, no thank you!

Best regards,

Laura Rockow
Country Terrace HOA
Coopers Hawk Court
Golden Eagle Court
Fox Sparrow Court

You rock. That's why Blockbuster's offering you one month of Blockbuster Total Access, No Cost.

Taylor Bateman

From: ktbothman@comcast.net

Sent: Thursday, April 03, 2008 1:45 PM

To: tbateman@scottsvalley.org

Cc: Shane Margraves;Melisa Margraves;bbothman@bothman.com;Trisha Christensen;Dwain & Trisha Christensen's;Laura Gonzalez

Subject: Gateway South Retail Store

I am a homeowner in the Hidden Hill Farms neighborhood, which is just beyond the Manana Woods neighborhood in Scotts Valley. I am extremely concerned about the proposed location for the gateway south retail store. The drawings that you provided in the notice sent to my home, do not indicate that La Madrona is a two lane road that becomes increasingly narrow as you travel toward Santa Cruz. The large majority of traffic, for both cars and delivery trucks, would be entering and exiting from the direction of Mt. Herman Road/Hwy 17.

We have two exits from our neighborhood. To exit at La Cuesta, we can only travel onto Hwy 17, or the frontage road El Rancho, which is rarely used. The other exit, which is what I (and most of my neighbors) use 99.9% of the time, is on Altenitas, located just the other side of the Hilton from where the proposed retail location is. If we are going to travel onto Mt. Herman towards town, we must turn left onto La Madrona from Altenitas and then turn left from La Madrona onto Mt. Herman Road.

The ability to exit our neighborhood has definitely been impacted by the shopping center that houses Surf City and Quiznos. This area is very heavily congested during normal morning commute hours and also when school lets out. I cannot even imagine how long we would have to wait to turn onto La Madrona if the traffic were to increase as drastically as it would with such a large retail store just a block down the road.

I have read several complaints regarding this project which include negative input about Target. I am a periodic customer of Target and I want to be clear that I do not have issues about that particular store. I know how busy this store can get and I cannot fathom how traffic would possibly flow in and out of this narrow, two lane road. My concern is that I will not be able to exit my neighborhood in a timely manner and furthermore that this could become a safety issue, not only for my family, but also for all of my neighbors.

Has there been consideration to use a location that is already set up for retail? I wouldn't mind seeing K-Mart and the Dollar store transformed into a Target.

Thank you for your time,

Kathryn Bothman
118 Elena Drive, Scotts Valley, CA 95066

Taylor Bateman

From: Carter Potts [carter@rattlebrain.com]
Sent: Thursday, April 03, 2008 9:04 AM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

Dear Taylor Bateman,

I'm not convinced that Scotts Valley is the right place for a Target store. I'm actually a Target customer, I think they're great, I have them ship items right to my house. But when I envision what I'd like Scotts Valley to look like, I'd prefer to see something like downtown Los Gatos or Saratoga. Please can't we do something more upscale, more old world? Something we can all feel good about and be proud of? Guess I'll come to the public meeting on April 16th,

Sincerely,
Carter Potts

Taylor Bateman

From: Charles Palmer [chpirz@pacbell.net]
Sent: Wednesday, April 02, 2008 8:14 PM
To: tbateman@scottsvalley.org
Subject: April 16 Meeting for proposed Target store

Dear Taylor Bateman,

We received the notice of the public meeting regarding the SEIR report for the proposed Target store planned for April 16, 4:00pm. It seems that this time is more convenient for the City Council members than the general public to be able to participate. Most people are still at work and can not attend this very important meeting. Please reconsider the time. 7:00 pm should generate a much higher turn- out, provided the Council is interested in hearing from its constituents on this matter.

Thank you.

Sincerely

Charlie and Inge Palmer
Scotts Valley
Tel: 438 4481

Taylor Bateman

From: Enid Brock [eavh@yahoo.com]

Sent: Wednesday, April 02, 2008 8:40 AM

To: tbateman@scottsvalley.org

Subject: Gateway South Retail Store

I am writing to register my opposition to the proposed construction of a Target store in Scotts Valley. Scotts Valley is a small city, with neither the population nor the infrastructure to support a large "big box" business. If a Target is built here, it will attract thousands of cars daily, resulting in additional traffic and pollution in this clear-skied country town. Target customers will pull into the parking lot, shop, and leave. They will not appreciate or enhance Scotts Valley.

I was an early and vocal supporter of the plans for a new town center in Scotts Valley, attending several meetings and participating in focus groups. I continue to support the idea of a town center. We need a pedestrian-friendly, community-building mixed residential and business district in this town. A town center will encourage small businesses, such as restaurants, bookstores, toy stores, and cafes. It will make Scotts Valley a great place to live. A Target, on the other hand, will make Scotts Valley a place to drive through.

I encourage the City Council to reject the Target proposal and turn its attention and resources back to the town center project.

Thank you,

Enid Brock
600 Cress Road

Taylor Bateman

From: Joseph W Espinola [jsejr@pacbell.net]
Sent: Wednesday, April 02, 2008 8:29 AM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store - Target

I oppose the development of this area for a retail store of this size. I live in the Manana Woods area and am concerned about the high density traffic that will come with this development; the increased pollution in my neighborhood from the increased traffic; the immediate secondary roads congestion; the increase in noise, especially into the later hours of the evening; the increase in nighttime lighting and illumination; delivery trucks servicing this reatil store; the potential increased crime and the public safety responders that will be associated with such a large development. This type of development is better suited in the retail commercial corridor that already exists and/or associated with the proposed downtown center commercial development.
Respectfully:
Joseph Espinola

Taylor Bateman

From: Amy Barton [amymcbarton@sbcglobal.net]
Sent: Tuesday, April 01, 2008 11:02 PM
To: tbateman@scottsvalley.org
Subject: Gateway South Retail Store

Hello Taylor,
I am a resident of the Scotts Valley area. I live on La Madrona Dr., about one mile south of the proposed Target Superstore.
I love the idea of a Target in Scotts Valley, but STRONGLY feel that this location is the WRONG location for such a store. In fact, so much so, that it would be BETTER if there were no Target in the area at all, if this is the ONLY location possible.

Have you looked into other possible locations? Possibly on Scotts Valley Dr., or further into town on Mt. Hermon Rd.? What about making the Target Store an integral part of the Town Center, close to all of the other shopping that Scotts Valley has to offer.

Think about where the Target in Watsonville is located. It is at least one mile off of any freeway exit, and still gets plenty of traffic and patronage. This could create a win-win situation for our community--enhancing our commerce and still preserving the "quality of life" of the residential neighborhoods that would be so adversely affected by a Target store right next door to the SV Hilton.

I urge you to reconsider your location options for this Target store. And if you feel that there is NO other option, I urge you to reconsider altogether. We are not so desperate.

Thank you for your consideration,

Amy Barton
A concerned community member

Taylor Bateman

From: zzotcase [zzotcase@sbcglobal.net]
Sent: Tuesday, April 01, 2008 1:17 PM
To: Taylor Bateman
Subject: Gateway South Retail Store
Attachments: Target wants your customers.doc

Mr. Taylor Bateman
Associate Planner
City of Scotts Valley

My name is Doug Wood, and I am a resident of Hidden Hill Farms, a development at the end of La Cuesta, which passes through Manana Woods, the neighborhood closest to the Hilton Hotel. Access to our homes is either via Altenitas, which connects to La Madrona Drive, adjacent to the hotel, or the old Manana Woods entrance, which can only be accessed via south-bound Mt Hermon Road. I am a retired geologist, having last worked as an environmental consultant on groundwater contamination issues. I supervised the drilling of the groundwater monitoring wells in King's Village shopping center, and constructed the small groundwater treatment plant in the Walgreens parking lot.

Just like Monte Fiore, our neighborhood will be heavily impacted by the proposed Target development, and our property values will likely be degraded, following the national trend where such stores are constructed near residential areas. My wife's family has lived in Hidden Hill Farms since 1959; our family purchased a home there in 2000.

I fully realize that it is simply a matter of time before some type of development occurs at that location. I would have supported the construction of an office complex, or any type of development (such as light manufacturing, small-scale retail, electronics development, biotech, private education, senior care facilities, medical facilities, etc.) that would offer jobs paying a living wage or better, which is absolutely not the case with any large-scale retail operation with the exception of Costco, which I understand still pays a realistic wage somewhere above twice the minimum wage. I would support development that creates new opportunities, and Target does not. Target competes for a limited resource (our spending dollars) by maximizing sales per square foot, served by minimum-wage employees with nearly no hope for any kind of career path.

Target would not represent any kind of step forward for Scotts Valley, but rather an invitation to large-scale retail to compete with existing local and regional retailers. Existing retailers will suffer declines in sales and may fail. The infrastructure construction and infrastructure maintenance costs to build and support the existence of a Target would eat away a large part of the hoped-for annual tax revenues.

I submitted a letter the Scotts Valley Press-Banner regarding the proposed Target development, and was asked to provide an abbreviated version, which you may have read in last week's edition. I have attached the long version as additional commentary. The goals of my letter are as follows:

My primary focus is to inform the business community – local and regional, that Target is a predatory and competitive organization that will be drawing from a limited pool of consumer dollars. Their presence would cause a redistribution of that money, particularly in times of economic stress, since they can afford to sell at a loss. If you owned a business, Target doesn't need to carry your entire product line or offer all your services, they just need to sell enough of your product or services to make you collapse. For most retail businesses, the profit margins are slim, and it takes little pressure to cause failure or layoffs. Any business that sells something Target offers is in jeopardy, because there's only so much consumer money in the area to go around, particularly in a geographically constrained locale such as ours. Target can also cause a reduction in commercial real estate values and rents as it becomes apparent that competing businesses struggle or are lost. New, local retail businesses are less likely to get funding or to get started by any means because of Target's competition.

My second focus is to inform all the employees and support people for local businesses (and smaller competing chains, which means most retailers including every store I can think of in Scotts Valley, the San Lorenzo Valley, and most of Santa Cruz) that Target will reduce the available jobs, and will replace existing jobs with minimum-

wage, high-turnover, no-benefits positions.

My third focus is to make all community members aware that the construction and ongoing maintenance of the infrastructure necessary to support a Target is often paid for dearly by local, regional, State, and Federal subsidies – your tax dollars at work for a corporation that will siphon money out of the community, and return less than existing local businesses. The ongoing costs for cities to support all types of businesses have been calculated and compared in numerous case studies around the US. The most expensive businesses to support are fast food, followed by megastores. The costs are excessive enough that in some locales cities lose money overall.

I feel it is critical that Scotts Valley performs or obtains a comprehensive Economic Impact Report to determine how a Target "pencils out" for the community, an EIR that includes projections regarding new and ongoing infrastructure costs, the impacts Target will have on existing retailers, and the jobs Target would reportedly provide.

If you would, please read the attached letter, and retain it as my commentary. I have circulated the letter via email among neighbors and Scotts Valley acquaintances, and will be writing more regarding the proposed Target. I will attend the April 16th meeting.

Thank you for reading my email, and the attached letter. If you have any questions or comments please feel free to email me or contact me by cell phone at 831 247 0170.

Doug Wood

Target wants your customers!

What can you sell in a 155,000 square foot Target store? Whatever you think customers will buy. How do you fill such a place with customers? Build the store in an established market, and lure customers away from existing businesses. How many customers do you need to attract? Just enough to drive the local competition into the red, and into eventual failure. Then you have the market to yourself.

That's the Target business plan. They are obligated to grow by shareholders and Wall Street. They don't generate new consumers by building new markets; they attract existing shoppers from local and regional businesses. The 10,000 cars a day that may stop at the proposed Target in Scotts Valley will not appear out of thin air, they will be cars that used to park near competing businesses in Scotts Valley, San Lorenzo Valley, and Santa Cruz.

Who can compete with Target? Very few – Target can afford to sell at a loss to lure customers in, for months or years. They have the mandate, buying power, and the lack of community involvement to crush competition. They build huge stores to saturate the market, overwhelm competitors, and employ just enough people to keep the store functional. They pay the lowest wages possible. Their employees experience high turnover rates, which keep wages low, and are often dependent on government health and financial assistance programs. Target's owners and corporate officers do not live in Scotts Valley; they have no need or interest in supporting local businesses, producers, manufacturers, vendors, services, or charitable programs. Their accounting and banking needs are met by corporate headquarters.

Recently published quotes estimate Scotts Valley would gain $500,000 a year in additional revenue from Target. Would that gain be offset by decreased receipts from other businesses? How many businesses will fail, wiping gains out altogether? What city, county, state, and federal subsidies would be used to build a Target and the necessary infrastructure changes to accommodate the store? What costs are incurred by an increased crime rate, which historically accompanies Target and other big-box stores? How many tax dollars will continue to support Target once it is built?

Other quotes contend Target will supply up to 200 new jobs. How many jobs will eventually be lost as competing businesses decline or fail? Will those business owners, bankers, bookkeepers, accountants, buyers, salespeople, maintenance personnel, and local suppliers, vendors, and distributors find employment at Target, at minimum wage?

A higher proportion of dollars spent in locally owned and operated businesses remain in the community – in local banks, property improvements, business investments, and other goods and services sold in the community. Target will extract the maximum amount of money possible out of the community to support the construction and operation of more stores elsewhere, following their business plan. Target has no incentive to reinvest locally.

The effects of big-box retailers including Target have been studied and well documented in thousands of cases on local, regional, national, and global scales. Some examples include research by economists David Neumark, UC California at Irvine, on the employment effects of Wal-mart across US counties, and the conclusions by Dr. Kenneth Stone, an economist at Iowa State University who has studied the impact of Wal-mart, Home Depot, and other retailers since the 1980's. A consulting group called Civic Economics has specialized in advising local communities on the impact of proposed large-scale retail projects. Their web site includes case examples that are well worth examination. Every City Council member, planner, and business owner in Scotts Valley should read the book Big Box Swindle, by Stacy Mitchell, an eye-opening account of the business tactics and effects of large-scale retail.

Scotts Valley must take a hard look at the potential losses before considering approval of a Target, by completing an Economic Impact Report. The city must consider the loss of sales to existing businesses, and the potential for competing businesses to fail. With lost sales and potential business failures, the city will face uncertain revenues, reduced employment, and a loss of higher-paying local business ownership and support careers. They must calculate the cost of an increased crime rate, changing needs for emergency services, and changing infrastructure, traffic patterns, and maintenance costs. They must consider the loss of alternate development potential for the proposed Target site that could produce more and better-paying jobs. They must consider possible losses to the hoped-for city center development, and reduction in commercial real estate values and rents as Target reduces the potential for other businesses to remain competitive. In a time of tremendous economic uncertainty, Scotts Valley must be extremely careful not to endanger existing jobs, business investments and revenue.

Finally, if Scotts Valley allows Target to set the precedent, what other big-box stores might follow? Along Hwy 17 lies a corridor that could easily accommodate a Home Depot, a Wal-Mart, or other mega-stores. Does Scotts Valley want a thriving local economy, that generates long-term business and career opportunities that continue to reinvest in the community, or to be a pin on the map in Target and other big-box headquarters, far from here? As a concerned former business owner and a current Scotts Valley resident, I urge the City Council and citizens to be as informed as possible, and to make the best decision for our long-term prosperity.

Doug Wood

Taylor Bateman

From: David Jensen [ds_jensen@yahoo.com]
Sent: Tuesday, April 29, 2008 3:56 PM
To: Frank Z. Kertai
Cc: Lawrence Fogel;Jackie Heald;Deborah A. Muth;Todd Ritchie;Michael Shulman;Steve Ando;Taylor Bateman;Chuck Comstock;Tracy Ferrara;Kirsten Powell;April Wooden
Subject: **SPAM** Target Center Project Input

Taylor et al,

Thank you for taking the time to read my email. As a Scotts Valley resident I am writing you to voice my concern for the proposed Target store in our City.

My concerns are for the following items:

1. The traffic will be horrible for everyone in every direction. Adding as many cars as there are people in Scotts Valley will make Mount Hermon look like 41st street at Christmas time.

2. I am concerned about the viability of this store. With the the economic downturn I believe consumer spending will decrease greatly and the retailers will get hit hard. Without any stores around the Scotts Valley Target, they may decide that this is location is no longer profitable and we are left with an abandoned shell of a building.

3. Sales tax benefit is not there. The recession and cannibalization of existing retail will seriously affect any sales tax advantage coming from this store.

4. I do not understand the location. All Target stores in California are on 4 lane roads with good in/out. I also have never seen a Target without companion stores that this one will never have because of the location. I fear that this is an experimental venture for Target.

5. I also wanted to mention the arguments made in favor of this project. I have read the correspondence in the papers and what strikes me is the arguments in favor are first about the sales tax revenue and a distant second place are thoughts about how "it would be nice to have a convenient store close by". I have already mentioned the sales argument above so addressing the convenience factor I think people are not taking into consideration how much environment damage a new store will cause esp when they can get most of what they need already in Scotts Valley and Santa Cruz. These days when we are measuring carbon footprints etc... is a project of this size really worth the environmental cost? This is not a hospital or community service so I do not expect to see many people enthusiastically in favor of it where they would show up with pro-Target signs at City Hall but I do see many people with important objections.

Sincerely,

David Jensen
Scotts Valley, Ca.

Taylor Bateman

om: bdprices@aol.com
ent: Wednesday, April 30, 2008 4:42 PM
To: TBATEMAN@scottsvalley.org
Subject: **SPAM** EIR Report

Attachments: Target EIR Comments.docx

Target EIR
mments.docx (35 K

Mr Bateman,

We strongly oppose the Scotts Valley Target Project. Enclosed please find our Target EIR Comment Letter, including our scope suggestions for the EIR.

Sincerely,

Dave and Beth Price
465 Silverwood Dr.
Scotts Valley

Have you checked out www.KOL.com? It's a great site just for kids. It's got games, music, cartoons, sports scores, homework help and more. So what are you waiting for? Start clicking!

Dear Mr. Bateman and City Council Members,

Please consider this as our recommendation to what should be considered and covered in the Supplemental Environmental Impact Report (SEIR) for the proposed one story 155,000 square foot **Target** retail store on the 17.62 acre site on the West side of State Route 17 on La Madrona Drive, backing up to Silverwood Dr.

Deleted: my

We believe some background as to why we are residents of Scotts Valley would be helpful.

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We are currently home owners in Monte Fiore and moved to Scotts Valley from Santa Cruz in 2000. We moved to Scotts Valley because we were attracted to the community feeling of a small town that was being managed with the best interest of its residents. Crime was and is virtually nonexistent, homeless persons and drug users don't wander through our retail shopping areas on Mt. Hermon Road, as they do in downtown Santa Cruz. We were looking for a beautiful rural area, and a safe community in which to raise our children. We know we came to Scotts Valley for the same reasons that have attracted many other families.

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Up until this point in time, we have been encouraged by our City Council and their desire to continue to move forward in building a town center which would promote a town feeling and provide a retail center for necessary businesses, such as a book store, restaurant, and possibly a clothing or shoe store. We envisioned this as a nice place to spend time with our family and friends. The preliminary drawings were exciting to see and fostered the ideal of our City Council working hard to provide for the interests of the residents of Scotts Valley.

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We were therefore thoroughly surprised and discouraged to find out our previous Mayor, Dene Bustichi, had contacted a big box store with the idea of building a huge store in an open field that was zoned commercial service and professional use, not commercial shopping center.

Obviously, we don't feel this is the correct location for a super store, and don't feel that a super store in Scotts Valley is the best idea for the community. A town center can not co-exist with a Target on the outskirts of town.

Listed below are concerns that need to be addressed in the SEIR Report currently being prepared.

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Pollution:

Big box stores cause runoff from pavement which pollutes water. Runoff, according to the U.S. EPA, is now the Nation's leading source of water pollution, affecting more than 40% of all U.S. lakes and streams and causing 1,500 beach closings and advisories since 1998.
We want the SEIR to specifically address the problem of water pollution from runoff that will travel into local creeks and the end up in the ocean affecting our beaches.

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Unsightly views will affect quality of life for those living near the proposed Target.

The SEIR needs to address report the smells of additional exhaust from cars traveling to and from Target, as well as the smell of garbage waste.

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The SEIR report needs to address littering that will occur as a result of the proposed Target.

The SEIR must address light pollution that will occur when Target leaves on outside lighting to discourage crime in the parking lot after dark, and after the store closes.

Water Availability:

The city is not able to adequately supply water to the Target as 5,000-15,000 visitors daily will increase water usage for restroom facilities. Respond to this problem in the SEIR. (5,000 car trips equal how many visitors? Some shoppers will be alone, while others will be shopping with children).

Water usage will also increase when a garden center is established in the proposed Target.

Additionally, water will be required to irrigate the non native plantings that will be scattered throughout the 17 acre site. These plantings will require fertilizing which will negatively impact the runoff from the site and increase water pollution. Both items must be addressed in the SEIR.

Economic Issues:

As CPA's, my husband and I understand the impact of a big box store on a community such as Scotts Valley. Disposable income in any area is limited by the number of residents in an area,

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and their relative affluence. To assume the proposed Target store will suddenly increase the amount of disposable income that will be spent in Scotts Valley is short sited at best. The economic study must consider all the existing businesses that will be negatively impacted by the proposed Target, and determine what the offsetting loss of sales tax will be at those locations. For example, Safeway, Nob Hill, and Scotts Valley Market will lose business when grocery products are purchased at Target. Longs, Walgreen's and K-mart will lose business when health care items are purchased at Target. Westside beauty will lose revenue on all Targets' hair product and other beauty supply sales. K-mart will also be effected by reduce sales for products such as sporting goods, books, office and school supplies, clothing, kitchen and bath products, small furniture, small appliances, and garden supplies. Scarborough Garden Center will probably close, as will the local pet store. Radio Shack will be negatively impacted when technology products are purchased at Target. Ace hardware will be negatively impacted by the proposed Target store as well. During the Holiday season, decorating accessories and gift items will be purchased at the proposed Target while local gift stores such as Zinnia's and Mint will see a reduction in sales. **The reason Target wants to build a store is to take those purchasing dollars away from existing local community stores. Do you really think Target believes Scotts Valley residents will all of sudden have 2x the amount of disposable income available to spend at their store without taking away sales from local businesses**? What economic study or theory supports this supposition? Our community cannot support small business and Target. As a resident I require our City Council to provide an Economic Study to address the increase in sales tax from target, and the loss of sales tax from local business. Anything less than a detailed analysis of the impact on other business would be short sited and fool hardy. I can only imagine what the city council will propose to solve the budget shortfall when businesses begin closing.

Research shows that at least one grocery store closes when a Target or Wal-Mart is opened in the same area. Those retail spaces remain empty as no other retailer wants to come in and compete with a Target. The small retail business that surround grocery stores to obtain business find themselves located next to an empty building and their business continues to decrease and eventually fail. Which grocery store and retail facility does the City Council want to see closed? Nob Hill, Scotts Valley Market, or Safeway?

Additionally, local accountants, tax preparers, insurance agents, advertising design and sales, and newspapers and every other service provider who operates (and pay taxes) in Scotts Valley will feel the negative ripple effect of Target cannibalizing local business sales.

Road Maintenance Expense

The proposed Target will require an increase in road maintenance costs, and new traffic lights to address the inadequate existing intersections. The cost of the proposed enhancements to the existing roads must be assessed to determine the cost to the city of the proposed Target. The annual maintenance costs to the roads must be accessed and included in the Economic Study. Additionally, costs will be incurred for sewer and water services as well as fire and police services.

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Police Services
The increase in Police services will require an increase in the number of police cars already owned by the City. The cost of the purchase of police cars to meet the increase in staffing must be included in the Economic Study. Additionally, auto insurance costs, auto maintenance costs, and annual cost for gasoline must be included in the Economic Study. Salaries and benefits for additional personnel must also be included in the Economic Study.

Fire Services
Unfortunately across the street from the proposed Target is land currently owned by the City for the purpose of building a new Fire Station. The increase in traffic will increase response time for fire and emergency medical services. Does the City Council want to develop a Target and make our Fire Department less efficient? Or does the City Council plan to sell this parcel and purchase another in the same general area, but not where there will be traffic gridlock? What will be the cost in terms of the land sale and purchase, and design of a new fire station? Analyze these costs in the Economic Study.

If the City Council chooses to allow a Target and a Fire Station across the street from each other, it must access the cost in legal fees that will occur when the city is sued by citizens due to long response times that reduce the benefits of necessary medical help. Include these costs in the Economic Study.

Property Tax Revenue
The economic effect of the proposed Target must be studied to determine the effect of the visual and aesthetic character of the proposed store on the Monte Fiore development as well as Mannana Woods.

Unfortunately some of our neighbors have been adversely affected by the economy and are in a position where they must sell their homes. If they can even sell their homes with a proposed Target literally and figuratively on the horizon, their home will have lost value and therefore property tax revenue will decrease.

The proposed Target will also lower the value of all residential properties and reduce property tax revenue currently benefiting the city when home values are reduced for property tax assessment. The decrease in property tax revenue must be included in the economic study.

Hilton Hotel
Additionally, losses of sales tax revenue and room tax revenue equal to the proposed tax revenue to be derived from the proposed Target will result if the City Council allows a Target to be built next to the existing Hilton Hotel. The economic impact on the Hilton Hotel, must be analyzed and included in the Economic Report.

Biological Impacts:

We currently have Red Tailed Hawks hunting for food in the proposed Target Site. We also have deer using this area for grazing. Paving it over will affect the exiting life cycle of both herbivores and carnivores. Respond to these concerns in the SEIR.

Traffic:

Homeowners would be unable to pull out from Silverwood drive and turn left onto La Madrona. Once drivers leaving target realize the light at La Madrona and Mt Herman and the existing freeway on ramps are insufficient to handle the immense increase in traffic, I'm sure many drivers would turn right when exiting target and travel south to enter Highway 17 at the Sims Road Exit. This two lane road is not sufficient to handle an increase in traffic. What is next, a traffic light at La Madrona and Silverwood Dr. and the widening of La Madrona south of Target? What will be the cost of these changes in dollars as well as the negative environmental impact? Address these issues in the SEIR and the Economic Study.

Where is the analysis of what this Target will cost our community?

Additionally, some costs cannot be measure in dollars and cents. They have affects that damage our quality of life. Residents of Manana Woods and residents of Monte Fiore are able to allow their young teenage children to ride bikes to Scotts Valley Corners sure that their children are safe. With an estimated 8,000-10,000 additional cars trips traveling on La Madrona road daily, our children will no longer be biking along La Madrona to purchase lunch at Quiznos or simply enjoy the outdoors.

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Most important, however, are children that currently ride their bikes on La Madrona road to get to and from the Scotts Valley Middle School(SVMS) as they have parents that work and there is no bus system for school. These children will be riding an incredibly busy street in the afternoon, and in the morning at the same time as large delivery trucks taking inventory to Target. Are the existing council members unaware of how many children have been hit by cars while walking or riding their bikes on Scotts Valley Drive and Mt. Hermon Rd. in the past two years on their way to and from SVMS? This is a prime example of what happens when you mix children traveling with cars on busy roads. Do we want to make this situation worse by increasing the traffic on La Madrona as well? How could the City Council find this increased risk to children acceptable?

What would be the cost to our city in legal fees for law suits for accidents on roads not equipped or designed to handle this level of traffic?

Lastly, Homeowners would be unable to pull out from Silverwood drive and turn left onto La Madrona. Once drivers leaving Target realize the light at La Madrona and Mt Hermon and the existing freeway on ramps are insufficient to handle the immense increase in traffic, I'm sure many drivers would turn right when exiting Target and travel south to enter Highway 17 at the Sims Road Exit. This two lane road is not sufficient to handle an increase in traffic. What is next, a traffic light at La Madrona and Silverwood Dr. and the widening of La Madrona south of Target? What will be the cost of these changes?

Crime:

As stated in our cover letter, we were attracted to Scotts Valley as a community to reside in part due to the low crime rate. Our City Council is now considering a Target even though it has been proven Targets increase crime. You must address in you SEIR report how crime will be minimized and add in your Economic Report the cost of crime mediation.

Finally, as a resident of this City, I recommend that Mayor Randy Johnson and the City Council go back and read the City Plan. A City Plan is a Mission Statement for City Government. Please consider the sections of the City Plan listed below and determine if the proposed Target meshes seamlessly with the City Plan, or if it is in stark contrast to every section listed below.

LP-45 Commercial land uses should be concentrated along the urban core of the City.

LP-25 The City shall prohibit new land use activities within and in close proximity to residential zones that generate undesirable impacts which cannot be mitigated.

LA-26 Through the environmental and permit review process, the City shall identify projects which could impact residential zones in a negative manner, and if such impacts cannot be mitigated, the City shall deny the project.

LO-37 Ensure compatibility between commercial development and surrounding land uses.

LP-38 Land uses located adjacent to commercial uses should be protected from excessive noise, unsightliness, offending odors and other nuisances.

CG169 To establish, maintain and enhance the scenic beauty of those roads, streets and/or highways which are significant to the planning area, and to enhance the aesthetic and visual qualities of those portions of the planning area visible from major transportation corridors.

CO-170 Encourage the preservation and enhancement of the scenic beauty of all roads, streets and highways within the Planning Area as part of any road improvement or construction project.

CP-180 The City shall prohibit the placement of unsightly advertising and street and directional signs along roadways.

OSP-381 The City shall discourage scattered development or urban sprawl which may be detrimental.

CA-142 Maintain the City street and highway system to integrate with the road system already established by Santa Cruz County. The Public Works Director shall ensure a coordinated system design. to the City's visual beauty and increase significantly the cost of providing city service.

CP-123 The present street and highway system shall be improved and maintained to provide safe and efficient travel between various parts of the planning area and to individual properties.

CP-146 The City shall identify and improve congested and critical traffic locations.
PSP-548 The City shall ensure that school children are provided safe pedestrian and bicycle travel ways to and from schools.

OSP-357 In order to reduce automobile related pollution, the City will plan for and encourage the use of transit, bicycles and walking as alternatives to automobile travel.

PSP-533 The City shall require that all new development proposals and/or changes in land use be referred to the police department for law enforcement evaluation and to the fire department for evaluation of fire and life safety issues.

As accountants, we understand that the City Council is looking for a quick fix revenue stream to provide city services. After careful consideration, we don't believe a Target store is the answer. It will only create additional fiscal problems for the City of Scotts Valley. We would appreciate a copy of the Economic Study and the SEIR once they are completed.

We would also like the City Council to contemplate if they will be considered intelligent agents of the city that take action to benefit our city. If I were a considering opening a retail business or restaurant in Scotts Valley, I would be immensely interested in decisions made by the city council. Would I respect a city council that votes in favor of negatively impacting existing business for new business. Even considering a Target, is sending the message that existing business are of no concern to the City Council. How will we attract retail stores into a town

center in a town with a City Council that has no regard for retail business owners? What would our sales slogan be, "Come to Scotts Valley Now, But Once You're Here Your Stuck"?

Respectfully,

David and Elizabeth Price

Scotts Valley Residents

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Amendment to ESA Professional Services Contract

To: Ms. Wooden
Community Development Director Scotts Valley

From: Frank Z. Kertai
President Heritage Parks Association

Subject: Amendment to ESA Professional Services Contract
Draft SEIR Gateway South Retail Shopping Center Application

Date: June 30, 2008

I have reviewed your draft Amendment to ESA Professional Services Contract for services related to the SEIR Gateway South Retail Shopping Center Application. I have also reviewed the related Exhibit A Scope of Work Revision 2008-06-26

The following are my comments to your proposed amendment and the revised scope of work:

- Important biological resources that could be at this site are being overlooked. These include:
  - Ohlone tiger beetle
  - California red-legged frog
  - Scotts Valley spineflower
  - Aritists popcornflower
  - Other California Native Plant Society (CNPS) list 1B species found in the vicinity
  - Numerous sensitive bird specifies are not listed (golden eagles have been observed in the area)
- This revised proposal does not include any work to identify similar projects with similar mitigation measures that have succeeded – we asked for this in the original scoping, but it was not included
  - The citizens of Scotts Valley definitely deserve to be shown, clearly and convincingly, that the mitigation measures proposed are tried and true.
  - The best way to do this is for ESA to list and describe successful projects applying the mitigation measures they propose.
- The last sentence in paragraph 3 on page 12 of the Exhibit A is incomplete and cut off, indicating there was additional text that is not shown here
  - As such, this amendment cannot be considered complete as there could be substantial undescribed work omitted
  - If this is an example of the quality of work we can expect from ESA Development, perhaps the city should consider opening up the RFP again
- The first paragraph on page 13 is confusing and misleading. For USFWS involvement via a Corps permit, then the project proponent would have to propose filling a federal wetland.

  - The City of Scotts Valley would not permit filling of wetlands, would they?
  - This paragraph could be much more clearly written for the layperson trying to understand the public process.
- Carbonera Creek is already listed as impaired
  - This is not mentioned in Section 5 Hydrology and Water Quality
  - This "impaired" categorization severely limits the amount of additional discharges which can be released into this waterway
  - There is a TMDL (Total Daily Maximum Load) established for specified categories of pollutants after a stream is determined to be impaired
    - This issue should be explicitly stated/addressed in the RFP
- On page 14, ESA discusses analysis of flood flows and discharge from the site.
  - Generally, a consultant would be given direction as to the level of analysis by the person hiring them.
  - In order to safeguard the citizens of Scotts Valley, and especially in light of climate change and the recent experiences with under engineered systems in the Midwest, I would suggest that the consultant analyze and mitigate for at least a 50-year event, if not a 100-year event like other modern civilized countries.
- On page 18, ESA ignored our request to look at atmospheric N deposition and its impacts on local biota.
  - There are several studies clearly documenting the effects of N deposition on grasslands and endangered species, and the proximity of similar species in grasslands in the vicinity warrants such an analysis.
  - This will require modeling which will cost money that is not included in the project proposal.
- This document does not refer to the City of Scotts Valley's Storm Water Management Plan (SWMP).
  - Amended contract should allow for the necessary time for the contractor to analyze impacts to the city's SWMP, if this exists
  - If the city doesn't have a SWMP, then this project, by adding additional pollutants to local creeks, has the potential to severely affect future City development. The amended contract should include a budget and line item for analysis of potential impacts to a future developments in the City as they may be affected by the City's SWMP, including reference to potentially affected impaired water bodies, potential TMDLs, and all other pertinent regulations as pertain to storm water runoff.
- We request that all administrative and other drafts to be available on the web or in pdf form for public review.
  - That is not specifically addressed, and, in fact, looks like (from the proposal) it will not be considered.
  - These are public documents, and it will be pricey to copy the hard copies that ESA proposes to provide - the public deserves better.
  - The drafts we want include the wetlands delineation, and any other biotic resources reports.

- For any and all mitigation measures, ESA should also prepare and include in the EIR a mitigation management and monitoring plan.
    - These are sometimes, in error, omitted and left for after a project is approved.
    - Such measures can in and of themselves need environmental review and permitting.
    - When the practices proposed for management and monitoring are not described in conjunction with the proposed project, the public cannot weigh the feasibility of the monitoring and the costs of such monitoring.
- The SDEIR budget should include sufficient time and finances to write the many plans that will be necessary, including:
    - wetland and biotic resource plans
    - stormwater plans
    - traffic management and monitoring plans
    - landscaping plans
    - pollutant prevention plans
- ESA does not mention that, for the wetland delineation, the contractor will need to measure soil saturation throughout the growing season
    - This is expensive and they do not specifically budget for this.
    - This will require visits every few days from about December through April.

Also, I would like to note that this revised project description does not capture many of the comments made during the original scoping meeting. This is a very significant misstep as the very purpose of the scoping meeting was to include all additional comments from the community – not filter them. Are we are sure that the City is incorporating them without directly listing them here?

Finally, Ms. Wooden, I believe these contract amendments change the scope of work significantly enough to require putting the entire report back out to bid. This way we can look for a firm with greater competency and one that is more qualified to perform the work. Is there any reason why the city would not do this for a report of such significance?

Please feel free to contact me if you have any questions regarding my suggestions.

Sincerely,

Frank Z. Kertai
President Heritage Parks Association

APPENDIX C

Air Quality Calculations

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Summary Report for Summer Emissions (Pounds/Day)

File Name:

Project Name: Scotts Valley Target

Project Location: Santa Cruz County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
009 TOTALS (lbs/day unmitigated)	50.35	33.92	28.95	0.01	35.64	1.61	37.24	7.45	1.48	8.92	3,252.04

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.14	1.52	2.81	0.00	0.01	0.01	1,800.81

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	64.32	75.75	679.12	0.35	69.77	13.63	37,728.50

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	65.46	77.27	681.93	0.35	69.78	13.64	39,529.31

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Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name:

Project Name: Scotts Valley Target

Project Location: Santa Cruz County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

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CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 1/1/2009-2/13/2009 Active Days: 32	3.25	26.60	14.65	0.00	35.61	1.34	36.94	7.44	1.23	8.67	2,352.99
Mass Grading 01/01/2009-02/15/2009	3.25	26.60	14.65	0.00	35.61	1.34	36.94	7.44	1.23	8.67	2,352.99
Mass Grading Dust	0.00	0.00	0.00	0.00	35.60	0.00	35.60	7.43	0.00	7.43	0.00
Mass Grading Off Road Diesel	3.18	26.46	12.98	0.00	0.00	1.33	1.33	0.00	1.23	1.23	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	0.07	0.14	1.67	0.00	0.01	0.00	0.01	0.00	0.00	0.00	105.67
Time Slice 2/16/2009-4/1/2009 Active Days: 33	3.72	**33.92**	17.02	0.01	**35.64**	**1.61**	**37.24**	**7.45**	**1.48**	**8.92**	**3,252.04**
Fine Grading 02/16/2009-04/01/2009	3.72	33.92	17.02	0.01	35.64	1.61	37.24	7.45	1.48	8.92	3,252.04
Fine Grading Dust	0.00	0.00	0.00	0.00	35.60	0.00	35.60	7.43	0.00	7.43	0.00
Fine Grading Off Road Diesel	3.18	26.46	12.98	0.00	0.00	1.33	1.33	0.00	1.23	1.23	2,247.32
Fine Grading On Road Diesel	0.47	7.32	2.37	0.01	0.03	0.27	0.30	0.01	0.25	0.26	899.05
Fine Grading Worker Trips	0.07	0.14	1.67	0.00	0.01	0.00	0.01	0.00	0.00	0.00	105.67
Time Slice 4/2/2009-9/1/2009 Active Days: 109	4.68	19.68	**28.95**	**0.01**	0.06	1.35	1.40	0.02	1.23	1.26	2,822.45
Building 04/02/2009-09/01/2009	4.68	19.68	28.95	0.01	0.06	1.35	1.40	0.02	1.23	1.26	2,822.45
Building Off Road Diesel	3.87	17.35	11.50	0.00	0.00	1.28	1.28	0.00	1.17	1.17	1,621.20
Building Vendor Trips	0.09	0.95	0.88	0.00	0.01	0.03	0.04	0.00	0.03	0.03	153.02
Building Worker Trips	0.73	1.39	16.57	0.01	0.05	0.04	0.09	0.02	0.03	0.05	1,048.23
Time Slice 9/2/2009-12/2/2009 Active Days: 66	**50.35**	0.08	0.98	0.00	0.00	0.00	0.01	0.00	0.00	0.00	62.04
Coating 09/02/2009-12/02/2009	50.35	0.08	0.98	0.00	0.00	0.00	0.01	0.00	0.00	0.00	62.04
Architectural Coating	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.04	0.08	0.98	0.00	0.00	0.00	0.01	0.00	0.00	0.00	62.04

Phase Assumptions

Phase: Fine Grading 2/16/2009 - 4/1/2009 - Fine Site Grading

Total Acres Disturbed: 10

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Maximum Daily Acreage Disturbed: 1.78
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 212.12
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: Mass Grading 1/1/2009 - 2/15/2009 - Mass Site Grading
Total Acres Disturbed: 10
Maximum Daily Acreage Disturbed: 1.78
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: Building Construction 4/2/2009 - 9/1/2009 - Building Construction
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 9/2/2009 - 12/2/2009 - Architectural Coating
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 100
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name:

Project Name: Scotts Valley Target

Project Location: Santa Cruz County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2009 TOTALS (tons/year unmitigated)	2.03	2.06	2.13	0.00	1.16	0.12	1.28	0.24	0.11	0.35	247.18

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.20	0.27	0.37	0.00	0.00	0.00	328.39

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	12.57	14.92	131.81	0.06	12.73	2.49	6,855.55

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	12.77	15.19	132.18	0.06	12.73	2.49	7,183.94

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

JOB: scotts valley target
RUN: Hour 1
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	270.0 DEGREES	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	1.3 PPM		
SIGTH=	10. DEGREES	TEMP=	68.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. GC E MT H	270	660	120	1020	AG	1373	4.8	.0	16.8
B. MT H E GC	450	690	120	1020	AG	2833	4.8	.0	16.8
C. S W LM	-60	300	210	300	AG	81	4.8	.0	16.8
D. LM S S	180	30	210	300	AG	157	4.8	.0	16.8
E. A W LM	60	720	120	630	AG	50	4.8	.0	16.8

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	-30	330	.5
2. Recpt 2	150	90	.5
3. Recpt 3	75	660	.5
4. Recpt 4	210	690	.5
5. Recpt 5	168	840	.5
6. Recpt 6	240	990	.5
7. Recpt 7	240	870	.5
8. Recpt 8	390	720	.5

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

C4$ existing
JOB: scotts valley target
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E
1. Recpt 1	1.3	.0	.0	.0	.0	.0
2. Recpt 2	1.3	.0	.0	.0	.0	.0
3. Recpt 3	1.3	.0	.0	.0	.0	.0
4. Recpt 4	1.3	.0	.0	.0	.0	.0
5. Recpt 5	1.3	.0	.0	.0	.0	.0
6. Recpt 6	1.8	.1	.3	.0	.0	.0
7. Recpt 7	1.5	.2	.0	.0	.0	.0
8. Recpt 8	1.4	.1	.0	.0	.0	.0

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

JOB: scotts valley target
RUN: Hour 1
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	270.0 DEGREES	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	1.3 PPM		
SIGTH=	10. DEGREES	TEMP=	68.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. GC E MT H	270	660	120	1020	AG	1533	4.8	.0	16.8
B. MT H E GC	450	690	120	1020	AG	3139	4.8	.0	16.8
C. S W LM	-60	300	210	300	AG	81	4.8	.0	16.8
D. LM S S	180	30	210	300	AG	177	4.8	.0	16.8
E. A W LM	60	720	120	630	AG	50	4.8	.0	16.8

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	-30	330	.5
2. Recpt 2	150	90	.5
3. Recpt 3	75	660	.5
4. Recpt 4	210	690	.5
5. Recpt 5	168	840	.5
6. Recpt 6	240	990	.5
7. Recpt 7	240	870	.5
8. Recpt 8	390	720	.5

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

C4$ existing plus project
JOB: scotts valley target
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E
1. Recpt 1	1.3	.0	.0	.0	.0	.0
2. Recpt 2	1.3	.0	.0	.0	.0	.0
3. Recpt 3	1.3	.0	.0	.0	.0	.0
4. Recpt 4	1.3	.0	.0	.0	.0	.0
5. Recpt 5	1.3	.0	.0	.0	.0	.0
6. Recpt 6	1.8	.1	.4	.0	.0	.0
7. Recpt 7	1.5	.2	.0	.0	.0	.0
8. Recpt 8	1.4	.1	.0	.0	.0	.0

□□

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

JOB: scotts valley target
RUN: Hour 1
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	270.0 DEGREES	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	1.3 PPM		
SIGTH=	10. DEGREES	TEMP=	68.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. GC E MT H	270	660	120	1020	AG	568	4.8	.0	16.8
B. MT H E GC	450	690	120	1020	AG	3604	4.8	.0	16.8
C. S W LM	-60	300	210	300	AG	81	4.8	.0	16.8
D. LM S S	180	30	210	300	AG	166	4.8	.0	16.8
E. A W LM	60	720	120	630	AG	50	4.8	.0	16.8

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	-30	330	.5
2. Recpt 2	150	90	.5
3. Recpt 3	75	660	.5
4. Recpt 4	210	690	.5
5. Recpt 5	168	840	.5
6. Recpt 6	240	990	.5
7. Recpt 7	240	870	.5
8. Recpt 8	390	720	.5

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

C4$ cumulative
JOB: scotts valley target
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E
1. Recpt 1	1.3	.0	.0	.0	.0	.0
2. Recpt 2	1.3	.0	.0	.0	.0	.0
3. Recpt 3	1.3	.0	.0	.0	.0	.0
4. Recpt 4	1.3	.0	.0	.0	.0	.0
5. Recpt 5	1.3	.0	.0	.0	.0	.0
6. Recpt 6	1.8	.0	.4	.0	.0	.0
7. Recpt 7	1.4	.0	.0	.0	.0	.0
8. Recpt 8	1.4	.0	.0	.0	.0	.0

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

JOB: scotts valley target
RUN: Hour 1
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	270.0 DEGREES	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	1.3 PPM		
SIGTH=	10. DEGREES	TEMP=	68.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. GC E MT H	270	660	120	1020	AG	573	4.8	.0	16.8
B. MT H E GC	450	690	120	1020	AG	3910	4.8	.0	16.8
C. S W LM	-60	300	210	300	AG	81	4.8	.0	16.8
D. LM S S	180	30	210	300	AG	184	4.8	.0	16.8
E. A W LM	60	720	120	630	AG	50	4.8	.0	16.8

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	-30	330	.5
2. Recpt 2	150	90	.5
3. Recpt 3	75	660	.5
4. Recpt 4	210	690	.5
5. Recpt 5	168	840	.5
6. Recpt 6	240	990	.5
7. Recpt 7	240	870	.5
8. Recpt 8	390	720	.5

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

C4$ cumulative plus project
JOB: scotts valley target
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E
1. Recpt 1	1.3	.0	.0	.0	.0	.0
2. Recpt 2	1.3	.0	.0	.0	.0	.0
3. Recpt 3	1.3	.0	.0	.0	.0	.0
4. Recpt 4	1.3	.0	.0	.0	.0	.0
5. Recpt 5	1.3	.0	.0	.0	.0	.0
6. Recpt 6	1.8	.0	.4	.0	.0	.0
7. Recpt 7	1.4	.0	.0	.0	.0	.0
8. Recpt 8	1.4	.0	.0	.0	.0	.0

APPENDIX D
Biological Resources

D-1 Wetland Delineation

D-2 Special Status Plant Survey Report

D-3 Habitat Assessment

D-4 Habitat Assessment Confirmation Letter

D-5 Tree Survey

Appendix D-1
Wetland Delineation

GATEWAY SOUTH SITE, SCOTTS VALLEY

Scope of Services – Wetland Delineation

This proposal provides a description of the tasks required to update the wetland delineation of the Gateway South parcel proposed for development of a large retail store. This scope does not include obtaining the necessary regulatory permits for those portions of the project site that will affect federal or state jurisdictional wetlands through discharge of fill material or other substantial alteration of their condition. It is assumed that permitting would be undertaken by other parties on behalf of the project applicant, once the project reaches that stage.

Project Understanding

The proposed project would involve construction of a 155,000-square-foort store, currently planned for occupancy by Target Stores, on La Madrona Road Drive south of Mount Hermon Road in Scotts Valley. Small areas of wetlands were identified on the project site during earlier site investigations. Federal and state laws and policies regulate the discharge of fill material into wetlands, and in some cases also may regulate activities that occur near such so-called "jurisdictional areas" (i.e., areas under the jurisdiction of applicable federal and state regulatory agencies) that can be shown to have substantial effects on their ability to perform certain important ecological functions.

ESA has reviewed the previous wetland delineation, included as an appendix in the SEIR prepared for the same site in 2005. The appendix is not very detailed with respect to the size, extent and characteristics of the wetlands, but several points are relevant:

1. The wetland delineation is out of date. Wetland delineations, if verified (i.e. confirmed by as to the location and size) typically expire five years after approval by the U.S. Army Corps of Engineers (the Corps), which is principally responsible for regulating federal wetlands. The previous wetland delineation was completed in 2004; nonetheless, the delineation was never submitted to the Corps for verification. Therefore, for this reason alone, the delineation needs to be re-done.

2. In the years since the previous delineation was completed, there have been substantive changes to how the Corps delineates, verifies and permits projects with wetlands fills. A new delineation will need to take these changes into account to avoid being returned for not providing adequate information upon which to make a jurisdictional determination.

3. Wetlands on the project site may be isolated, which means they do not have a surface hydrological connection to traditional navigable waters, such as creeks, rivers, or

Monterey Bay. Therefore, such wetlands as existing on the project site may not be Waters of the United States and, as such, would not be subject to Corps jurisdiction. However, wetlands may still be considered Waters of the State, and subject to a different set of state regulations with similar documentation, protection and mitigation requirements.

Project Approach

The basic sequence of services proposed are: delineation, followed by Corps verification (if necessary). The delineation is the process of determining the location and extent of jurisdictional waters, including streams, seeps, springs, marshes, etc. Once the wetland features have been identified, a report is submitted to the Corps (if there are potential waters of the U.S.) and the Regional Water Quality Control Board.

Delineation of Waters of the U.S. and of the State, including Wetlands

ESA will conduct a routine wetland delineation of jurisdictional waters of the U.S., including wetlands, on the entire 19-acre parcel. The previous wetland delineation will be used as a guide for locating the freshwater seeps that were previously identified, but conditions may have changed in the intervening years. ESA will prepare a Draft Delineation Report, including a map of the jurisdictional areas, for review by the City. The final Delineation Report will be submitted to the U.S. Army Corps of Engineers only in the event that the wetlands are determined to meet the criteria for federal jurisdiction, which is essentially a clear connection to surface waters, either on the property or off it.

If it is necessary to submit the Delineation Report to the Corps, then a site visit by Corps staff will typically take place. ESA will accompany Corps staff to review the site conditions and methods of delineation. The Corps may make requests to change certain details of the report or map. ESA will make those changes, then re-submit the revised Delineation Report. The Corps will then send a letter confirming the extent of its jurisdiction. This jurisdictional determination will be valid for five years.

Wetlands that are not federally jurisdictional may still be considered Waters of the State, subject to regulation by the Central Coast Regional Water Quality Control Board (RWQCB). The Regional Boards do not have the same separate and formal process for reviewing wetland delineations as the Corps. Therefore, the delineation can be submitted with the permit applications once the project proceeds to that stage. However, this scope includes consultation with RWQCB staff and

ESA will submit one copy of draft reports to the project applicant for review; we assume that the draft will not receive more than one round of review, and that one set of consolidated, non-contradictory comments prior to submitting to ESA. ESA will prepare a total of 10 copies of final reports for Agency staff, the applicant, and ESA. Copies will also be available in PDF format.

Data Needs

To prepare the Wetland Delineation Report, ESA will require the following information. (It is assumed that the City will obtain these data from the applicant, property owner, or other parties and provide the information to ESA.)

- Color aerial imagery, ortho-rectified to national mapping standards, optimally at a resolution of one foot per pixel or finer.
- Contour data flown for design purposes also will assist to accurately map jurisdictional features.

If the above data are not available, ESA will acquire imagery at additional cost.

Schedule

Milestone	Completed By
Conduct wetland delineation; submit to Corps if federally jurisdictional. Identify need for any additional studies for endangered species or cultural resources. Remaining schedule assumes none needed.	Two months from NTP (mid-July)
Wetland Verification by Corps if federally jurisdictional	Four months from NTP (mid-September)

[1] Assumes Notice to Proceed by May15, 2007

Budget

We estimate that the work scope described herein can be completed for $6,675.

Assumptions

- There will be no significant changes (e.g., changes to the construction footprint) in the project design after 90%.
- There will be no more than one round of review on any document by client.
- If necessary, the project sponsor or applicant will obtain right of entry permission for ESA parcels not owned by the sponsor or applicant for the purpose of conducting the delineation.
- This scope does not include any permits for geotechnical borings in or near wetlands. If borings were to occur in wetlands, drainages, or riparian areas, environmental permits would be required. If permits are needed for borings, schedule and cost would be affected.
- The likelihood of endangered species on the site is judged to be slight. However, if the wetlands on the project are not federally jurisdictional, then the project will not have a federal nexus with regard to any endangered species issues that may be identified on the project site. In the absence of federal nexus, consultation with the US Fish and Wildlife Service (USFWS) on endangered species would need to be conducted directly with the

USFWS according to Section 10 of the Federal Endangered Species Act following submittal of application materials to the agency. This consultation process is more protracted than if the wetlands are federally jurisdictional, wherein the endangered species consultation is facilitated by the Corps as part of the wetland permitting process. ESA anticipates there will be no endangered species consultation, and is not included in this proposal. If it is required, a separate scope and budget will be provided for that task.

- Cultural resources, including archaeological and historical resources, are not anticipated to be of concern at the project site, and are therefore not included in this scope of work. Section 106 of the National Historic Preservation Act requires federal agencies to review all actions that may affect a property listed or eligible for listing in the National Register of Historic Places. If the Corps takes regulatory action, then it is required to comply with Section 106 when issuing general permits, and will typically adopt recommendations received through its consultation with the SHPO. If cultural resources are determined to be an issue, then ESA will prepare a separate scope and budget to resolve any cultural resource issues by providing the Corps with information it requires to meet its Section 106 obligation.
- The General Construction Permit requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) prior to the start of construction. Typically, this is the responsibility of the construction contractor, so it has not been accounted for in this scope. ESA can assist in preparation of the SWPPP as a task with separate scope and budget, if needed.
- The project applicant must obtain all applicable wetland permits prior to initiating ground-breaking, construction, or any type of site modification. The wetland delineation report and verification of the delineation by the Corps do not represent permits.

Appendix D-2
Special Status Plant Survey Report

Rare Plant Survey Report

Summary

This report presents the findings of two focused floristic surveys conducted at the proposed Gateway South Retail Store site located in the City of Scotts Valley, on May 8, and June 20, 2008. The purpose of these surveys was to document the diversity of plant species occurring on the property in a comprehensive manner, and to establish whether or not any special status plant species were growing on the property at that time.

During these surveys, no individuals or populations of special status plants were observed on the site in 2008 (the term "special status" is described in the section *Special Status Plants* below). In most respects, 2008 is considered a "normal" year for weather patterns and precipitation, apart from the lack of late spring rain. The lack of late spring rain, and high temperatures in late spring caused the spring and summer growing seasons to be somewhat shorter than average. However, based on the extreme variability of weather from year to year in California, the weather in 2008 was not considered extraordinarily different from the average. Due to the early arrival of summer, the second plant survey was conducted in mid-June instead of July or August as it might have been in a year with a longer spring and later summer.

Project Setting and Description

The City of Scotts Valley is proposing to develop an approximately 19 acre parcel of land located just west of State Route (SR) 17, on La Madrona Drive, generally southwest of the Mt. Hermon Road / La Madrona Drive exit. The topography of the property slopes gently upwards in a westward direction for the majority of the property, then reaches a much steeper slope (40 percent and greater) on the west end of the property. The development plans are restricted to the areas of gentler slopes, approximately 7 acres, so a large portion of the property will remain unaltered. The proposed development is a retail store, which will cover 155,000-square feet, with additional area used to construct a parking lot, retaining walls against the steep slopes, and landscaping around the development.

Land management of the site appears to have been minimal, at least during the past several years. The concrete foundation and rubble piles at the site indicate that a structure was once present, but there are not currently any structures on the property. The grassland area is occasionally disked or mowed by the City of Scotts Valley for fire prevention management in the late spring or early summer. No mowing or disking had been done in 2008 prior to the floristic surveys. At the time of the June 20, 2008 survey there were scattered areas of recent disturbance at the site due to geotechnical boring, presumably in association with the proposed project. A pit was being dug at the time of the survey on the western edge of the grassland area.

Vegetation Communities

Six distinct Vegetation communities were identified at the project site. These communities are described below, and are also shown on the map in **Figure 1**.

California annual grassland is a plant community that exhibits extreme variation across the state, but that is characterized by a dominance of native and non-native annual grasses. There can be also be a high cover of native and non-native broad-leaved plants (forbs), and scattered, sparse shrub and tree cover within annual grasslands. At the project site, the annual grassland is dominated by non-native species such as soft brome (*Bromus hordeaceus*), sheep sorrel (*Rumex acetosella*), Italian rye grass (*Lolium multiflorum*) and various species of vetch (*Vicia* spp.- some native). The majority of the project site is dominated by this vegetation community, which occurs mostly on the gentle to moderate east-facing slope. There is significant diversity even within the site with regard to species diversity, distribution, and relative and absolute cover within the California annual grassland.

California oatgrass grassland is found in small patches in or near the wetland seeps on the property. California oatgrass (*Danthonia californica*), a perennial bunchgrass, is the dominant species in this community, and forms an almost continuous cover, with few other species present in the stand. Species that commonly associate with California oatgrass grassland are; blue eyed grass (*Sisyrinchium bellum*), and blue wildrye (*Elymus glaucus*). This community is found in coastal areas as well as inland grasslands throughout the state, and is an important component of coastal prairie.

California needlegrass grassland is dominated by purple needlegrass (*Nassella pulchra*), which is a perennial bunchgrass that has a large range, extending from northern California down through Baja California and from the California coast to the western foothills of the Sierra Nevada range. This grass forms sparse to dense stands that typically contain a wide variety of associated species, mostly exotic annual grasses such as; soft brome, Italian rye grass, and ripgut brome (*Bromus diandrus*). At the project site needlegrass grassland is found scattered within the annual grassland in small, discrete stands, mostly on the upper slope of the grassland, but below the mixed conifer stand tree line.

Wetland seeps are not a vegetation community *per* se, but rather a hydrologic feature resulting from water seeping to the soil surface from a groundwater source. They are described here because on the project site they support a distinct suite of plant species and constitute a habitat type separate from their surroundings. Seeps are found dispersed throughout the grasslands at the project site, some very small, others large. They typically support wetland species such as; brown-headed rush (*Juncus phaeocephalus*), various sedges (*Carex* spp.), and common velvet grass (*Holcus lanatus*).

① California Annual Grassland
② California Oatgrass Grassland
③ California Neeolegrass Grassland
④ Wetland Seeps
⑤ Mixed Conifer Forest
⑥ Ruderal/Disturbed
Parcel Boundary

SOURCE: Globe Xplorer, 2008, ESA , 2008

Gateway South Retail Stores . 207755

Figure 1
Vegetation Communities at the Project Site

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Mixed conifer forest is found in the eastern portion of the property, on slopes generally 40 percent or steeper. At the project site, this community is dominated by coast redwood (*Sequoia sempervirens*), Douglas fir (*Pseudotsuga menziesii*), and ponderosa pine (*Pinus ponderosa*), with scattered, mature, coast live oak (*Quercus agrifolia*) at the lower margins of the stand. The understory of this community is dominated by poison oak (*Toxicodendron diversilobum*), and miner's lettuce (*Claytonia perfoliata*). For the most part, the mixed conifer stand will remain undisturbed by the development on the site. The exception is a grove of coast redwoods near the north boundary of the property, which will be wholly or partially removed.

Ruderal/Disturbed is found on and around the concrete foundation and rubble piles on the site, and in isolated patches near the road. The vegetation is composed mostly of thistles such as Italian thistle (*Carduus pycnocephalus*), bull thistle (*Cirsium vulgare*), and acacia trees (*Acacia dealbata*). These areas have already been heavily modified by people, allowing non-native, invasive plants to establish.

Survey Methods

Relevent background information for the floristic surveys was extracted from the following sources prior to planning field visits:

- Historic and current occurrence records found in the California Natural Diversity Database (CNDDB, 2008), for the following USGS quadrangles; Felton, Laurel, Soquel, Watsonville West, Castle Rock Ridge, Big Basin, Los Gatos, and Santa Cruz.
- The plant specimen record (Consortium of California Herbaria (ucjeps.berkeley.edu/consortium/)).
- The California Native Plant Society Inventory of Rare and Endangered Plants (CNPS, 2008).
- Reports of special status plant surveys conducted at the site by EIP in 2002 (*Biological Technical Report, Gateway South office Building and Fire Station*,EIP, 2002), and Harvey and Stanley Associates, Inc., in 1988 (*Gateway South Assessment District EIR Biotic Resources*, Harvey and Stanley Associates, Inc., 1988)
- Two EIR documents discussing biological resources at the project site; *Gateway South Specific Plan Final EIR*, Zander Associates, July 1995, and the *Supplemental EIR Gateway South Office Building and Fire Station*, EIP Associates, 2005.

Based on the information gathered from these sources, the special status plant species listed in the following section were determined to have a low to moderate potential to occur at the site. The survey was therefore timed to coincide with the identification period of the target plant species.

The property was surveyed on foot by ESA botanists Rachel Brush and LeChi Huynh, according to the CNPS rare plant survey guidelines[1]. All plants and trees were identified to the lowest

[1] *CNPS Botanical Survey Guidelines.* Revised 2001. Available online at: http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf

taxonomic level possible. The botanists walked transects approximately 20 ft. apart, back and forth across the property. A comprehensive species list follows the text of this document, and includes the plants observed both during the spring and summer surveys (May 8, and June 20, 2008). Many specimens were collected for identification purposes and subsequently pressed, including several species of vetch, and coastal tarweed (*Deinandra corymbosa*). These specimens are currently available for viewing (contact ESA at 510.839.5066), and may be donated to an herbarium collection in the future if they are considered to be of high quality.

Special Status Plants

The term "special-status species" as used here is defined to include the following:

- Plants that are legally protected or proposed for protection under the California Endangered Species Act (CESA) or Federal Endangered Species Act (FESA);
- Plants defined as endangered or rare under the California Environmental Quality Act (CEQA), Section 15380(b);
- Plants designated as species of special concern by the U.S. Fish and Wildlife Service or California Department of Fish and Game;
- Plants listed in the California Native Plant Society's *Electronic Inventory of Rare and Endangered Vascular Plants of California* (CNPS, 2008).

Based on a review of the relevant background information sources listed above, it was determined that the species listed in Table 1 may have a low to moderate potential to occur at the site. However, since all plants encountered during the surveys were identified to the species level or lower, any rare plants growing at the site at the time of the surveys would have been found, regardless of whether or not they were on the target list prior to embarking on the surveys.

Conclusions

Based on the focused floristic surveys conducted on May 8, and June 20, 2008, no special status plants (as defined above) were observed at the project site. This survey, in combination with CNDDB records, Herbarium records (those presented by the Consortium of California Herbaria ucjeps.berkeley.edu/consortium), and previous survey reports (EIP, 2002, and Harvey and Stanley Associates, Inc., 1988), further confirms that special status plants have not been documented at this site.

TABLE 1
SPECIAL-STATUS PLANT SPECIES CONSIDERED FOR THE GATEWAY SOUTH RETAIL STORES PROJECT

Scientific Name	Common Name	Status USFWS/ CDFG/CNPS	General Habitat
Federal or State Threatened and Endangered Species			
Arenaria paludicola	Marsh sandwort	FE/CE/1B/1	Marshes and swamps, sandy openings.
Chorizanthe pungens var. *hartwegiana*	Ben Lomond spineflower	FE/--/1B.1	Lower coniferous forest, specifically the maritime ponderosa pine sandhills.
Chorizanthe robusta var. *hartwegii*	Scotts Valley spineflower	FE/--/1B.1	Valley and foothill grasslands, often on mudstone or sandstone substrates or exposed bedrock with very thin soils. 230-245 meters.
Chorizanthe robusta var. *robusta*	Robust spineflower	FE/--/1B.1	Sandy or gravelly terraces in coastal scrub, coastal dunes, cismontane woodland, chaparral.
Dudleya setchellii	Santa Clara Valley dudleya	FE/--/1B.1	Cismontane woodland, valley and foothill grasslands on serpentine or rocky parent material
Erysimum teretifolium	Santa Cruz wallflower	FE/CE/1B.1	Inland marine sands in chaparral, lower montane coniferous forest.
Holocarpha macradenia	Santa Cruz tarplant	FT/FE/1B.1	Clay or sandy valley or foothill grasslands, coastal scrub, coastal prairie.
Pentachaeta bellidiflora	White-rayed pentachaeta	FE/CE/1B.1	Open, dry, rocky slopes of valley and foothill grasslands, cismontane woodland. Often on serpentine.
Plagiobothrys diffusus	San Francisco popcorn flower	FE/--/1B.1	Coastal prairie, valley and foothill grassland.
Polygonum hickmanii	Scotts Valley polygonum	FE/CE/1B.1	Valley and foothill grasslands, often on mudstone or sandstone substrates or exposed bedrock with very thin soils.
CNPS Listed Species			
Amsinckia lunaris	Bent-flowered fiddleneck	--/--/1B.2	Coastal bluff scrub, open cismontane woodland, and valley and foothill grassland
Anomobryum julaceum	Slender silver moss	--/--/1B.2	Broadleaf upland forest, lower montane coniferous forest, on damp rock and soil outcrops and roadcuts.
Arctostaphylos andersonii	Santa Cruz mountains Manzanita	--/--/1B.2	Openings and edges of chaparral, upland forest.
Arctostaphylos glutinosa	Schreiber's manzanita	--/--/1B.2	Closed cone coniferous forest, and chaparral on diatomaceous shale.
Arctostaphylos regismontana	Kings mountain Manzanita	--/--/1B.2	Broadleaf upland forest, chaparral, and coniferous forest on granitic or sandstone parent material

TABLE 1 (Continued)
SPECIAL-STATUS PLANT SPECIES CONSIDERED FOR THE GATEWAY SOUTH RETAIL STORES PROJECT

Scientific Name	Common Name	Status USFWS/ CDFG/CNPS	General Habitat
CNPS Listed Species (cont.)			
Arctostaphylos silvicola	Bonny Doon Manzanita	--/--/1B.2	Closed-cone coniferous forest, chaparral, lower montane coniferous forest.
Calyptridium parryi var. hesseae	Santa Cruz mountains pussypaws	--/--/3	Chaparral, cismontane woodland. 305-1115 meters elevation
Campanula californica	Swamp harebell	--/--/1B.2	Mesic coniferous forest, marshes, swamps, meadows, seeps, coastal prairie.
Carex comosa	Bristly sedge	--/--/2.1	Coastal prairie, marshes and swamps, valley and foothill grassland.
Carex saliniformes	Deceiving sedge	--/--/1B.2	Coastal prairie, coastal scrub, meadows, seeps, and marshes.
Cirsium fontinale var. *campylon*	Mt. Hamilton fountain thistle	--/--/1B.2	Chaparral, cismontane woodland, valley and foothill grassland, and serpentine seeps.
Collinsia multicolor	San Francisco collinsia	--/--/1B.2	Closed-cone coniferous forest, coastal scrub, sometimes serpentine
Dacryophyllum falcifolium	Tear drop moss	--/--/1B.3	Coniferous forest on carbonate parent material
Eriogonum nudum var. *decurrens*	Ben Lomond buckwheat	--/--/1B.1	Sandy chaparral, cismontane woodland, lower montane coniferous forest.
Hoita strobilina	Loma Prieta hoita	--/--/1B.1	Chaparral, cismontane woodland, and serpentine riparian woodland.
Horkelia cuneata ssp. *sericea*	Kellogg's horkelia	--/--/1B.1	Sandy or gravelly openings in coastal scrub, coastal dunes, chaparral, closed-cone coniferous forest.
Lessingia hololeuca	Wolly-headed lessingia	--/--/3	Broadleaf upland forest, coastal scrub, lower montane coniferous forest, and serpentine grassland.
Lessingia micradenia var. *glabrata*	Smooth lessingia	--/--/1B.2	Chaparral and serpentine cismontane woodlands.
Micropus amphibolus	Mt. Diablo cottonweed	--/--/3.2	Broadleaf upland forest, chaparral, cismontane woodland and rocky grassland.
Microseris paludosa	Marsh microseris	--/--/1B.2	Closed cone coniferous forest, cismontane woodland, coastal scrub, and grassland
Monardella villosa ssp. *globosa*	Robust monardella	--/--/1B.2	Oak woodland, chaparral openings.
Pedicularis dudleyi	Dudley's lousewort	--/CR/1B.2	Coastal chaparral or forest.

TABLE 1 (Continued)
SPECIAL-STATUS PLANT SPECIES CONSIDERED FOR THE GATEWAY SOUTH RETAIL STORES PROJECT

Scientific Name	Common Name	Status USFWS/ CDFG/CNPS	General Habitat
CNPS Listed Species (cont.)			
Penstemon rattanii var. *kleei*	Santa Cruz mountains beardtongue	--/--/1B.2	Lower montane coniferous forest, chaparral.
Pinus radiata	Monterey pine	--/--/1B.1	Closed cone pine forest, oak woodland
Piperia candida	White flowered piperia	--/--/1B.2	Coniferous forest in open to shaded sites.
Plagiobothrys chisianthus var. *chorisianthus*	Choris' popcorn-flower	--/--/2.2	Grassy and moist places, coastal scrub, chaparral
Rosa pinetorum	Pine rose	--/--/2.2	Closed-cone coniferous forest
Silene verecunda ssp. *verecunda*	San Francisco campion	--/--/1B.2	Sandy grassland, chaparral, and coastal bluffs
Trifolium buckwestiorum	Santa Cruz clover	--/--/1B.1	Gravelly margins of coastal prairie, cismontane woodland, and upland forest.

STATUS CODES:

Federal (U.S. Fish and Wildlife Service [USFWS]):
FE = Listed as Endangered (in danger of extinction) by the federal government.
FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the federal government.

State (California Department of Fish and Game [CDFG]):
CE = Listed as Endangered by the State of California.
CT = Listed as Threatened by the State of California.

California Native Plant Society (CNPS):
List 1A=Plants presumed extinct in California.
List 1B=Plants rare, Threatened, or Endangered in California and elsewhere.
List 2= Plants rare, Threatened, or Endangered in California but more common elsewhere.
List 3 = More information needed or taxonomically problematic.

An extension reflecting the level of threat to each species is appended to each rarity category as follows:
.1 – Seriously endangered in California.
.2 – Fairly endangered in California.
.3 – Not very endangered n California.

SOURCE: CDFG, 2008; CNPS, 2008

SPECIES LIST

	Scientific name	Common name
	FLOWERING PLANTS	
Dicots		
Anacardiaceae		
	Toxicodendron diversilobum	Poison oak
Asteraceae		
	Achillea millefolium	Yarrow
	Anaphallis margaritacea	Western pearly everlasting
	Baccharis pilularis	Coyote brush
	Carduus pychnocephalus	Italian thistle
	Centaurea melitensis	Tocalote
	Cirsium vulgare	Bull thistle
	Conyza canadensis	Common horseweed
	Deinandra corymbosa	Coastal tarweed
	Gnaphalium canescens ssp. *beneolens*	Fragrant everlasting
	Heterotheca grandiflora	Telegraph weed
	Hypochaeris glabra	Smooth cat's ear
	Lactuca saligna	Willow lettuce
	Leontodon taraxacoides	Hawkbit
	Madia sativa	Coast tarweed
	Symphyotrichum chilense	California aster
	Taraxacum officinale	Common dandelion
	Tragopogon porrifolius	Salsify
Araliaceae		
	Hedera helix	English ivy
Agavaceae		
	Chlorogalum pomeridianum	Soap plant
Brassicaceae		
	Brassica nigra	Black mustard
	Raphanus sativus	Wild radish
Caprifoliaceae		
	Lonicera hispidula var. *vicillans*	hairy honeysuckle
	Symphoricarpos albus	snowberry
Caryophyllaceae		
	Silene gallica	Windmill pink
	Spergula arvensis	Corn spurrey
Cucurbitaceae		
	Marah fabaceous	California man root
Ericaceae		
	Arbutus menziezii	Pacific madrone
Fabaceae		
	Acacia dealbata	Silver wattle
	Genista monspessulana	French broom
	Lotus pershianus	Spanish trefoil
	Lupinus bicolor	Miniature lupine
	Medicago polymorpha	Burclover
	Trifolium dubium	Shamrock
	Trifolium incarnatum	Crimson clover
	Vicia disperma	European vetch
	Vicia sativa ssp. *sativa*	Garden vetch
	Vicia tetrasperma	Slender Vetch
	Vicia villosa	Winter vetch
Fagaceae		
	Quercus agrifolia var. *agrifolia*	Coast live oak
Geraniaceae		
	Geranium dissectum	Cut-leaved geranium
Lauraceae		
	Umbellularia californica	California bay
Malvaceae		
	Sidalcea malviflora	Checkerbloom
Papaveraceae		
	Eschscholzia californica	California poppy

SPECIES LIST (Continued)

	Scientific name	Common name
	FLOWERING PLANTS (cont.)	
Dicots (cont.)		
Plantaginaceae		
	Plantago coronopus	Cut-leaf plantain
	Plantago major	Common plantain
Polemoniaceae		
	Navarretia squarrosa	Skunkweed
Polygonaceae		
	Rumex acetosella	Sheep sorrel
	Rumex crispus	Curly dock
Portulacaceae		
	Claytonia perfoliata	Miner's lettuce
Primulaceae		
	Anagallis arvensis	Scarlet pimpernel
Ranunculaceae		
	Ranunculus californica	California buttercup
Rosaceae		
	Rubus discolor	Himalayan blackberry
	Rubus ursinus	California blackberry
Rubiaceae		
	Galium aperine	Goose grass
Scrophulariaceae		
	Castilleja exerta ssp. *exerta*	Escobita
	Mimulus aurantiacus	Sticky monkeyflower
Urticaceae		
	Urtica dioica	Stinging nettle
Monocots		
Cyperaceae	*Carex densa*	Dense sedge
	Cyperus eragrostis	Umbrella sedge
Iridaceae		
	Sisyrinchium bellum	Blue eyed grass
Juncaceae		
	Juncus bufonius	Toad rush
	Juncus phaeocephalus	Brown-headed rush
Liliaceae		
	Calochortus albus	White globe lily
Poaceae		
	Aira caryophyllea	European hairgrass
	Avena barbata	Slender oatgrass
	Briza maxima	Rattlesnake grass
	Briza minor	Little quaking grass
	Bromus carinatus	California brome
	Bromus diandrus	Ripgut brome
	Bromus hordeaceus	Soft brome
	Cortaderia jubata	Jubata grass
	Danthonia californica	California oatgrass
	Dactylis glomerata	Orchard grass
	Elymus glaucus	California wild rye
	Festuca rubra	Red fescue
	Holcus lanatus	Velvet grass
	Hordeum marinum var. *gussoneanum*	Mediterranean barley
	Hordeum murinum var. *leporinum*	Farmer's foxtail
	Lolium multiflorum	Italian ryegrass
	Melica torreyana	Torrey's melic
	Nassella pulchra	Purple needlegrass
	Phalaris sp.	Canary grass
	Taeniatherum caput-medusae	Medusahead

SPECIES LIST (Continued)

	Scientific name	Common name
Conifers		
Pinaceae		
	Pinus ponderosa	Ponderosa pine
	Pseudotsuga menziesii	Douglas fir
Taxodiaceae		
	Sequioa sempervirens	California redwood
Ferns		
Dryopteridaceae		
	Polystichum munitum	Western sword fern
Moss		
Brachytheciaceae		
	Scleropodium californicum	
Cryphaeaceae		
	Dendroalsia abietina	

SOURCE: ESA 2008

Appendix D-3
Habitat Assessment

HABITAT ASSESSMENT REPORT ON THE MOUNT HERMON JUNE BEETLE, ZAYANTE BAND WINGED GRASSHOPPER, OHLONE TIGER BEETLE, AND OPLER'S LONGHORN MOTH AT THE GATEWAY SOUTH PROJECT SITE ON LA MADRONA DRIVE IN SCOTTS VALLEY, CALIFORNIA

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Report Date:
April 2002

INTRODUCTION

An office building, restaurant, and fire station have been proposed to be built on two adjacent parcels, which collectively measure slightly more than 19 acres and are located along La Madrona Drive in Scotts Valley (Santa Cruz County), CA. Four federally-listed, proposed, or range-limited insects are known to occur in Scotts Valley and surrounding areas of Santa Cruz County, including:

a) Mount Hermon June beetle, *Polyphylla barbata* (Coleoptera: Scarabaeidae);
b) Zayante Band Winged grasshopper, *Trimerotropis infantils* (Orthoptera: Acrididae);
c) Ohlone Tiger beetle, *Cicindela ohlone* (Coleoptera: Cicindelidae); and
d) Opler's Longhorn moth, *Adela oplerella* (Lepidoptera: Incurvariidae).

Both beetles and the grasshopper are recognized as endangered species by the U.S. Fish & Wildlife Service (USFWS), while the moth is a federal species of special concern.

Because of the proximity to the project site to locations known to support these insects, a habitat assessment for all four insects was conducted in March 2002 and the results of this survey are described in this report. In addition, pertinent background information on each species is provided.

PROJECT SITE DESCRIPTION

The project site consists of two neighboring parcels that are bisected by La Madrona Drive:

a) a 17.65-acre, irregularly shaped parcel, located on the northwest corner of the intersection of Silverwood Drive and La Madrona Drive; and
b) a 1.5-acre, triangular-shaped parcel that lies between Highway 17 and La Madrona Drive.

The lower portion of the larger parcel is roughly rectangular, with a buildable area of about 10.8 acres. The upper portion, approximately 6.85 acres, is relatively steep and heavily wooded. It is not proposed for development. Vegetation in the buildable portion of the site consists primarily of a mixture of non-native and native grassland species, plus scattered shrubs and trees. Vegetation in the upper, non-buildable portion of the larger parcel is a mixed coniferous forest. The smaller parcel has been disturbed by prior land uses and supports a mixture of annual grassland and shrubs.

Soils at both parcels consist of Pfeiffer gravelly sandy loam in the grassland-dominated areas and Ben Lomond-Felton complex in the coniferous forest (Bowman *et al.* 1980). A soils report (Treadwell & Rollo 2001) indicates that the colluvial layer on the larger parcel is approximately 2.5 to 7.5 feet deep and is underlaid by Santa Margarita sandstone. The smaller parcel served as a stockpile area during construction of a nearby residential development, so the surface soil conditions are more variable. The smaller parcel is also underlaid by Santa Margarita sandstone.

BACKGROUND INFORMATION

This section summarizes pertinent information on the distribution, habitat, biology, and conservation of the four sensitive insects.

Mount Hermon June Beetle and Zayante Band Winged Grasshopper.

Both of these insects were recognized as endangered species by USFWS in 1997 (U.S. Fish & Wildlife Service 1997). They are known only from the greater Scotts Valley – Felton – Ben Lomond area in Santa Cruz County. This portion of the county is characterized by the Zayante sand hills, which are old marine deposits of sand. Native vegetation on the Zayante sands includes a mixture of Ponderosa pine forest, maritime chaparral, and grassland with areas of bare or sparsely vegetated sand. This mixture of plant communities has been referred to as sand parkland vegetation.

Within the Zayante sand hills, the June beetle is known from approximately 70 locations while the grasshopper is known from about 12 locations (BUGGY Data Base 2002). Ponderosa pines grow at all known locations of the June beetle, and for this reason it is a suspected larval food plant. The larval stage of the beetle is fossorial, meaning that it burrows in the ground, where it feeds on roots. At a nearby project site, I observed larvae in association with roots of Ponderosa pine (Arnold, personal observation). As the common name suggests, adult activity begins in mid-June and continues through early August. Adults are active at dusk.

The grasshopper is also associated with sand parkland vegetation, but prefers areas where the tree cover is limited and the understory vegetation is characterized by grasses and forbs. The primary habitat requirement of the grasshopper is barren or sparsely vegetated ground that receives sunlight at ground level. Adult grasshoppers have been observed between July and early November.

Additional information on both of these species can be found in the final ruling to list them (U.S. Fish & Wildlife Service 1997) and their recovery plan (U.S. Fish & Wildlife Service 1998a).

Ohlone Tiger Beetle.

The Ohlone Tiger beetle (OTB) was described in 1993 by Freitag, Kavanaugh, and Morgan (1993). Their description of this new species was based on specimens collected from three sites in west central Santa Cruz County between 1987 and 1992. Subsequently, the beetle has been found at the Vine Hill Elementary School in Scotts Valley, Pogonip Park next to the UC Santa Cruz campus, and the Kinzli property, located at the south end of Meder Street in Santa Cruz.

This species appears to be restricted to coastal terrace situations, at low to mid-elevations (less than 1,200 feet), located between the crest of the Santa Cruz Mountains and the Pacific Ocean. On these terraces *Cicindela ohlone* inhabits areas characterized by remnant stands of native grassland. California oatgrass (*Danthonia californica*) and Purple needlegrass (*Stipa pulchra*) are two native grasses known to occur at all six sites.

Within these grasslands, the beetle has been observed primarily on level ground, where the vegetation is sparse or bare ground is prevalent.

The soil type, as mapped by the Soil Conservation Service (Bowman, et al. 1980), at all six locations known to support the tiger beetle is Watsonville loam, which consists of shallow, poorly drained clay or sandy-clay soils that have accumulated over a layer of bedrock. This soil type has also been referred to as Santa Cruz Mudstone (Freitag, Kavanaugh, and Morgan 1993). Because the larvae and to a lesser degree, the adults of all tiger beetle species live much of their lives in earthen burrows, every species is usually associated with a specific soil type.

The diurnally active adults and larvae of *C. ohlone* are associated with sunny areas of bare or sparsely vegetated ground. Both adults and larvae are voracious predators. Collection records indicate that most adult *C. ohlone* are active from late January through early May (BUGGY Data Base 2001).

The U.S. Fish & Wildlife Service (2001) recently recognized the OTB as an endangered species. Additional information on the OTB is presented in this rulemaking.

Opler's Longhorn Moth.

Adelids are small, brightly colored, day-flying moths with exceptionally long antennae, hence their common name of Longhorn moths. They have been treated both as a family, the Adelidae, and as a subfamily (the Adelinae) of the Incurvariidae. These and other small moths are often referred to as microlepidoptera because of their small size.

Adela oplerella is a small, dark bronze colored moth with antennae only slightly longer than the forewing in the male and shorter than the forewing in the female. Males are approximately 10 mm. in size (i.e., wingspan), while females are slightly larger at approximately 12 mm. The color and maculation pattern of the wings and features of the head appendages and abdominal sclerites are primary characteristics used to distinguish *A. oplerella* from related species (Powell 1969).

This microlepidopteran is known primarily from various localities in Marin, San Francisco. and Santa Clara counties. The population behind the Vine Hill School in Scotts Valley was only recently discovered (U.S. Fish & Wildlife Service 1998b).

Opler's Longhorn moth is known primarily from serpentine grasslands throughout most of its geographic range (U.S. Fish & wildlife Service 1998b). Adult moths are usually found in association with *Platystemon californicus* (Papaveraceae), its presumed larval foodplant (Powell 1969). However, this plant is not strictly limited to serpentine grasslands. Indeed, it grows at locations, such as the Vine Hill School site, where no serpentine is present.

Little specific information is available about the biology and life history of this species. Indeed, none of the 11 Nearctic species of *Adela* have been reared. Information on the biologies of Nearctic species is inferred from information gained from rearing

related European species (Powell 1969).

Larvae of *Adela oplerella* are presumed to feed on *Platystemon californicus* because females have been observed ovipositing on the flowers. Young larvae probably consume the contents of developing seed capsules and then descend to the ground. There they construct a case, in which they feed on the lower or fallen leaves of the same or other plants.

There is only one generation per year. Adults are active in the spring, typically during the flowering period of *Platystemon californicus,* which is early April through mid-May.

The U.S. Fish & Wildlife Service (1991) first recognized *A. oplerella* as a category 2 candidate in response to a petition to recognize the moth as endangered, which was submitted in 1990. Until recently, *A. oplerella* continued to be recognized as a category 2 candidate for endangered or threatened status; however, the U.S. Fish & Wildlife Service (1996) eliminated all category 2 candidates and now considers these taxa, including the moth, to be species of special concern.

SURVEY METHODS

I visited the Gateway South project site on March 28th, 2002, and surveyed the entire project site by hiking throughout it. On this same day, I also briefly visited the Vine Hill School site to confirm that the OTB was active. During my visit to the school site, I observed that *Platystemon californicus*, the presumed food plant of Opler's Longhorn moth, was already in flower. However, I did not see any moths in association with its presumed food plant at the school site.

Even though soils at the project site do not include Watsonville loams, I searched for the OTB and others signs of it, such as adult emergence burrows, larval burrows, and oviposition burrows. Since the OTB is strictly associated with grassland vegetation, I looked for barrens or areas of sparse vegetation, preferably characterized by native bunch grass, that are favored by the OTB, at the project site. Where such areas were found, I then examined the ground for evidence of burrows and adult beetles.

Similarly, since *P. californicus* was observed flowering at the school site, I searched for the moth's food plant at the project site. Although life stages of the Mount Hermon June beetle and Zayante Band Winged grasshopper were not active at the time of my site visit, I focused my survey efforts on identifying features characteristic of suitable habitat for both of these insects, namely loose sandy deposits with sand parkland vegetation.

HABITAT ASSESSMENT RESULTS

Mount Hermon June Beetle and Zayante Band Winged Grasshopper.

Neither sand parkland vegetation or Ponderosa pine forests were observed at the project site. The coniferous woodland at the rear of the larger parcel is dominated by other species of conifers. The closest pines were observed approximately 150 feet from the boundaries of the project site, beyond the gate house at the entrance to the Monte Fiore residential development on Silverwood Drive. Because the pines are growing at a lower elevation than the project site, I doubt that any roots from these trees extend onto the project site. Also, excavation for the roadbed of Silverwood Drive would have previously disturbed the roots of these pines if they extend towards the project site. No areas of loose, sandy soils were observed at either the larger or smaller parcel. All grassland at both parcels is dominated by annuals, which provide nearly complete cover. For these reasons, I did not find any suitable habitat for the Mount Hermon June beetle or Zayante Band Wing grasshopper and would not expect either of these endangered insects to occur at the Gateway South project site.

Ohlone Tiger Beetle.

All known locations of the Ohlone Tiger beetle are characterized by sandy-clay soils known Watsonville loam. Soils in the grassland portions of the project site are Pfeiffer gravelly sandy loams, while those in the coniferous woodland are Ben Lomond-Felton complex (Bowman *et al.* 1980). According to the descriptions provided by Bowman *et al.* 1980, neither of these soil types is known to have inclusions of Watsonville loam. Vegetation at the project site is inappropriate for the OTB. The wooded area does not have any openings with sunlight bare ground and the grassland has nearly complete cover of vegetation. Soil conditions at the smaller parcel exhibit signs of recent disturbance, which would not favor a ground burrowing insect such as the OTB. In addition, since my site visit coincided with the adult activity period, I conducted a search for the beetle at the project site. No life stages of the beetle nor any larval burrows were observed. For these reasons, the Ohlone Tiger beetle is not expected to occur at the Gateway South project site.

Opler's Longhorn Moth.

No specimens of the suspected larval food plant, *Platystemon californicus*, were observed during my survey of the project site. Due to the absence of its presumed larval food plant, the moth is unlikely to occur at the parcel.

RECOMMENDATIONS

Since no suitable habitat was observed at either parcel for the four special-status insects treated in report, I do not anticipate that these insects utilize the Gateway South project site. As no impacts to the insects or their habitat are anticipated, no mitigation actions should be required.

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Appendix D-4
Habitat Assessment Confirmation Letter

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4 July 2008

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Re: Proposed Target Project Site on La Madrona Drive in Scotts Valley, CA
Update from 2002 Habitat Assessment for Rare/Endangered Insects

Dear Karl:

At your request I visited the proposed Target project site in Scotts Valley, CA to see if habitat conditions have changed since the time of my 2002 assessment report on four rare or endangered insect species that occur at other locations in the greater Scotts Valley area. I refer you to my 2002 habitat assessment report for details on the biology, habitat requirements, and geographic distribution of the four insects. When I conducted my 2002 habitat assessment survey, the proposed project included an office building and fire station.

I revisited the project site May 9, 2008. I hiked throughout the property and examined the soils and habitats present there. Soils and habitat types at the property are still not suitable to support the Opler's Longhorn moth, Ohlone Tiger beetle, Mt. Hermon June beetle, or Zayante Band Wing grasshopper. Due to the absence of habitats suitable to support any of the four special-status insects, construction and operation of the proposed Target store should not impact any of these insects or their habitats.

If you have any questions regarding my original habitat assessment or 2008 visit, just contact me.

Sincerely,

Richard A. Arnold

Richard A. Arnold, Ph.D.
President

Appendix D-5
Tree Survey

GATEWAY SOUTH RETAIL STORE
Arborist Report

Introduction

Environmental Science Associates (ESA) was contracted by the City of Scotts Valley to perform a tree survey and produce an arborist report for the Gateway South Retail Store Plan Area (herein referred to as the proposed project). The project would develop a retail store, associated parking and driveways, landscaped area, and open space.

The 17.62-acre site is located within the City of Scotts Valley, in Santa Cruz County (**Figure 1**). Trees within the proposed project area are therefore subject to the City of Scotts Valley's tree protection regulations. The site is on La Madrona Drive, west of State Route (SR) 17, and generally southwest of the Mt. Hermon Road / La Madrona Drive exit. The site is bounded on the east by La Madrona Drive, on the north by the Hilton Hotel, on the west by the Monte Fiore community residential uses and to the south by Silverwood Drive and undeveloped land outside the city limits, within County jurisdiction.

The purpose of this report is to document tree resources in the project area that may be adversely impacted by implementation of the proposed project, to document the potential effects of the proposed project on tree resources, and to identify recommendations for avoidance, minimization, and mitigation of the potential effects on trees.

Regulatory Setting

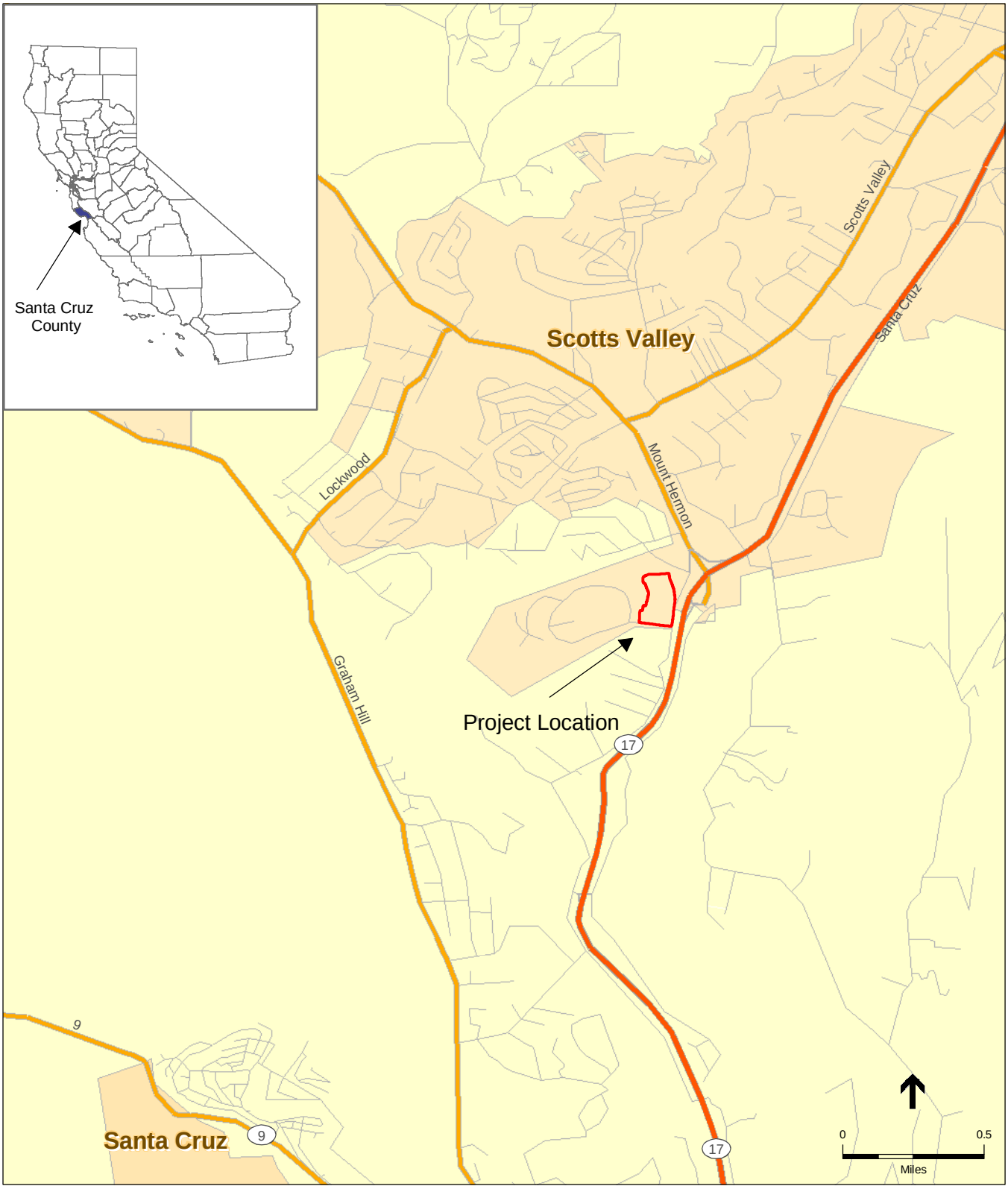
City of Scotts Valley

City of Scotts Valley General Plan

According to the Tree Protection Regulations, Section 17.44.080 of the Scotts Valley Municipal Code, protected trees within the City of Scotts Valley's jurisdiction are defined as:

- Any standing or upright tree meeting any one of the following criteria:
    - Any tree having a main stem or trunk at least 8 inches or greater diameter at breast height (DBH)[1] (25 inches in circumference), located in a hillside residential zone where the slope within 20 feet of where the tree is located exceeds 20 percent;

[1] DBH, or diameter at breast height, is measured at 4½ feet from the ground.



SOURCE: ESRI 2006; and ESA 2008

Gateway South Retail Store Tree Survey . 207755

Figure 1
Project Location

- Any tree having a main stem or trunk at least 8 inches or greater diameter at breast height (DBH)[2] (25 inches in circumference), located in a hillside residential zone where the slope within 20 feet of where the tree is located exceeds 20 percent;
- Any single-trunk oak tree with a main stem or trunk at least 8 inches DBH (25-inch circumference), or any multi-trunk oak tree with an individual trunk over 4 inches DBH (12 inch circumference);
- Any street tree (defined as any tree within five feet of a public or private street or right of way), regardless of size;
- Any single-trunk tree with a 13-inch or greater DBH (40-inch circumference);
- Any multi-trunk tree with any trunk greater than or equal to 8-inch DBH (25-inch circumference);
- Any tree, regardless of size, required to be planted or preserved as part of a permit approved by the Planning Department, Planning Commission or City Council, or required as a replacement tree for a removed tree; and
- Any Heritage Tree, defined as a tree identified, because of unique quality and/or size, as among the most significant and noteworthy in the city and formally designated by the City Council.

No tree removal permit is required to remove fruit trees, Monterey Pine trees that are infected with pitch canker, blue gum eucalyptus, or acacia trees. Additionally, no permits are required to remove bay laurel trees if they are growing under the drip-line of an established oak tree.

The City of Scotts Valley encourages preservation of trees to the greatest extent possible. Proposals for removal of protected trees within the City require that project proponents obtain a Tree Removal Permit (except in case of immediate hazard), which involves submitting an application and an Arborist's Report to verify reasons for removal or to determine alternatives to tree removal. Removal of protected trees other than Heritage Trees may be granted administratively. Heritage Tree removal must be approved by the Planning Commission. As an alternative to a separate Tree Removal Permit, tree removal may be permitted as part of the authorization by the Planning Commission or City Council of a larger development application pursuant to the City zoning ordinance. The determination as to whether a tree may be removed is based on the condition (health) of the tree; topography, including the effect of tree removal on erosion, soil retention, and runoff; and other nearby trees and "the effect the removal would have upon shade, sunlight, privacy, scenic beauty, wildlife, noise, air quality, wind, health, safety, prosperity, historic values and general welfare of the area and the city as a whole" (Municipal Code Sec. 17.44.080(H)(2)(c). The City may require replanting of replacement tree(s) or payment

[2] DBH, or diameter at breast height, is measured at 4½ feet from the ground.

to the City's tree replacement fund as a condition of granting a tree removal permit; replanting is normally required at a ratio of two new trees for each tree removed.

Methods

The project site was surveyed by ESA's certified arborist LeChi Huynh (International Society of Arboriculture Certified Arborist Certification Number WE-8322A) on May 8, 2008. The survey consisted of identifying, measuring, and assessing all potentially affected trees in the project area. In addition, trees were tagged with 1" aluminum tags. Seven additional trees near the perimeter of the proposed project footprint were surveyed on June 2, 2008, by ESA botanist Rachel Brush; these trees were not tagged. Information collected includes diameter of the tree at breast height (4.5 feet), radius of dripline (measured at the largest radius), the general condition of the tree and its components (root collar, trunk, limbs, foliage), the general structural health of the tree, and its overall vigor. The "Condition" of the tree is defined as follows:

Excellent: Tree is without any visible deficiencies. Tree is in excellent health and is structurally sound, with little evidence of dieback and good overall annual growth. The tree shows no sign of disease, decay, or mistletoe infestation. The tree has a balanced branching structure.

Good: Tree has no major deficiencies but may have minor defects such as minor dieback or overcrowding. Tree is in good health and is structurally sound. Minor defects are not detrimental to overall health of tree.

Fair: Tree has no major deficiencies but many minor defects. Tree is in average health and may have some structural deficiencies such as decay and numerous dead limbs. Overall health and integrity of the tree is not adversely affected at present, but the tree may have limited growth, and unbalanced or asymmetrical form. Deficiencies may be detrimental to long-term health of tree.

Poor: Tree has major deficiencies that are detrimental to health of tree, including major decay in the trunk or main limbs, extensive dieback, sparse foliage, extreme overcrowding, and unbalanced or asymmetrical form.

Trees may be ascribed a condition that falls between the described major categories (i.e. "Good to Fair"). These trees have elements of both categories.

Results

A summary of the species composition and average diameter at breast height of the surveyed trees is provided in **Table 1**, below. With the exception of those trees outside the proposed footprint of project improvements (identified by an asterisk), all trees listed in Table 1 are assumed to require removal as part of the project, based upon the Preliminary Grading & Drainage Plan.[3] **Figure 2** provides an overview of the project area and approximate locations of surveyed trees. Trees of similar species occurring in proximity to each other were mapped with a single waypoint. A total of 32 trees were surveyed within and adjacent to the potential impact areas on the project site. Approximately 30 of the 32 trees are anticipated to be removed, while

[3] DES Architects and Engineers and C2G/Civil Consultants Group, "Preliminary Grading & Drainage Plan, Target, Scotts Valley, CA," November 12, 2007.

two trees outside the area of proposed grading and construction (#2626 and #2627) might have to be removed, depending on the final grading plan, and would, at the least, require protection during grading and other activities to avoid being damaged by construction equipment.[4] Of the 32 surveyed trees, 26 were native, including: 13 coast redwood trees, ten coast live oaks, two Pacific madrone trees, and one Douglas fir. Six surveyed trees, all silver wattles, were non-native

Vegetation communities within the project area include annual grasslands, mixed forest, and freshwater seeps. The mixed forest area is located west of the proposed project footprint and is found on slopes greater than 40 percent. The most notable trees on the site include a small grove of coast redwood trees on the northern end of the parcel, scattered coast live oak trees on the southeast portion of the parcel, and non-native silver wattles along La Madrona Drive on the east side of the parcel.

None of the surveyed trees within or adjacent to the project area is listed in the City's Heritage Tree Inventory.

4 Others of the 32 surveyed trees that are determined not to necessitate removal during construction would require similar protection.

TABLE 1
GATEWAY SOUTH SPECIFIC PLAN TREE DATA

Tree #	Common Name	Scientific Name	DBH[1] (in.)	Dripline Radius[2] (ft.)	Condition[3]	Notes	Requirements
2601	Silver wattle	*Acacia dealbata*	23	15	Excellent	Adjacent to the Hilton Hotel parking lot and La Madrona Drive. Multiple trunks: DBH (inches) = 5, 5, 5, 3.	No permits or mitigation required for acacia trees. (Tree is more than 5 feet from La Madrona Drive and is therefore not a street tree; Hilton driveway is not a public right-of-way.)
2602	Silver wattle	*Acacia dealbata*	23	12	Excellent	Adjacent to the Hilton Hotel parking lot. Multiple trunks: DBH (inches) = 5, 3, 3, 3, 6, 3.	No permits or mitigation required for acacia trees. (Tree is more than 5 feet from La Madrona Drive and is therefore not a street tree; Hilton driveway is not a public right-of-way.)
2603	Silver wattle	*Acacia dealbata*	14	7	Good	Adjacent to Hilton Hotel parking lot. Several branches trimmed, bark damage. Multiple trunks: DBH (inches) = 4, 4, 3, 3.	No permits or mitigation required for acacia trees. (Tree is more than 5 feet from La Madrona Drive and is therefore not a street tree; Hilton driveway is not a public right-of-way.)
2604	Coast redwood	*Sequoia sempervirens*	18	15	Good	Crowding from other tree branches. Located in a grove of coast redwoods. This tree is on the exterior of the grove.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).
2605	Coast redwood	*Sequoia sempervirens*	30	15	Good	Crowding from other tree branches. Located in a grove of coast redwoods. This tree is on the exterior of the grove. Multiple trunks: DBH (inches) = 21, 9.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).
2606	Coast redwood	*Sequoia sempervirens*	78	15	Good	Crowding from other tree branches. Located in a grove of coast redwoods. This tree is on the exterior of the grove. Multiple trunks: DBH (inches) = 26, 24, 28.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).

TABLE 1
GATEWAY SOUTH SPECIFIC PLAN TREE DATA

Tree #	Common Name	Scientific Name	DBH[1] (in.)	Dripline Radius[2] (ft.)	Condition[3]	Notes	Requirements
2607	Coast redwood	*Sequoia sempervirens*	38	15	Good	Crowding from other tree branches (growth of one branch is highly suppressed by higher canopy layer). Located in a grove of coast redwoods. This tree is on the exterior of the grove. Multiple trunks: DBH (inches) = 16, 22.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).
2608	Coast redwood	*Sequoia sempervirens*	19	7	Excellent	Interior tree of a coast redwood grove, but has sufficient space and sunlight.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).
2609	Coast redwood	*Sequoia sempervirens*	30	10	Good	Some broken branches. Located on the exterior of a coast redwood grove. Some crowding from adjacent trees.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).
2610	Coast redwood	*Sequoia sempervirens*	72	15	Good	Some broken branches. Crowding. Located on the exterior of a redwood grove. Multiple Trunks: DBH (inches) = 33, 39.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).
2611	Coast redwood	*Sequoia sempervirens*	71	15	Good	Some broken branches. Crowding. Located on the exterior of a redwood grove. Multiple Trunks: DBH (inches) = 22, 21, 28.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).
2612	Coast redwood	*Sequoia sempervirens*	39	15	Good	Some broken limbs, but otherwise in good conditions. An exterior tree of a redwood grove. Some crowding from adjacent trees.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).

TABLE 1
GATEWAY SOUTH SPECIFIC PLAN TREE DATA

Tree #	Common Name	Scientific Name	DBH[1] (in.)	Dripline Radius[2] (ft.)	Condition[3]	Notes	Requirements
2613	Silver wattle	*Acacia dealbata*	13	12	Excellent	Next to landscaping on the southern edge of property. Multiple trunks: DBH (inches) = 8, 5.	No permits or mitigation required for acacia trees.
2614	Coast redwood	*Sequoia sempervirens*	55	12	Good	Some branches broken, crowding. An exterior tree of redwood grove. Multiple trunks: DBH (inches) = 37, 18.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).
2615	Coast redwood	*Sequoia sempervirens*	83	12	Good	Has broken limbs, nails in trunk, charred from a fire. Exterior tree of a redwood grove. Multiple trunks: DBH (inches) = 43, 25, 15.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).
2616	Coast live oak	*Quercus agrifolia*	33	18	Good	Generally healthy, but has ~10% dead branches throughout. Located next to Silverwood Drive.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s)..
2617	Coast redwood	*Sequoia sempervirens*	9	10	Excellent	A landscape/street tree located next to Silverwood Drive.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s)..
2618	Coast redwood	*Sequoia sempervirens*	12	7	Excellent	Some lower branches has been trimmed, overall has no structural flaws. Located next to Silverwood Drive.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s)..

TABLE 1
GATEWAY SOUTH SPECIFIC PLAN TREE DATA

Tree #	Common Name	Scientific Name	DBH[1] (in.)	Dripline Radius[2] (ft.)	Condition[3]	Notes	Requirements
2619	Coast live oak	*Quercus agrifolia*	45	15	Excellent to Good	Some dead small branches on the underside.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s)..
2620	Coast live oak	*Quercus agrifolia*	18	12	Excellent to Good	Branches trimmed, next to La Madrona Drive and Silverwood Drive.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s)..
2621	Coast live oak	*Quercus agrifolia*	11	10	Good to Fair	Trimmed. Located in SE corner near road. Next to power line; growth greatly affected; substantial lean.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s)..
2622	Coast live oak	*Quercus agrifolia*	39	18	Excellent to Good	Many bare branches underneath canopy. Whitewash on branches and trunk. Multiple trunks: DBH (inches) = 12, 6, 8, 13.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).
2623	Coast live oak	*Quercus agrifolia*	53	10	Excellent to Good	Very dense tree with some dead branches underneath the canopy. Cement foundation nearby with lots of scrap metals. Wetland nearby. Multiple trunks: DBH (inches) = 7, 5, 7, 6, 8, 9, 7, 4.	Obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s).
2624	Silver wattle	*Acacia dealbata*	18	10	Excellent to Good	Located next to La Madrona Drive. Multiple trunks: DBH (inches) = 9, 9.	No permits or mitigation required for acacia trees. (Tree is more than 5 feet from La Madrona Drive and is therefore not a street tree.)

TABLE 1
GATEWAY SOUTH SPECIFIC PLAN TREE DATA

Tree #	Common Name	Scientific Name	DBH[1] (in.)	Dripline Radius[2] (ft.)	Condition[3]	Notes	Requirements
2625	Silver wattle	*Acacia dealbata*	20	15	Excellent	Next to La Madrona Drive. Multiple trunks: DBH (inches) = 9, 7, 4.	No permits or mitigation required for acacia trees. (Tree is more than 5 feet from La Madrona Drive and is therefore not a street tree.)
2626*	Coast Live Oak	*Quercus agrifolia*	28	15	Excellent to Good	Healthy for the most part with few dead branches.	If tree is to be removed, obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s). Otherwise, minimize disturbance to tree by providing appropriate protection for the tree during construction.
2627*	Coast Live Oak	*Quercus agrifolia*	44	12	Excellent	Healthy; no structural deficiencies.	If tree is to be removed, obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s). Otherwise, minimize disturbance to tree by providing appropriate protection for the tree during construction.
2628*	Pacific Madrone	*Arbutus menziesii*	36	12	Excellent	Healthy. Multiple trunks: DBH (inches) = 2, 2, 2, 7, 9, 6, 8.	If tree is to be removed, obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s). Otherwise, minimize disturbance to tree by providing appropriate protection for the tree during construction.

TABLE 1
GATEWAY SOUTH SPECIFIC PLAN TREE DATA

Tree #	Common Name	Scientific Name	DBH[1] (in.)	Dripline Radius[2] (ft.)	Condition[3]	Notes	Requirements
2629*	Pacific Madrone	*Arbutus menziesii*	16	8	Excellent	Sub-canopy; healthy.	If tree is to be removed, obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s). Otherwise, minimize disturbance to tree by providing appropriate protection for the tree during construction.
2630*	Coast Live Oak	*Quercus agrifolia*	12	8	Excellent	Young and healthy, sub-canopy tree.	If tree is to be removed, obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s). Otherwise, minimize disturbance to tree by providing appropriate protection for the tree during construction.
2631*	Douglas Fir	*Pseudotsuga menziesii*	14	8	Excellent	Top canopy tree; near oaks and madrone.	If tree is to be removed, obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s). Otherwise, minimize disturbance to tree by providing appropriate protection for the tree during construction.

TABLE 1
GATEWAY SOUTH SPECIFIC PLAN TREE DATA

Tree #	Common Name	Scientific Name	DBH[1] (in.)	Dripline Radius[2] (ft.)	Condition[3]	Notes	Requirements
2632*	Coast Live Oak	*Quercus agrifolia*	22	10	Excellent to Good	Some bare branches, overall healthy.	If tree is to be removed, obtain permit from the City of Scotts Valley to remove the tree. Compensate for the loss of the tree per City regulations and approval conditions, including planting of replacement tree(s). Otherwise, minimize disturbance to tree by providing appropriate protection for the tree during construction.

Source: ESA 2008.

1: DBH (diameter at breast height), the diameter of a tree measured at 4.5 feet above ground level on the high side of the tree, unless otherwise noted.
2: Measured at the largest radius of the dripline of a tree.
3: General health of the tree including root collar, trunk, limbs, foliage, structure, and general vigor.

Trees marked by an asterisk (*) were not tagged in the field. These trees are located near the perimeter of the project footprint, but would likely need protection during construction work if not removed..

SOURCE:GlobeXplorer 2006; and ESA 2008

Gateway South Retail Store Tree Survey. 207755

Figure 2

Location of Trees Within and Adjacent to Project Area

References

City of Scotts Valley General Plan: Chapter 17.44 General and Special Provisions (17.44.080 Tree Protection Regulations). 1992. Scotts Valley, CA.

Preparers

LeChi Huynh, International Society of Arboriculture Certified Arborist, WE-8322A

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APPENDIX E

Transportation Data and Calculations

Final Transportation Impact Analysis

Gateway South: Scotts Valley Target

TRANSPORTATION

&PLANNING

FEHR & PEERS
TRANSPORTATION CONSULTANTS

160 W. Santa Clara St., Ste. 675
San Jose, CA 95113

Project SJ07-980

September 2009

Final Transportation Impact Analysis
Gateway South: Scotts Valley Target

Prepared for:

The City of Scotts Valley

Fehr & Peers

September 2009

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EXECUTIVE SUMMARY

This report presents the results of the transportation impact analysis (TIA) conducted for the Gateway South/Scotts Valley Target project located on the northwest corner of La Madrona Drive and Silverwood Drive in Scotts Valley, California. An alternative site, on Santa's Village Road north of the Granite Creek interchange of SR 17 in northern Scotts Valley, was also evaluated.

The purpose of this analysis is to identify the potential impacts of the proposed development on the adjacent transportation system. Project impacts were estimated following guidelines of the City of Scotts Valley and California Department of Transportation (Caltrans). The analysis focused on the operations of key intersections and the freeway ramp junctions within the study area.

The proposed project includes development of an approximately 143,000-square foot (s.f.) retail store (analyzed as ITE land use code 815 Free-Standing Discount Store) on a currently vacant site with two levels of parking accessed by two unsignalized driveways.

ANALYSIS SCENARIOS

Project impacts were estimated following the guidelines of the City of Scotts Valley and Caltrans. The analysis focused on the operations of eight (8) key intersections for the La Madrona Drive site during the weekday morning (AM), evening (PM), and Saturday mid-day (SAT) peak hours for the following scenarios: Existing, Existing Plus Project, Cumulative (with and without the Mid-Town interchange), and Cumulative Plus Project (with and without the Mid-Town interchange). Four (4) key intersections were analyzed for the Santa's Village Road alternative site.

Project impacts to the freeway ramps of SR 17 were also evaluated for the scenarios described above.

PROJECT TRAFFIC

The amount of traffic generated by the proposed project was estimated based on trip generation data published by the Institute of Transportation Engineers (ITE). Standard ITE rates were applied to the square footage of the retail building to estimate trips. Adjustments were applied to account for traffic that would divert from nearby roadways to the site. The proposed project is estimated to generate 7,366 net new daily, 152 net new AM peak hour (103 inbound and 49 outbound), 536 net new PM peak hour (268 inbound and 268 outbound), and 793 net new Saturday peak hour (404 inbound and 388 outbound) vehicle trips.

INTERSECTION LEVELS OF SERVICE

Level of service (LOS) calculations were conducted for the study intersections using the SYNCHRO analysis program and using existing traffic count data and lane configurations, traffic projections from approved and pending developments, traffic volumes factored using the Association of Monterey Bay Area Governments (AMBAG) model forecasts, and project-generated trips. All analyses were conducted by applying methods described in the *2000 Highway Capacity Manual* (Transportation Research Board). The results of the intersection LOS calculations are presented in **Table ES-1**. As shown in Table ES-1, all of the intersections operate at acceptable levels during all peak hours under Existing Conditions.

PROJECT IMPACTS AND PROPOSED MITIGATION MEASURES

Impacts at the intersections were identified based on operating standards for the City of Scotts Valley and Caltrans. As specified in the City's Circulation Element (Action CA-150), the City maintains a minimum LOS C for intersections, except the intersections of Mt. Hermon Road/Scotts Valley Drive and Scotts

Valley Drive/Granite Creek Road, where LOS D is considered acceptable. Caltrans strives to maintain operations at LOS C on all State-maintained facilities.

Intersections

Near-Term Conditions

Signalized Intersections

The project would result in a significant impact at the Mt. Hermon Road/Scotts Valley Drive, Mt. Hermon Road/La Madrona Drive – SR 17 Southbound off-ramp intersections under Existing Plus Project conditions. The following improvements would mitigate these impacts:

Mt. Hermon Road/Scotts Valley Drive

- Add second westbound (Mt. Hermon Road) left-turn lane.

Restripe the northbound (Whispering Pines Drive) approach to provide a separate left-turn, through, and right-turn lanes. Convert split phasing to protected left-turn phasing for the north- and southbound (Whispering Pines Drive and Scotts Valley Drive) approaches.

- Add westbound (Mt. Hermon Road) and northbound (Whispering Pines Drive) right-turn overlap phases.

Mt. Hermon Road/La Madrona Drive – SR 17 Southbound off-ramp

- Add an eastbound right-turn overlap phase on Mt. Hermon Road

Unsignalized Intersections

The project also would result in significant impacts at La Madrona Drive/Altenitas Road and Mt. Hermon Road/El Rancho Road-SR 17 Northbound off-ramp. No feasible mitigation measures were identified for these intersections; therefore, the project's impacts are considered significant and unavoidable.

Cumulative Conditions

Signalized Intersections

Cumulative Conditions, representing approximately year 2018, were evaluated both with and without the planned Mid-Town interchange. Without the proposed interchange the project would result in significant impacts at the Mt. Hermon Road/Scotts Valley Drive, Mt. Hermon Road/LaMadrona Drive/SR 17 Southbound off-ramp, and Mt. Hermon Road/Kings Village Road intersections. These impacts would also occur with construction of the Mid-Town interchange. The improvements identified to reduce the project's impacts under Cumulative Conditions include:

Mt Hermon Road/Scotts Valley Drive

- Add second westbound (Mt. Hermon Road) left-turn lane
- Restripe the northbound (Whispering Pines Drive) approach to provide a separate left-turn, through, and right-turn lanes. Convert split phasing to protected left-turn phasing for the north- and southbound (Whispering Pines Drive and Scotts Valley Drive) approaches

- Add westbound (Mt. Hermon Road) and northbound (Whispering Pines Drive) right-turn overlap phases

Mt. Hermon Road/La Madrona Drive/SR 17 Southbound off-ramp

- Add an eastbound right-turn overlap phase on Mt. Hermon Road
- Add a second southbound right-turn lane from the Southbound off-ramp

Mt. Hermon Road/Kings Village Road

- Restripe the southbound (Kings Village Road) approach to a left-turn lane and a shared through/right-turn lane.

At the Mt. Hermon Road/Scotts Valley Drive and Mt. Hermon Road/Kings Village Road intersections, the improvements listed above reduce the project's impacts both without and with the Mid-Town interchange; however these intersections are projected to continue to operate at unacceptable levels during at least one peak hour. Thus, the project's impacts at these intersections are considered significant and unavoidable. At the Mt. Hermon Road/La Madrona Drive/SR 17 SB off-ramp intersection without the Mid-Town interchange, the improvements identified above improve operations and reduce the project's impacts; however, the intersection is projected to operate at unacceptable levels during the PM and Saturday peak hours. Thus, the project's impact without construction of the Mid-Town interchange is considered significant and unavoidable. With construction of the Mid-Town interchange, the improvements identified above improve operations to acceptable levels and mitigate the project's impact to a less-than-significant level.

Unsignalized Intersections

The project also would result in significant impacts at La Madrona Drive/Altenitas Road and Mt. Hermon Road/El Rancho Road-SR 17 Northbound off-ramp. No feasible mitigation measures were identified for these intersections; therefore, the project's impacts are considered significant and unavoidable.

Pedestrian, Bicycle, and Transit

The number of pedestrians accessing the proposed project site is anticipated to be relatively low because of the limited transit services in the immediate area of the project site and the few homes and retail facilities within walking distance. The current pedestrian facilities are considered adequate to accommodate pedestrian circulation. The existing bicycle facilities should also provide adequate service to accommodate bicycles to and from the project site. Current transit service in Scotts Valley near the project site is limited and the number of new riders generated by the project will also be relatively low (estimated to be approximately 30 in the PM peak period). Therefore, the project would have a less-than-significant impact on the transit system.

Site Access, Circulation, and Parking

Site access to the project is considered adequate. Access will be provided via two driveways on La Madrona Drive, spaced approximately 550 feet apart. Vehicles would enter the driveways, and would turn into the lower level parking lot or continue up the ramp to the upper level parking lot. The store's primary entrance is on the upper level, with access via a pedestrian-only entry bridge over the south driveway. This configuration reduces the number of potential conflicts by separating vehicle and pedestrian flows.

Internal circulation within the site is also adequate, with enough space for passenger vehicles to circulate and for trucks to access the delivery docks. To enter the south driveway from La Madrona Drive, trucks would have to make a wide turn and may encroach on the opposing lane of traffic. This is a common practice, and truck drivers will wait for an appropriate gap in traffic before making their turn.

The City's Municipal Code requires that parking be provided at a rate of 1 space per 250 square feet of floor area for sales area, and 1 space per 1,000 square feet of stocking/storage area. The latest project description shows a sales floor area of 116,930 square feet, and 25,145 square feet of stocking area, which corresponds to 493 spaces required. The site plan shows 517 spaces, which exceeds the City's requirements. This supply is also adequate to meet the average demand provided in ITE's *Parking Generation Manual* for a non-December peak. Under December peak conditions, a shortage of approximately 212 spaces could occur based on ITE rates. Given the limited parking supply in the surrounding area, the store operator should prepare a parking plan to require store employees to park off-site during the peak holiday shopping period. This may require a use of a temporary shuttle service to transport employees or an agreement with adjacent property owners to provide available spaces.

TABLE ES-1
INTERSECTION LEVELS OF SERVICE

Intersection	Peak Hour	Without Mid-Town Interchange Scenarios								With Mid-Town Interchange Scenarios			
		Existing		Project		Cumulative		Cumulative Project		Cumulative		Cumulative Project	
		Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
1. Scotts Valley Drive / Bean Creek Road	AM	15.8	B	15.8	B	22.7	C	22.7	C	23.7	C	23.5	C
	PM	13.5	B	13.7	B	15.3	B	15.3	B	15.3	B	15.4	B
	SAT	15.8	B	14.7	B	15.2	B	15.2	B	15.2	B	15.2	B
2. Mt. Hermon Road / Scotts Valley Drive	AM	38.5	D	39.2	D	59.4	E	**60.3**	**E**	60.4	E	**60.1**	**E**
	PM	45.6	D	**55.5**	**E**	92.1	F	**101.4**	**F**	97.9	F	**103.4**	**F**
	SAT	38.1	D	44.3	D	64.6	E	**88.3**	**F**	58.3	E	**74.5**	**E**
3. Mt. Hermon Road / Glen Canyon Road	AM	15.8	B	16.1	B	18.1	B	18.3	B	16.7	B	16.7	B
	PM	19.8	B	21.8	C	25.8	C	29.7	C	23.5	C	24.7	C
	SAT	11.5	B	11.9	B	16.7	B	18.9	B	15.9	B	17.2	C
4. Mt. Hermon Road / La Madrona Drive-SR 17 SB off-ramp	AM	23.4	C	25.3	C	27.6	C	29.1	C	21.0	C	23.0	C
	PM	23.9	C	32.1	C	37.0	D	**49.2**	**D**	24.4	C	**36.3**	**D**
	SAT	20.0	C	**36.3**	**D**	35.1	D	**60.9**	**E**	23.2	C	**41.9**	**D**
5. La Madrona Drive / Altenitas Road[3]	AM	19.2	C	28.3	D	20.9	C	31.7	D	20.9	C	31.7	D
	PM	11.7	B	40.0	E	12.4	B	46.0	E	12.4	B	45.8	E
	SAT	11.4	B	90.5	F	12.2	B	123.9	F	12.2	B	123.5	F
6. La Madrona Drive / Silverwood Road[3]	AM	11.3	B	11.3	B	11.5	B	11.5	B	11.5	B	11.5	B
	PM	9.8	A	10.0	A	9.9	A	10.1	B	9.9	A	10.1	B
	SAT	9.5	A	9.8	A	9.6	A	9.8	A	9.6	A	9.8	A
7. Mt. Hermon Road / El Rancho Drive-SR 17 NB ramp[3]	AM	22.4	C	23.2	C	26.9	D	28.1	D	20.1	C	20.8	C
	PM	23.2	C	26.6	D	32.0	D	37.6	E	28.1	D	32.7	D
	SAT	19.7	C	24.7	C	32.4	D	44.1	E	28.8	D	38.3	E
8. Mt. Hermon Road / Kings Village Road	AM	18.3	B	18.6	B	23.7	C	23.7	C	22.5	C	22.5	C
	PM	24.2	C	24.3	C	38.2	D	**44.5**	**D**	39.6	D	**46.2**	**D**
	SAT	23.6	C	23.9	C	40.5	D	**42.0**	**D**	41.3	D	**45.0**	**D**

Notes: [1]Average control delay per vehicle in seconds. Delay and LOS at unsignalized intersections are for the worst-case movement.
[2] LOS = Level of service.
[3] Unsignalized intersection. Significant impacts are indicated in **bold**.

Queues for the northbound left-turn movement at the Mt. Hermon Road/La Madrona Drive intersection are projected to exceed available storage lengths with the project in place. To accommodate this additional queue, the existing turn pockets would need to be lengthened to approximately 250 feet, which would create a two-lane approach on La Madrona Drive between Altenitas Road and Mt. Hermon Road. The queue for the northbound right-turn is not expected to exceed the existing storage pocket.

ALTERNATIVE SITE

The potential impacts of locating the proposed project at an alternative site, on the east side of SR 17 on Santa's Village Road just north of the existing Enterprise Technology Center, were also evaluated. Operations at four (4) key intersections and two freeway interchanges were analyzed under the scenarios described above.

Intersections

The project would result in significant impacts at the Granite Creek Road/Santa's Village Road/SR 17 Northbound Ramp intersection under Existing Plus Project conditions. The following improvements would mitigate the impacts:

- Restripe the southbound (Santa's Village Road) approach to provide a shared right-turn/through lane, and a separate left-turn lane. Convert split phasing to protected left-turn phasing for the north- and southbound (Granite Creek Road – Santa's Village Road) approaches.

Under Cumulative Conditions, both with and without the planned Mid-Town interchange, the project would result in significant impacts at the Granite Creek Road/Santa's Village/SR 17 Northbound Ramp intersection. Two improvements identified to mitigate the impacts under Cumulative Conditions include:

Option 1:

- Restripe the southbound (Santa's Village Road) approach to provide a shared right-turn/through lane, and a separate left-turn lane. Convert split phasing to protected left-turn phasing for the north- and southbound (Granite Creek Road – Santa's Village Road) approaches.

- Add northbound (Granite Creek Road) right-turn overlap phases.

Without the Mid-Town interchange, Option 1 would not fully mitigate the project's impact during the PM peak hour. With the Mid-Town interchange, Option 1 mitigates the project's impact to a less-than-significant level.

Option 2:

- Restripe the southbound (Santa's Village Road) approach to provide a shared right-turn/through lane, and a shared left-turn/through lane and maintain split phasing for the north- and southbound (Granite Creek Road – Santa's Village Road) approaches.

Option 2 would mitigate project impacts to a less-than-significant level.

CHAPTER 1. INTRODUCTION

This report presents the results of the transportation impact analysis (TIA) conducted for the Gateway South/Scotts Valley Target project located on the northwest corner of La Madrona Drive and Silverwood Drive in Scotts Valley, California.

The project includes an approximately 143,000-square foot (s.f.) retail store. The site location and surrounding roadway network are presented on **Figure 1**. A preliminary site plan is shown on **Figure 2**.

The purpose of this analysis is to identify the potential impacts of the proposed development on the adjacent transportation system. Project impacts were estimated following guidelines of the City of Scotts Valley and California Department of Transportation (Caltrans). The analysis focused on the operations of the following key intersections and the ramp junctions at one interchange within the study area. For simplification, SR 17 and parallel facilities (e.g., Scotts Valley Drive) were assumed to be aligned north-south and Mt. Hermon Road was assumed to extend east-west through the project study area.

Intersections

1. Scotts Valley Drive / Bean Creek Road
2. Mt. Hermon Road / Scotts Valley Drive
3. Mt. Hermon Road / Glen Canyon Road
4. La Madrona Drive / Mt. Hermon Road-SR 17 SB off-ramp
5. La Madrona Drive / Altenitas Road
6. La Madrona Drive / Silverwood Road
7. Mt. Hermon Road / El Rancho Drive-SR 17 Northbound ramps
8. Mt. Hermon Road / Kings Village Road

Freeway Ramp Junctions

1. SR 17 / Mt. Hermon Road interchange

Operations of these key intersections were analyzed during the weekday morning (AM), evening (PM), and Saturday mid-day (SAT) peak hour for Existing and Cumulative (2018) without and with the proposed project. The General Plan includes a new Mid-Town interchange on SR 17, which would alter traffic volumes and distribution patterns in the study area. This report examines cumulative conditions both with and without the new interchange. The following scenarios are evaluated:

Scenario 1: *Existing Conditions*. Existing volumes obtained from recent traffic counts.

Scenario 2: *Existing Plus Project Conditions.* Existing peak-hour volumes from Scenario 1 plus traffic generated by the proposed project.

Scenario 3: *Cumulative (2018) Conditions*. Growth-factored existing peak-hour volumes plus traffic from approved and pending but not yet constructed developments in the study area. This scenario assumes the Mid-Town interchange has not been constructed.

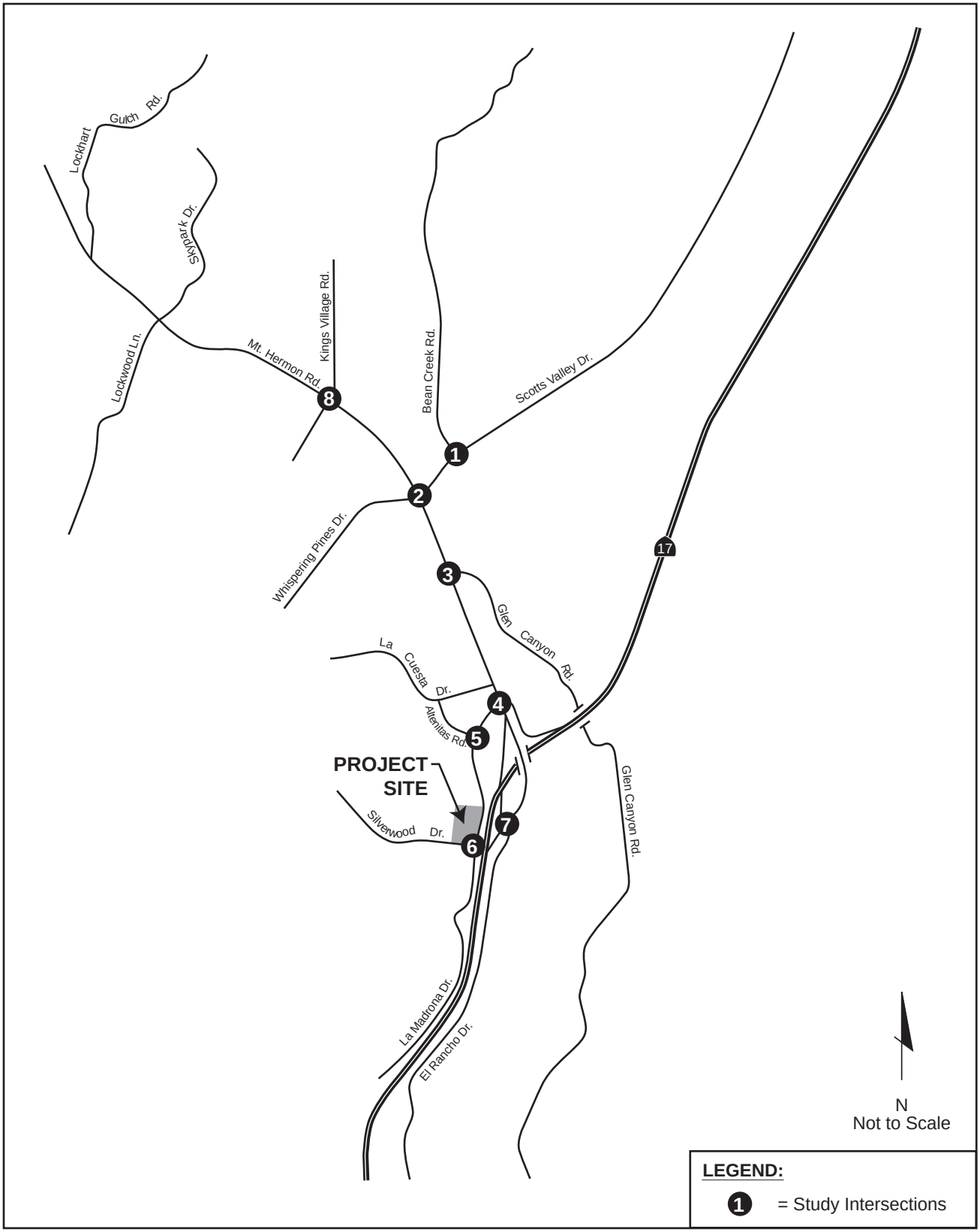
Scenario 4: *Cumulative Plus Project Conditions*. Cumulative peak-hour traffic volumes from Scenario 3 plus traffic generated by the proposed project. This scenario assumes the Mid-Town interchange has not been constructed.

Scenario 5: ***Cumulative (2018) with Mid-Town Interchange****.* Growth factored existing volumes plus traffic from approved and pending developments in the study area, with the new Mid-Town Interchange.

Scenario 6: ***Cumulative with Mid-Town Interchange Plus Project Conditions***. Cumulative peak-hour traffic volumes from Scenario 5 plus traffic generated by the proposed project.

Project impacts to ramp junctions on State Route (SR) 17 at the Mt. Hermon Road interchange were also evaluated. Several other issues including project impacts to bicycle, pedestrian, and transit facilities, site access, on-site circulation, and parking are also addressed in this study.

The remainder of this report is divided into five chapters. Chapter 2 presents Existing Conditions in terms of the existing roadway configurations, circulation patterns, and operating conditions of the key intersections and freeway ramps, and pedestrian, bicycle, and transit facilities. The transportation impacts of the proposed project are presented in Chapter 3, which also includes a discussion of site access, parking, and on-site circulation. Operations under Cumulative Conditions with traffic from approved but not yet constructed developments, with and without the proposed project, are discussed in Chapter 4. Cumulative Conditions with the Mid-Town interchange, both without and with the proposed project, are analyzed in Chapter 5. Chapter 6 presents analysis of an alternative project site, on the east side of SR 17, just north of the Granite Creek Road interchange.



Scotts Valley Target

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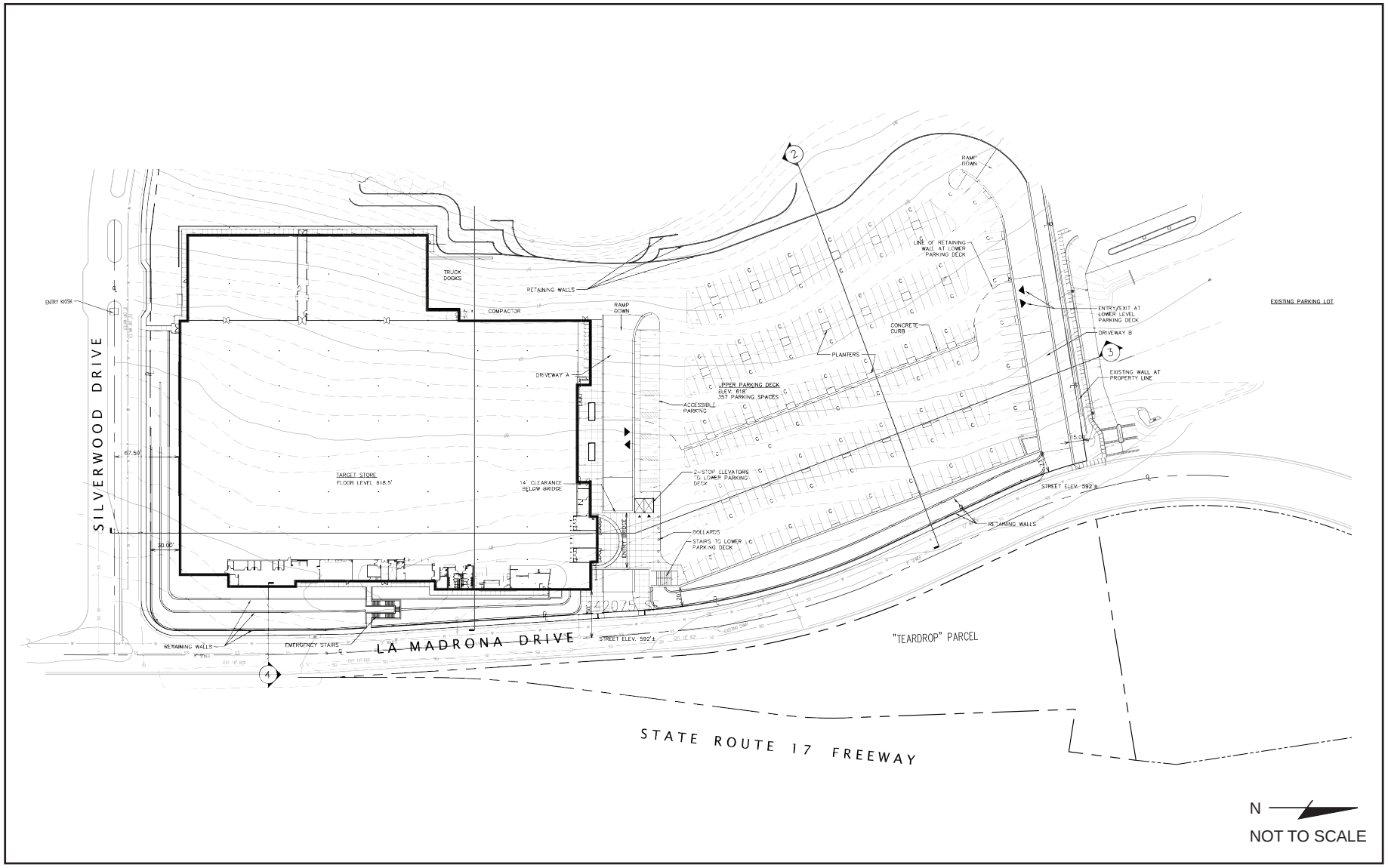
SITE LOCATION

April 2009
SJ07-980

FIGURE 1



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SITE PLAN

FIGURE 2

March 2009
SJ07-980

CHAPTER 2. EXISTING CONDITIONS

This chapter discusses the existing roadway network and operations of the study intersections and freeway segments. First, the existing transportation system within the study area is described, followed by a discussion of existing transit, bicycle, and pedestrian facilities. Then, the existing lane configurations and traffic volumes at the study intersections and on SR 17 are discussed. Next, the operations of the study intersections and freeway facilities under Existing Conditions are presented.

EXISTING ROADWAY NETWORK

Regional access to the project site is provided by SR 17, SR 9, and Mt. Hermon Road. Local access to the site is provided by Mt. Hermon Road, Scotts Valley Drive, Glen Canyon Road, and La Madrona Drive. Detailed descriptions of the key roadway facilities are presented below.

SR 17 is a four- to eight-lane, north-south facility that extends between the Cities of Santa Cruz and San Jose. In the vicinity of the project site, SR 17 is a four-lane freeway with full-access interchanges at Mt. Hermon Road and Granite Creek Road in Scotts Valley.

SR 9 is a two-lane, generally north-south roadway between SR 17 in the Town of Los Gatos and SR 1 in the City of Santa Cruz. SR 9 is located west of the project site and serves the communities of Boulder Creek, Ben Lomond, and Felton. Regional traffic using SR 9 can access the project site via Mt. Hermon Road.

Mt. Hermon Road is an arterial roadway extending between Graham Hill Road to the west and El Rancho Drive just east of SR 17. Near the project site, this street is oriented in a northwest to southeast direction and provides four travel lanes except for the two-lane overcrossing at SR 17. Between La Madrona Drive and Lockewood Lane, Mt. Hermon Road generally serves retail and commercial land uses.

Scotts Valley Drive is a four-lane, north-south arterial roadway extending between Mt. Hermon Road and Glenwood Drive. South of Mt. Hermon Road, Scotts Valley Drive becomes Whispering Pines Drive. Scotts Valley Drive is designated as a collector street north of Glenwood.

Glen Canyon Road is a two-lane north-south roadway that extends from Mt. Hermon Road to Branciforte Drive in Santa Cruz. Glen Canyon Road parallels SR 17.

La Madrona Drive is generally a two-lane, north-south collector roadway extending between Mt. Hermon Road and El Rancho Drive to the south. La Madrona Drive also parallels SR 17 and provides access to Santa Cruz from Scotts Valley via Sims Road and Graham Hill Road. La Madrona Drive provides direct access to the project site.

EXISTING TRANSIT SERVICE

The Santa Cruz Metropolitan Transit District operates fixed route, commuter, and paratransit bus service in the City and County of Santa Cruz, as well as in the City of Scotts Valley. One express and three local routes operate in the vicinity of the project site: Routes 31, 32, 35/35A, and the SR 17 Express. Currently, no bus stops are located within 1,000 feet of the project site. Detailed descriptions of existing transit service within the study area are presented below.

Route 31 operates between the Transit Centers in the Cities of Santa Cruz and Scotts Valley via SR 17 southbound. The Scotts Valley transit center is located on Kings Village Drive north of Mt. Hermon Road. This route operates during commute hours on weekdays between 7:00 am and 8:30 am and 1:30 pm and

5:15 pm. Route 31 operates on 30- to 60-minute headways during the week. This route does not provide direct access to Mt. Hermon Road near the La Madrona intersection.

Route 32 operates between the Transit Centers in Santa Cruz and Scotts Valley via SR 17 northbound. This route operates from 2:15 pm to 4:00 pm on approximately 40-minute headways. Route 32 does not provide direct access to the Mt. Hermon Road/La Madrona Drive intersection.

Routes 35/35A serve as a connection between Santa Cruz and Boulder Creek through the city of Scotts Valley. Weekday operation is provided from 5:45 am to 12:00 am with 30-minute headways. Weekend service is provided from 7:00 am to 12:00 am on 30- to 60-minute headways. Weekend service recently resumed to Big Basin State Park. Route 35 exits SR 17 at the Mt. Hermon Road interchange north of the project site. Route 35A exits SR 17 on the Granite Creek interchange.

SR 17 Express serves as a connection between Santa Cruz County and Santa Clara County with stops at the Scotts Valley Transit Center and on Mt. Hermon Road. SR 17 Express operates on weekdays between 4:30 am and 11:30 pm with headways of 20 to 60 minutes. On weekends and holidays, fifteen northbound and fifteen southbound trips are provided between 6:45 am and 11:10 pm.

EXISTING PEDESTRIAN AND BICYCLE FACILITIES

Pedestrian facilities are comprised of sidewalks, crosswalks, and pedestrian signals. Near the site, sidewalks are provided on the west side of La Madrona Drive along the project frontage and in front of the Hilton Hotel extending north to Mt. Hermon Road. Crosswalks and pedestrian signal heads are provided at all of the signalized study intersections. Sidewalks are provided along Mt. Hermon Road near the project site. Between La Madrona Drive and Glen Canyon Road, the sidewalk on the south side of Mt. Hermon Road extends through the Torrey Oaks linear park, roughly paralleling Mt. Hermon Road.

Bicycle facilities are comprised of bike paths, lanes and routes. Bike paths are paved trails that are separated from roadways. Bike lanes are lanes on roadways designated for use by bicycles by striping, pavement legends, and signs. Bike routes are roadways that are designated for bicycle use by signs. In the vicinity of the site, a bike route is designated and bike lanes are striped on La Madrona Drive along the entire project frontage, but the bike lanes terminate just south of Silverwood Drive. Bike lanes are also provided in both directions on Mt. Hermon Road and on Scotts Valley Drive in the study area.

EXISTING TRAFFIC VOLUMES

Intersection and freeway ramp operations were evaluated during weekday AM and PM and Saturday mid-day peak traffic conditions. Peak conditions on weekdays usually occur during the morning and evening commute hours from 7:00 am to 9:00 am and from 4:00 pm to 6:00 pm, respectively. Saturday peak conditions usually occur between 11:00 am and 1:00 pm.

Traffic counts (collected from September 2006 through May 2007) for the signalized study intersections were obtained from the City of Scotts Valley for the AM and PM peak periods. These counts represent traffic conditions consistent with the *Scotts Valley Town Center Specific Plan and EIR* (November 2008). New peak period traffic counts were conducted in November 2008 and April 2009 at the signalized study intersections during the Saturday peak period and at the unsignalized study intersections during the weekday and Saturday peak periods. The new peak hour counts are contained in Appendix A. The highest one-hour total or peak-hour traffic volume at each study intersection is shown on **Figure 3**. Lane geometry and traffic controls are also shown on **Figure 3**.

INTERSECTION LEVEL OF SERVICE METHODS

The operations of the key intersections were evaluated using Level of Service (LOS) calculations. *Level of Service* is a qualitative description of a roadway's operation, ranging from LOS A, or free-flow conditions, to LOS F, or over-saturated conditions. LOS E represents conditions that are at capacity. According to the City of Scotts Valley General Plan (1994), the level of service goal for intersections is LOS C, except for the intersection of Mt. Hermon Road/Scotts Valley Drive where LOS D is considered acceptable.

Signalized Intersections

Two methodologies were used to evaluate the key study intersections: one for the signalized intersections and another for the unsignalized intersections. For signalized intersections, the LOS methodology described in Chapter 16 of the 2000 *Highway Capacity Manual* (HCM) published by the Transportation Research Board was applied. This methodology evaluates a signalized intersection's operations based on the average control delay, which was calculated using the SYNCHRO analysis software and was correlated to a level of service as shown in **Table 1**.

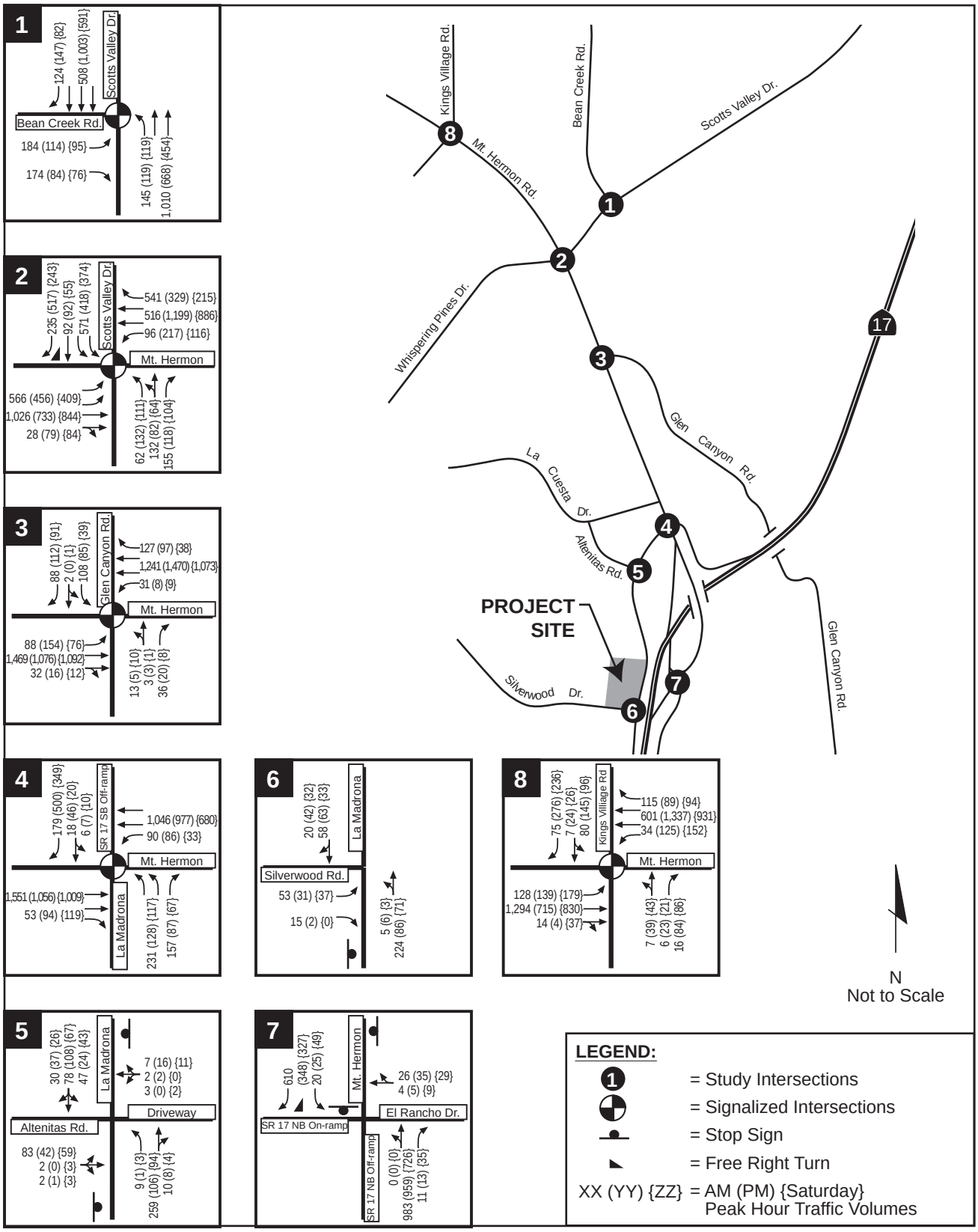
TABLE 1
SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Control Delay (sec / veh)
A	Insignificant Delays: No approach phase is fully utilized and no vehicle waits longer than one red indication.	≤ 10
B	Minimal Delays: An occasional approach phase is fully utilized. Drivers begin to feel restricted.	> 10 to 20
C	Acceptable Delays: Major approach phase may become fully utilized. Most drivers feel somewhat restricted.	> 20 to 35
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly, without excessive delays.	> 35 to 55
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues from upstream.	> 55 to 80
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80

Source: *Highway Capacity Manual*, Transportation Research Board, 2000.

Unsignalized Intersections

Unsignalized intersections with stop signs on the minor street approaches were evaluated using the methodology presented in Chapter 17 of the 2000 *Highway Capacity Manual*. Level of service is defined for the controlled movements at a two-way stop controlled intersection, not for the intersection as a whole. For stop sign controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The SYNCHRO analysis software was used to calculate control delay and correlated to a LOS designation as shown in **Table 2**.



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Scotts Valley Target

EXISTING TRAFFIC CONTROLS, LANE GEOMETRIES, AND PEAK-HOUR VOLUMES

May 2009
SJ07-980

FIGURE 3

TABLE 2
UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS USING AVERAGE CONTROL DELAY

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Little or no delay.	≤ 10.0
B	Short traffic delays.	10.1 to 15.0
C	Average traffic delays.	15.1 to 25.0
D	Long traffic delays.	25.1 to 35.0
E	Very long traffic delays.	35.1 to 50.0
F	Extreme traffic delays with intersection capacity exceeded.	> 50.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2000.

FREEWAY RAMP LEVEL OF SERVICE METHODOLOGY

Freeway ramp operations were also analyzed using LOS. Operations on SR 17 include merge/diverge junctions at ramps. Merge/diverge areas were analyzed using the methods described in Chapter 25 of the 2000 *Highway Capacity Manual*, which calculates the density in passenger car equivalents (PCE) per lane mile per hour (pce/ln-mi/hr). Passenger car equivalents are determined by converting trucks, buses, and other heavy vehicles to an equivalent number of passenger cars. The range of density for each level of service is presented in **Table 3**.

TABLE 3
DENSITY LEVEL OF SERVICE DEFINITIONS FOR MERGE/DIVERGE AREAS

Level of Service	Maximum Density (passenger car equivalents[1]/lane-mile/hour)
A	10
B	20
C	28
D	35
E	> 35
F	[2]

[1] Passenger car equivalents determined by converting trucks, buses, and other heavy vehicles to an equivalent number of passenger cars.
[2] Demand flow exceeds theoretical limits.
Source: *Highway Capacity Manual,* Transportation Research Board, 2000.

Caltrans' *Guide for the Preparation of Traffic Impact Studies* (December 2002) notes that Caltrans strives to maintain a target LOS on State highways at the transition between LOS C and D. Per direction from Caltrans District 5 staff, the LOS C/D threshold was used for this analysis. Specific criteria for project impacts are detailed in Chapter 3.

EXISTING LEVELS OF SERVICE

Intersections

The existing lane configurations and the peak-hour turning movement volumes on **Figure 3** were used to calculate the levels of service for each of the study intersections during the AM, PM, and Saturday peak periods. The unsignalized intersection of Mt. Hermon Road/El Rancho Drive-SR 17 Northbound Ramp has an atypical configuration. The northbound approach is not stop-controlled, to provide vehicles exiting the freeway right-of-way to proceed through the intersection without stopping; the westbound approach is stop-controlled, as is the southbound left-turn from Mt. Hermon Road to El Rancho Drive (southbound right-turn on to SR 17 northbound is yield-controlled). The westbound approach and southbound left-turning vehicles must yield to vehicles exiting the freeway. This intersection was converted to a conventional side-street stop-controlled intersection by shifting the southbound left-turn traffic to the eastbound approach; thus, the north- and southbound approaches are uncontrolled, and the east- and westbound approaches are stop-controlled. The results of the existing intersection LOS analysis are presented in **Table 4** and the corresponding calculation sheets are contained in **Appendix B**.

TABLE 4
EXISTING INTERSECTION LEVELS OF SERVICE

Intersection	Type of Control	Count Date	Peak Hour	Delay[1]	LOS[2]
1. Scotts Valley Drive / Bean Creek Road	Signal	9/20/2006 9/20/2006 11/8/2008	AM PM SAT	15.8 13.5 15.8	B B B
2. Mt. Hermon Road / Scotts Valley Drive	Signal	5/1/2007 5/1/2007 7/26/2008	AM PM SAT	38.5 45.6 38.1	D D D
3. Mt. Hermon Road / Glen Canyon Road	Signal	9/20/2006 9/20/2006 11/8/2008	AM PM SAT	15.8 19.8 11.5	B B B
4. Mt. Hermon Road / La Madrona Drive-SR 17 SB off-ramp	Signal	9/20/2006 9/20/2006 7/26/2008	AM PM SAT	23.4 23.9 20.0	C C C
5. La Madrona Drive / Altenitas Road	Two-way Stop	11/18/2008 11/18/2008 11/8/2008	AM PM SAT	19.2 11.7 11.4	C B B
6. La Madrona Drive / Silverwood Road	Two-way Stop	11/18/2008 11/18/2008 11/8/2008	AM PM SAT	11.3 9.8 9.5	B A A
7. Mt. Hermon Road / El Rancho Drive-SR 17 NB ramp	Two-way Stop	8/7/2007 8/7/2007 11/8/2008	AM PM SAT	22.4 23.2 19.7	C C C

TABLE 4
EXISTING INTERSECTION LEVELS OF SERVICE

Intersection	Type of Control	Count Date	Peak Hour	Delay[1]	LOS[2]
8. Mt. Hermon Road / Kings Village Road	Signal	9/16/2006	AM	18.3	B
		9/16/2006	PM	24.2	C
		4/25/2009	SAT	23.6	C

Notes: [1]Average control delay per vehicle in seconds. Delay and LOS at unsignalized intersections are for the worst-case movement.
[2] LOS = Level of service.
Weekday counts at intersections one through four represent traffic conditions consistent with the *Scotts Valley Town Center Specific Plan and EIR* (November 2008). Unacceptable levels of service are indicated in **bold**.

The results indicate that all of the signalized and unsignalized intersections are operating at acceptable levels during both peak hours.

Freeway Ramp Junctions

Freeway ramp merge or diverge operations on SR 17 were evaluated at the Mt. Hermon Road interchange since this will be a primary access point for project-generated traffic. The analysis evaluates ramp operations where they connect with the freeway mainline, either as a merge or a diverge section. SR 17 has two travel lanes in each direction in the vicinity of the project. **Table 5** presents the existing freeway ramp junction merge/diverge levels of service. The ramp junction LOS calculation worksheets are included in **Appendix C**. All ramps operate acceptably at LOS C or better during the peak hours.

TABLE 5
EXISTING STATE ROUTE 17 RAMP JUNCTION LEVELS OF SERVICE

Location and Direction	Peak Hour	Density[1]	LOS[2]
Mt. Hermon Road Interchange			
Northbound Loop On-ramp	AM	21.5	C
	PM	17.7	B
	SAT	16.9	B
Northbound Slip Off-ramp	AM	25.3	C
	PM	24.0	C
	SAT	23.2	C
Southbound Slip On-ramp	AM	21.9	C
	PM	20.1	C
	SAT	23.1	C
Southbound Slip Off-ramp	AM	17.1	C
	PM	19.8	C
	SAT	20.7	C

Notes: [1] Density = passenger cars per lane mile per hour (pc/ln-mi/hr).
[2] LOS = Level of service.

FIELD OBSERVATIONS

In addition to calculating intersection LOS based on traffic volumes, field observations were conducted at all of the study intersections and on the freeway segments during the AM and PM peak hours. These observations were used to verify the calculated levels of service and to note unusual operating conditions.

Observations showed that the study intersections operate at levels consistent with the calculated LOS. Queues were observed for the through movements on Mt. Hermon Road during both peak hours, with the heaviest flows in the eastbound direction during the AM peak hour and westbound direction during the PM peak hour. During the PM peak hour, westbound vehicles occasionally queued back to Glen Canyon Road. However, the queues typically cleared in one signal cycle. Although Mt. Hermon Road serves a significant volume of traffic, no substantial delays were observed during either peak hour, and traffic moved steadily between the freeway and Scotts Valley Drive.

The Mt. Hermon Road/La Madrona Drive-SR 17 Southbound off-ramp intersection operates at an acceptable level. During the PM peak hour, right-turning vehicles from the off-ramp onto Mt. Hermon Road were observed to queue around the corner of the off-ramp from the intersection. However, the existing phasing of the intersection provides an overlap phase that minimized delay for the queued vehicles. Additionally, the gaps provided by the through northbound vehicles on Mt. Hermon Road were long enough to allow some right-turns on red. Occasional westbound queues were observed to spill back to the SR 17 overcrossing structure, but these queues generally cleared in one cycle.

During the peak periods, traffic on SR 17 at the Mt. Hermon Road interchange typically moves in uniform progression and experiences minor congestion. The primary travel directions of the freeway are northbound in AM peak period and southbound in the PM peak period as Santa Cruz County residents commute to jobs in San Jose and other South Bay Area cities via SR 17.

CHAPTER 3. EXISTING PLUS PROJECT CONDITIONS

The impacts of the proposed retail development on the surrounding roadway system are discussed in this chapter. First, the methods used to estimate the amount of traffic generated by the proposed project are described. Then, the distribution of project traffic to the surrounding roadway system is discussed. The operations of the study intersections and freeway ramps were analyzed under Project Conditions (Existing volumes plus project-generated traffic) with level of service (LOS) calculations. Project impacts are then identified by comparing the LOS results under Project Conditions to those under Existing Conditions. Other issues addressed in this chapter include project impacts to bicycle, pedestrian, and transit facilities, on-site circulation, parking, and site access.

DESCRIPTION OF PROPOSED PROJECT

The project as analyzed herein includes the development of a 143,000-s.f. retail store (analyzed as ITE land use code 815 Free-Standing Discount Store) with two levels of parking accessed by two driveways. In 2002, the development of 136,000 s.f. of office space was approved for the site, but nothing was constructed, so the site is currently vacant.

PROJECT TRAFFIC VOLUMES

The amount of traffic associated with the proposed project was estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. In the first step, the amounts of traffic are estimated on a daily basis and for each peak hour. In the second step, the directions the trips use to approach and depart the site are projected. The trips are assigned to specific street segments and intersection turning movements in the third step. The results of this process are described in the following sections.

Trip Generation

The amount of traffic generated by the proposed project was estimated based on trip generation data published by the Institute of Transportation Engineers (ITE), *Trip Generation*, 8th Edition, 2008. ITE rates were applied to the square footage of the proposed retail space to estimate the number of vehicle trips. Some of the PM peak hour trips would be diverted linked trips, where a driver on Mt. Hermon Road or SR 17 would divert from their normal path to the site and then continue to their original destination. These diverted link trips were added to the study intersections in the vicinity of the project, but would not result in new traffic on other roadways in the area. No trip reduction was applied during the AM peak hour since a negligible number of diverted link trips are expected to occur before 9:00 am. The diverted linked trips reduction of 25% for the PM and SAT peak hours was estimated based on the survey data presented in Chapter 5 of ITE's *Trip Generation Handbook.* A diverted link reduction of 10% of daily trips was applied.

The trip generation rates and estimates are presented in **Table 6**. The proposed project is estimated to generate 7,366 net new daily, 152 net new AM peak hour (103 inbound and 49 outbound), 536 net new PM peak hour (268 inbound and 268 outbound), and 793 net new Saturday peak hour (404 inbound and 388 outbound) trips. These trips would be distributed on the roadway network as described in the next section, trip distribution.

TABLE 6
PROJECT TRIP GENERATION

Land Use	Size	Weekday Daily	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
			In	Out	Total	In	Out	Total	In	Out	Total
Free Standing Discount Store[1]	143 ksf[2]	57.24	0.72	0.34	1.06	2.50	2.50	5.00	3.77	3.62	7.39
Trips											
Trip Generation		8,185	103	49	152	358	357	715	539	518	1,057
Diverted Link Trips[3]		*(819)*	-	-	-	*(90)*	*(89)*	*(180)*	*(135)*	*(129)*	*(264)*
Net New External Trips[4]		7,366	103	49	152	268	268	536	404	388	793

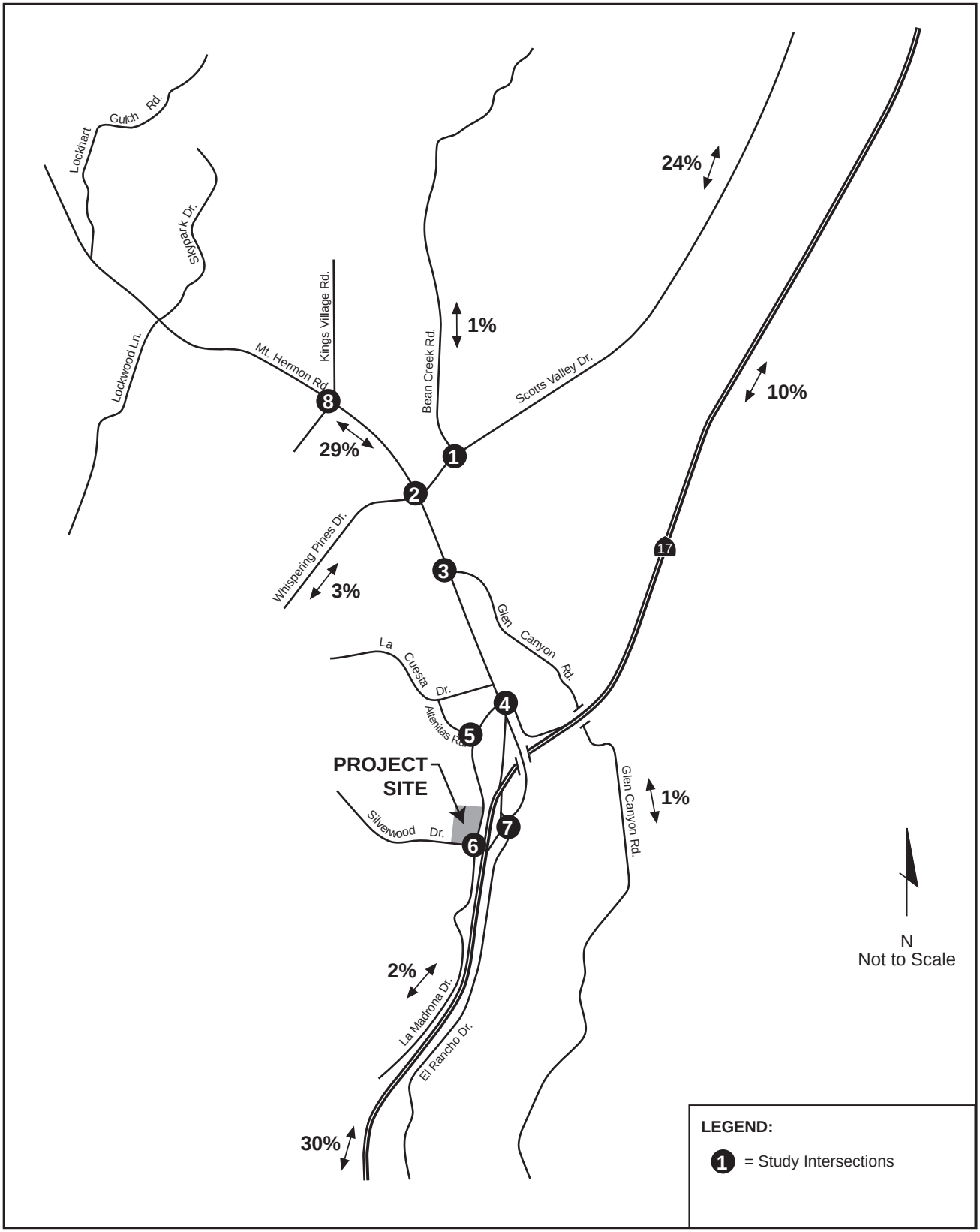
Notes: 1 ITE Land Use Code 815
2 ksf = thousand square feet
3 Trips attracted from traffic already on SR 17 and Mt. Hermon Road
4 Net new project trips assigned to external locations beyond the project vicinity
Source: *Trip Generation*, 8th Edition, ITE (2008) and Fehr & Peers, 2009

Trip Distribution

The project trip distribution defines the directions of approach and departure for project traffic. The distribution was prepared based on the existing travel patterns in the area, previous studies, the relative locations of complementary land uses, and the AMBAG travel demand model. **Figure 4** illustrates the major directions of approach and departure for project trips. A total of 57% of the project traffic would come from the communities to the west on Mt. Hermon Road and the residential areas of Scotts Valley. Approximately 30% would come from the south on SR 17 from Santa Cruz and adjacent communities, and about 10% would come from the north on SR 17. The remaining 3% would come from the east (Glen Canyon Road) and south (La Madrona Drive).

Trip Assignment

Trips generated by the proposed project were assigned to the roadway system based on the directions of approach and departure shown on **Figure 4**. Project-generated trips for the peak hours are shown on **Figure 5**, which shows that the project would add approximately 150 trips in each direction to Mt. Hermon Road between Glen Canyon Road and Scotts Valley Drive during the PM peak hour. Project trips were added to existing traffic volumes to estimate total volumes under Project Conditions as shown on **Figure 6**.



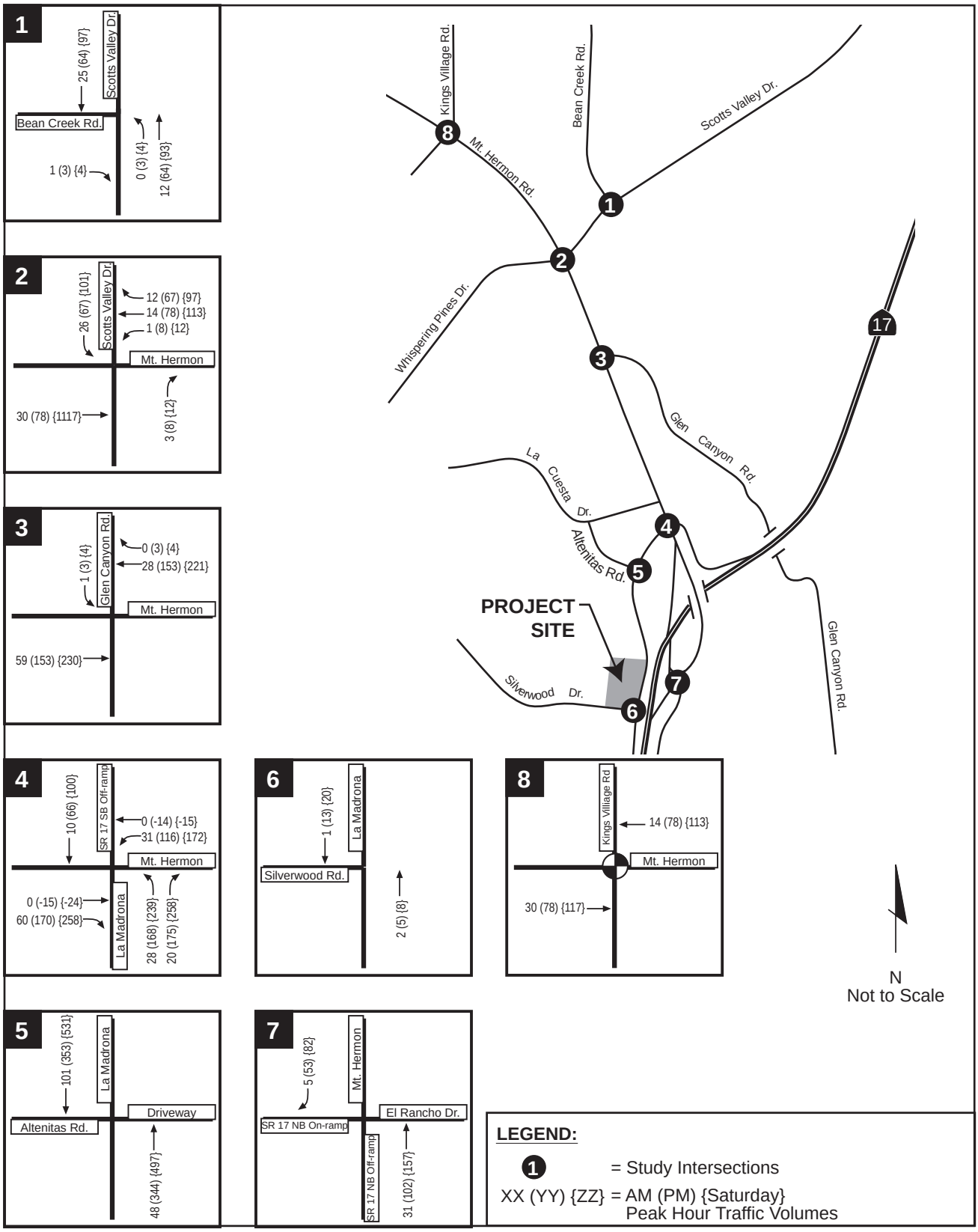
Scotts Valley Target

FEHR & PEERS
TRANSPORTATION CONSULTANTS

PROJECT TRIP DISTRIBUTION

April 2009
SJ07-980

FIGURE 4



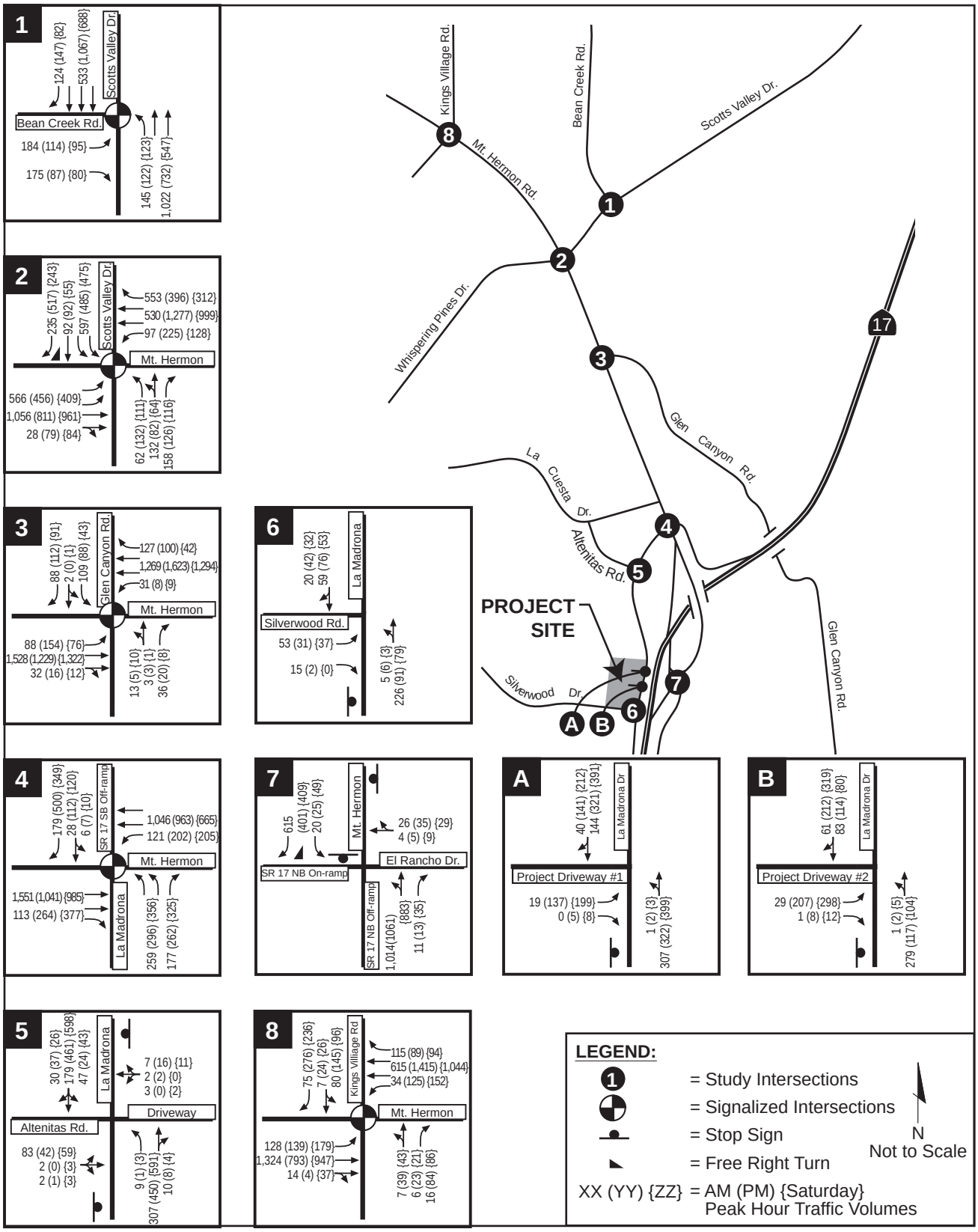
FEHR & PEERS
TRANSPORTATION CONSULTANTS

Scotts Valley Target

PROJECT TRIP ASSIGNMENT (INCLUDES DIVERTED LINK TRIPS)

March 2009
SJ07-980

FIGURE 5



Scotts Valley Target

FEHR & PEERS
TRANSPORTATION CONSULTANTS

EXISTING PLUS PROJECT TRAFFIC VOLUMES

May 2009
SJ07-980

FIGURE 6

SIGNIFICANT IMPACT CRITERIA

Impacts at intersections were identified based on the operating standards for the City of Scotts Valley and Caltrans. As specified in the City's Circulation Element (action CA-150), the City maintains a minimum Level of Service (LOS) C for intersections except for the intersections of Mt. Hermon Road/Scotts Valley Drive and Scotts Valley Drive/Granite Creek Road where LOS D is considered acceptable. Caltrans also strives to maintain a minimum LOS C on State highways.

A significant impact is identified for signalized intersections under the City's jurisdiction if the proposed project causes:

- Intersection operations to degrade from acceptable conditions (LOS C or D, or better depending on location) under Baseline Conditions to unacceptable conditions (LOS D, E or F, depending on location) under with Project Conditions; or

- For intersections already operating at unacceptable conditions (LOS D, E, or F depending on location), any increase in delay per vehicle.

A significant impact is identified for signalized intersections under Caltrans' jurisdiction when:

- The addition of project traffic causes the intersection's level of service to degrade from LOS C or better to LOS D, E, or F; or

- Project traffic is added to an intersection operating at LOS D, E, or F.

For all unsignalized intersections, the project results in a significant impact if:

- The addition of project traffic causes operations of the worst movement to degrade from acceptable conditions (LOS C or better) under Baseline Conditions to unacceptable conditions (LOS D, E or F) under with Project Conditions; or

- Project traffic is added to an intersection where the worst movement is already operating at unacceptable conditions (LOS D, E, or F) under Baseline Conditions.

A significant impact is identified for freeway ramp junctions based on Caltrans' impact criteria:

- The addition of project traffic causes the ramp junction's level of service to degrade from LOS C or better to LOS D, E, or F; or

- Project traffic is added to a ramp junction operating at LOS D, E, or F.

If an existing facility is operating at less than the target LOS (e.g., LOS D, E or F, depending on location), the mitigation measures identified should return the level of service to acceptable conditions.

PROJECT INTERSECTION LEVELS OF SERVICE

Intersection LOS calculations were conducted to evaluate intersection operations under Project Conditions. The results of the LOS analysis for Existing and Existing plus Project Conditions are summarized in **Table 7**. The corresponding LOS calculation sheets are included in **Appendix B**.

The addition of project traffic is projected to degrade operations at the signalized intersections of Mt. Hermon Road/Scotts Valley Drive during the PM peak hour. During the AM and Saturday peak hours, this intersection is projected to continue to operate at acceptable LOS D. The eastbound approach to the unsignalized La Madrona Drive/Altenitas Road intersection is expected to degrade to unacceptable levels

under Project Conditions during each peak hour. The southbound approach to the unsignalized Mt. Hermon Road/El Rancho Drive-SR 17 northbound ramps intersection is projected to degrade from LOS C to LOS D during the PM peak hour, an unacceptable level according to Caltrans criteria.

TABLE 7
PROJECT CONDITIONS INTERSECTION LEVELS OF SERVICE

Intersection	Peak Hour	Existing Conditions		Project Conditions	
		Delay[1]	LOS[2]	Delay[1]	LOS[2]
1. Scotts Valley Drive / Bean Creek Road	AM	15.8	B	15.8	B
	PM	13.5	B	13.7	B
	SAT	15.8	B	14.7	B
2. Mt. Hermon Road / Scotts Valley Drive	AM	38.5	D	39.2	D
	PM	45.6	D	**55.5**	**E**
	SAT	38.1	D	44.3	D
3. Mt. Hermon Road / Glen Canyon Road	AM	15.8	B	16.1	B
	PM	19.8	B	21.8	C
	SAT	11.5	B	11.9	B
4. Mt. Hermon Road / La Madrona Drive-SR 17 SB off-ramp	AM	23.4	C	25.3	C
	PM	23.9	C	32.1	C
	SAT	20.0	C	**36.3**	**D**
5. La Madrona Drive / Altenitas Road[3]	AM	19.2	C	**28.3**	**D**
	PM	11.7	B	**40.0**	**E**
	SAT	11.4	B	**90.5**	**F**
6. La Madrona Drive / Silverwood Road[3]	AM	11.3	B	11.3	B
	PM	9.8	A	10.0	A
	SAT	9.5	A	9.8	A
7. Mt. Hermon Road / El Rancho Drive-SR 17 NB ramp[3]	AM	22.4	C	23.2	C
	PM	23.2	C	**26.6**	**D**
	SAT	19.7	C	24.7	C
8. Mt. Hermon Road / Kings Village Road	AM	18.3	B	18.6	B
	PM	24.2	C	24.3	C
	SAT	23.6	C	23.9	C

Notes: [1] Average control delay per vehicle in seconds. Delay and LOS at unsignalized intersections are for the worst-case movement.
[2] LOS = Level of service.
[3] Unsignalized intersection.
Project impacts highlighted in **bold text.**

Project-added traffic would degrade operations from LOS D to unacceptable LOS E at Mt. Hermon Road/Scotts Valley Drive during the PM peak hour and Mt. Hermon Road/La Madrona Drive – SR 17 Southbound off-ramp during the Saturday peak hour. The operations at the unsignalized intersections of La Madrona Drive/Altenitas Road during the AM, PM, and Saturday peak hours and Mt. Hermon Road/El Rancho Drive-SR 17 Northbound Ramp during the PM peak hour degrade to unacceptable levels (LOS D or worse). ***These are considered significant impacts.***

Existing Plus Project Mitigation Measures

Intersection impacts were identified at the Mt. Hermon Road/Scotts Valley Drive, Mt. Hermon Road/La Madrona Drive-SR 17 Southbound off-ramp, La Madrona Drive/Altenitas Road, and Mt. Hermon Road/El Rancho Road-SR 17 Northbound off-ramp intersections. This section describes possible measures to mitigate the project's impacts. Mitigated levels of service for the impacted intersection are presented in **Table 8**.

The following lane additions, lane modifications, and signal changes were identified as the mitigation measures for the project impacts:

Mt. Hermon Road/Scotts Valley Drive

- Add second westbound (Mt. Hermon Road) left-turn lane.
- Restripe the northbound approach (Whispering Pines Drive) to provide separate left-turn, through, and right-turn lanes. Convert split phasing to protected left-turn phasing for the north- and southbound approaches (Whispering Pines Drive – Scotts Valley Drive).
- Add westbound (Mt. Hermon Road) and northbound (Whispering Pines Drive) right-turn overlap phases.

With the addition of these improvements, the intersection is projected to operate at acceptable LOS D during all three peak hours. These improvements mitigate the project's impacts to a less-than-significant level.

Mt. Hermon Road/La Madrona Drive – SR 17 Southbound off-ramp

- Add an eastbound right-turn overlap phase on Mt. Hermon Road

With the addition of this improvement, the intersection is projected to operate at acceptable LOS C during all three peak hours. These improvements mitigate the project's impacts to a less-than-significant level.

La Madrona Drive/Altenitas Road and Mt. Hermon Road/El Rancho Road-SR 17 Northbound off-ramp

Peak-hour warrants were analyzed for both of the unsignalized intersections of La Madrona Drive/Altenitas Road and Mt. Hermon Road/El Rancho Road-SR 17 Northbound off-ramp for the AM, PM, and Saturday peak hours under Project Conditions. A review of the *Manual on Uniform Traffic Control Devices* (MUTCD, 2003) traffic signal warrants shows that the peak hour signal warrants are not met, indicating that traffic volumes at these intersections do not meet the minimum peak-hour volume criteria

necessary to justify installation of a traffic signal[1] (see Appendix D for calculation sheets). No other feasible mitigation measures were identified, and the project's impacts are considered significant and unavoidable.

TABLE 8
MITIGATED PROJECT CONDITIONS INTERSECTION LEVELS OF SERVICE

Intersection	Peak Hour	Existing		Project		Mitigated Project	
		Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
2. Mt. Hermon Road / Scotts Valley Drive	AM	38.5	D	39.2	D	44.0	D
	PM	45.6	D	**55.5**	**E**	49.8	D
	SAT	38.1	D	44.3	D	37.2	D
4. Mt. Hermon Road / La Madrona Drive-SR 17 SB off-ramp	AM	23.4	C	25.3	C	25.2	C
	PM	23.9	C	32.1	C	31.7	C
	SAT	20.0	C	**36.3**	**D**	31.6	C
5. La Madrona Drive / Altenitas Road[3]	AM	19.2	C	**28.3**	**D**	S/U[3]	
	PM	11.7	B	**40.0**	**E**	S/U[3]	
	SAT	11.4	B	**90.5**	**F**	S/U[3]	
7. Mt. Hermon Road / El Rancho Drive-SR 17 NB ramp[3]	AM	22.4	C	23.2	C	N/A	
	PM	23.2	C	**26.6**	**D**	S/U[3]	
	SAT	19.7	C	24.7	C	N/A	

Notes: [1] Average control delay per vehicle in seconds. Delay and LOS at unsignalized intersections are for the worst-case movement.
[2] LOS = Level of service.
[3] S/U = significant and unavoidable project impact.
Unacceptable levels of service highlighted in **bold text.**

[1] The use of peak-hour signal warrants is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. The traffic analysis presented in this document estimates future development-generated traffic compared against a sub-set (peak-hour warrant) of the standard traffic signal warrants recommended in the Federal Highway Administration's *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. The decision to install a signal should not be based solely upon the warrants because signals can lead to certain types of collisions. The City of Scotts Valley/Caltrans 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.

EXISTING PLUS PROJECT RAMP JUNCTION LEVELS OF SERVICE

Table 9 presents the freeway ramp junction levels of service for Existing and Project Conditions. All ramps are projected to continue operating at the same acceptable levels of service as under Existing Conditions. Thus, the project's impact to the freeway ramp junctions is considered less-than-significant.

TABLE 9
PROJECT CONDITIONS FREEWAY RAMP JUNCTION LEVELS OF SERVICE

Location and Direction	Peak Hour	Existing Conditions		Project Conditions	
		Density[1]	LOS[2]	Density[1]	LOS[2]
Mt. Hermon Road Interchange					
Northbound Loop On-ramp	AM	21.5	C	21.5	C
	PM	17.7	B	18.0	B
	SAT	16.9	B	17.3	B
Northbound Slip Off-ramp	AM	25.3	C	25.6	C
	PM	24.0	C	24.8	C
	SAT	23.2	C	24.3	C
Southbound Slip On-ramp	AM	21.9	C	22.1	C
	PM	20.1	C	20.7	C
	SAT	23.1	C	24.0	C
Southbound Slip Off-ramp	AM	17.1	C	17.2	B
	PM	19.8	C	20.1	C
	SAT	20.7	C	21.1	C

Notes: [1] Density = passenger car equivalents per lane mile per hour (pce/ln-mi/hr).
[2] LOS = Level of service.

SITE ACCESS, CIRCULATION, AND PARKING

This section addresses site access and the on-site circulation system. The preliminary site plan showing the locations of project driveways and the internal circulation system is shown on **Figure 2**.

Site Access

Site access to the project is provided via two driveways on La Madrona Drive, spaced approximately 550 feet apart. Vehicles would enter the driveways, and turn into the lower level parking lot or continue up the ramp to the upper level parking lot. The store's primary entrance is on the upper level, with access via a pedestrian-only entry bridge over the south driveway. People parked on the lower level would use an elevator or the stairs to reach the upper level and enter the store. This configuration, with a pedestrian-only bridge to access the store, reduces the number of potential conflicts by separating the primary vehicle and pedestrian flows.

Due to the low existing and projected volumes on La Madrona Drive, the two side-street-stop controlled driveways would be adequate to serve project traffic. Sight distance from the proposed driveway entrances appears to be adequate, as well; however, sight distance at the north driveway should be confirmed once the site's engineering design is prepared.

Pedestrians on La Madrona Drive could access the site via the stairs or elevators at the lower level parking lot, which are located within 120 feet of the street. The site plan does not show the location of bike racks. Bike racks should be located on the lower level as close to the elevators and stairs as possible.

The truck docks are located on the west side of the site, and trucks would enter the site via the south driveway, and exit via the north driveway. To enter the south driveway from La Madrona Drive, trucks would have to make a wide turn and may temporarily encroach into the opposing lane. This is a common practice, and truck drivers will wait for an appropriate gap in traffic before making their turn. Given the relatively low traffic volumes and limited number of truck trips, no excessive delays are expected. Truck access as shown on the site plan is adequate.

Vehicle Queuing Analysis

Minimal vehicle queues are expected at the project driveway on La Madrona Drive, as these approaches will remain uncontrolled. The project driveways will be stop-controlled, and a maximum queues (95th percentile) of one (1) vehicle during the weekday AM and PM peak hours and two (2) vehicles during the Saturday peak hour are expected. These vehicular queues are not expected to interfere with adjacent land uses, including the fire station north of the project site on La Madrona Drive and the Hilton Hotel access driveway just south of Altenitas Drive. Additionally, the addition of the project is expected to cause little delay to residents accessing the schools located south on La Madrona Drive, including Brook Knoll Elementary and La Madrona Day School. During the AM peak hour, when parents drop off children at the school, traffic accessing the Target site is expected to be minimal, and cause short delays (less than ten (10) seconds in both directions). School pick up generally occurs between 12:00 pm (noon) and 3:00 pm, before the PM peak hour at the project site would occur. For a conservative estimate of delays on La Madrona Drive during school pick-up times, delays during the PM peak hour were reviewed. Delays are expected to be less than 15 seconds in either direction, thus causing minimal inconvenience to drivers accessing the schools.

Vehicle queue lengths were also reviewed at the northbound and westbound approaches to the Mt. Hermon Road/La Madrona Drive – SR 17 Southbound off-ramp intersection. Queue lengths were calculated based on the Synchro analysis, which calculates vehicle queues (feet per lane). The 95th percentile queues, which represent the queue length that would be exceeded only five percent of the time, are reported.

Table 10 presents the projected queues and available storage lengths during near- and far-term scenarios, both with and without the proposed project. The westbound though movement currently has two lanes; the outer lane is 200 feet long, while the inner lane continues back to SR 17. The total amount of storage provided is equivalent to approximately 1,500 feet, or 1,300 feet in the inner lane and 200 feet in the outer lane. The resulting queue lengths for each scenario for the westbound through movement are based on an equivalent single lane queue.

TABLE 10
QUEUING ANALYSIS AT MT. HERMON ROAD/LA MADRONA DRIVE – SR 17 SOUTHBOUND OFF-RAMP

Scenario	Peak Hour	95th percentile Queue Lengths (feet per lane)			
		Northbound		Westbound	
		Left Turn	Right Turn	Left Turn	Through[1]
Storage Length (feet/lane)		*110*	*110*	*200*	*1500*
Existing	AM	**134**	64	151	906

TABLE 10
QUEUING ANALYSIS AT MT. HERMON ROAD/LA MADRONA DRIVE – SR 17 SOUTHBOUND OFF-RAMP

Scenario	Peak Hour	95th percentile Queue Lengths (feet per lane)			
		Northbound		Westbound	
		Left Turn	Right Turn	Left Turn	Through[1]
Storage Length (feet/lane)		*110*	*110*	*200*	*1500*
	PM	81	50	130	918
	SAT	65	41	53	412
Existing plus Project	AM	**161**	68	**214**	906
	PM	**209**	84	**363**	900
	SAT	**220**	88	**339**	402
Mitigated Existing plus Project	AM	**161**	68	**214**	906
	PM	**209**	84	**363**	900
	SAT	**208**	86	**280**	410
Cumulative	AM	**155**	69	174	1,066
	PM	99	55	142	1,360
	SAT	92	50	75	672
Cumulative plus Project	AM	**182**	73	**246**	1,066
	PM	**196**	88	**371**	1,396
	SAT	**234**	95	**383**	728
Mitigated Cumulative plus Project	AM	**184**	73	**260**	920
	PM	**200**	88	**351**	1,132
	SAT	**234**	95	**359**	812

Notes: [1] Westbound through movement, under existing conditions, has two lanes. The outer lane is 200 feet long, the inner lane continues back to SR 17. The storage length and queue lengths presented for this movement are equivalent to a single lane approach with 1,500 feet of storage (1,300 feet in the inner lane plus 200 feet in the outer lane).

Queues that exceed available storage are highlighted in **bold text.**

Based on the queuing analysis presented in Table 10, queues for the northbound left-turn movement are projected to exceed available storage lengths with the project in place under the near-term and cumulative scenarios by up to 125 feet. To accommodate this additional queue, the existing turn pockets would need to be lengthened to approximately 250 feet, which would create a two-lane approach on La Madrona Drive between Altenitas Road and Mt. Hermon Road. The queue for the northbound right-turn is not expected to exceed the existing storage pocket.

For the westbound approach, the queues for the left-turn and through movements were reviewed. The queue for the westbound through movement is not expected to affect operations of the SR 17/El Rancho Drive intersection, SR 17 ramp junction operations, or the SR 17 mainline; however, the queue is expected to extend across the SR 17 overcrossing during all three peak periods. Thus, lengthening the westbound left-turn pocket to provide additional storage will not provide substantial benefit, as vehicles will be queued back beyond the overcrossing, unable to reach the westbound left-turn pocket.

Parking

According to the latest site plan (dated February 13, 2009), the project occupies a total of 142,075 s.f. of floor space, with 116,930 s.f. dedicated to sales areas and 25,145 square feet dedicated to stocking areas. The site plan shows a total of 517 parking spaces.

The City of Scotts Valley Municipal Code (Chapter 17.44.030) requires provision of one parking space for every 250 gross square feet of floor area for retail sales uses, and one parking space per 1,000 square feet of floor area for storage facilities combined with commercial uses.

Requirements from the Institute of Transportation Engineers *Parking Generation*, 3rd Edition (2004) were also compared to ensure adequate on-site parking supply. ITE parking ratios are derived from surveys of similar facilities, and represent the parking demand observed at suburban sites. The average ratios were increased by 15% to convert the demand rates to supplies rates. The 15% circulation factor minimizes vehicle circulation as vehicle search for the last few available spaces. ITE parking demand ratios are provided for both December and non-December peak parking periods. For retail uses, December peaks are associated with the holiday shopping season. **Table 11** presents a comparison between the City of Scotts Valley requirements and ITE for December and non-December peaks.

TABLE 11
PARKING ANALYSIS

Source	Number of Units	Units	Required Supply		Required Supply	Provided Stalls	Supply Adequate (Y/N)?
			Spaces	Per Unit			
City of Scotts Valley Municipal Code- Sales Area	116,930	sf	1	250	468	491	Y
City of Scotts Valley Municipal Code- Stocking Area	25,145	sf	1	1,000	25	25	Y
Total	142,075	sf			493	517	Y
ITE Parking Generation[1]							
December Peak	142,075	sf	1	195	729	517	N
Non-December Peak	142,075	sf	1	316	449	517	Y

Notes: [1] ITE parking ratios are used to calculate peak demand. Ratios were increased by a 15% circulation factor to represent supply to account for circulation requirements.

Based on the City of Scotts Valley parking requirements, the proposed parking supply is considered adequate. ITE parking ratios for the non-December peak period also indicate a parking surplus. The non-

December peak will provide sufficient parking throughout most of the year. The ITE parking ratios for the December peak indicate a 212-space deficit; however, driver tolerance for finding an available space is higher during this period. Without an additional parking supply, some shoppers would not be able to find a space on the site during the peak holiday shopping period. Given the limited parking supply in the surrounding area, the store operator should prepare a parking plan to require store employees to park off-site during the peak holiday shopping period. This may require a use of a temporary shuttle service to transport employees or an agreement with adjacent property owners to provide available spaces.

The City's Municipal Code does not provide bicycle parking requirements, but it is standard practice to provide bicycle parking at a rate of 5% of the provided vehicle parking.[2] This corresponds to parking for 26 bicycles which should be provided as close as possible to the lower level elevator/stair access next to the store entrance.

PEDESTRIAN, BICYCLE, AND TRANSIT

The existing sidewalks and bike lanes on La Madrona Drive and Mt. Hermon Road encourage the use of walking and bicycling as access modes. The number of pedestrians accessing the proposed project site is anticipated to be low because of the limited transit services in the immediate area of the project site and the limited number of nearby homes along with few nearby retail facilities. Therefore, the current pedestrian facilities are considered adequate to accommodate pedestrian circulation. The existing bicycle facilities should also provide adequate service to accommodate bicycles to and from the project site.

The current transit system does not service La Madrona Drive and only provides a limited number of bus routes on Mt. Hermon Road. In addition, no bus stops are provided in the vicinity of the project site on Mt. Hermon Road. The project is expected to generate a limited number of new riders on the transit system. A conservative estimate of five percent of vehicle trips was used to estimate the number of new riders at a maximum of 31 in the peak hour. Routes 35 and SR 17 Express provide service near the project site and operate on 15- to 30-minute headways; thus, no more than 5 riders are expected to utilize any given bus during the peak hour. Therefore, the project would have a less-than-significant impact on the transit system. The site plan should be designed to allow for a future bus stop including bench, shelter or other amenities.

[2] Based on model Bicycle Parking Ordinance from the City of San Jose.

CHAPTER 4. CUMULATIVE CONDITIONS

This chapter discusses Cumulative Conditions, both with and without the proposed project, which represent conditions ten (10) years from Existing Conditions, or year 2018.

CUMULATIVE TRAFFIC VOLUMES

No Project Conditions

Future increases in regional traffic were estimated using forecasts from the travel demand model maintained by the Association of Monterey Bay Area Governments (AMBAG). This model includes land use and roadway network data for Year 2000 and Year 2030 conditions. The AMBAG travel demand model showed a decrease in traffic from 2000 to 2030 along SR 17 during both the AM and PM peak hours. The arterial street segments showed a slight increase of approximately 0.5% to 0.6% annual growth for the AM and PM peak hours. However, to present a conservative analysis, an annual growth factor of 0.6% to the year 2018 (10 years from Existing Conditions) was used to increase existing traffic volumes along the regional facilities of SR 17, Mt. Hermon Road, and Scotts Valley Drive. The annual growth factor of 0.6% was also applied to La Madrona Drive because it continues to the City of Santa Cruz, parallel to SR 17.

The traffic volumes for Cumulative Conditions were estimated by adding existing volumes (with the applied growth rate) and traffic estimates for approved (but not yet constructed) and pending projects in the vicinity of the site. The City of Scotts Valley Planning Department staff provided the list of approved developments (see **Appendix E**). The approved developments analyzed in this study are also consistent with the *Scotts Valley Town Center Specific Plan EIR (2008)*.

Trips from each of the approved projects were estimated and assigned to the roadway network. ITE's *Trip Generation* (7th Edition, 2003) rates were used where available.[3] For specialty retail land uses, San Diego Association of Governments (SANDAG) trip generation rates (2002) were used for the AM peak hour, and a 25% reduction during the PM peak hour was applied to account for pass-by and diverted link trips. These trips represent traffic from people already on the roadway network who visit a project site en route to another destination. Approved and pending project trips were added to existing traffic volumes (with the applied growth rate) and the resulting Cumulative traffic volumes are shown on **Figure 7**.

Plus Project Conditions

The traffic generated by the proposed project, as described in Chapter 3, was added to the Cumulative traffic volumes, and represent Cumulative Plus Project Conditions volumes, presented on **Figure 8**.

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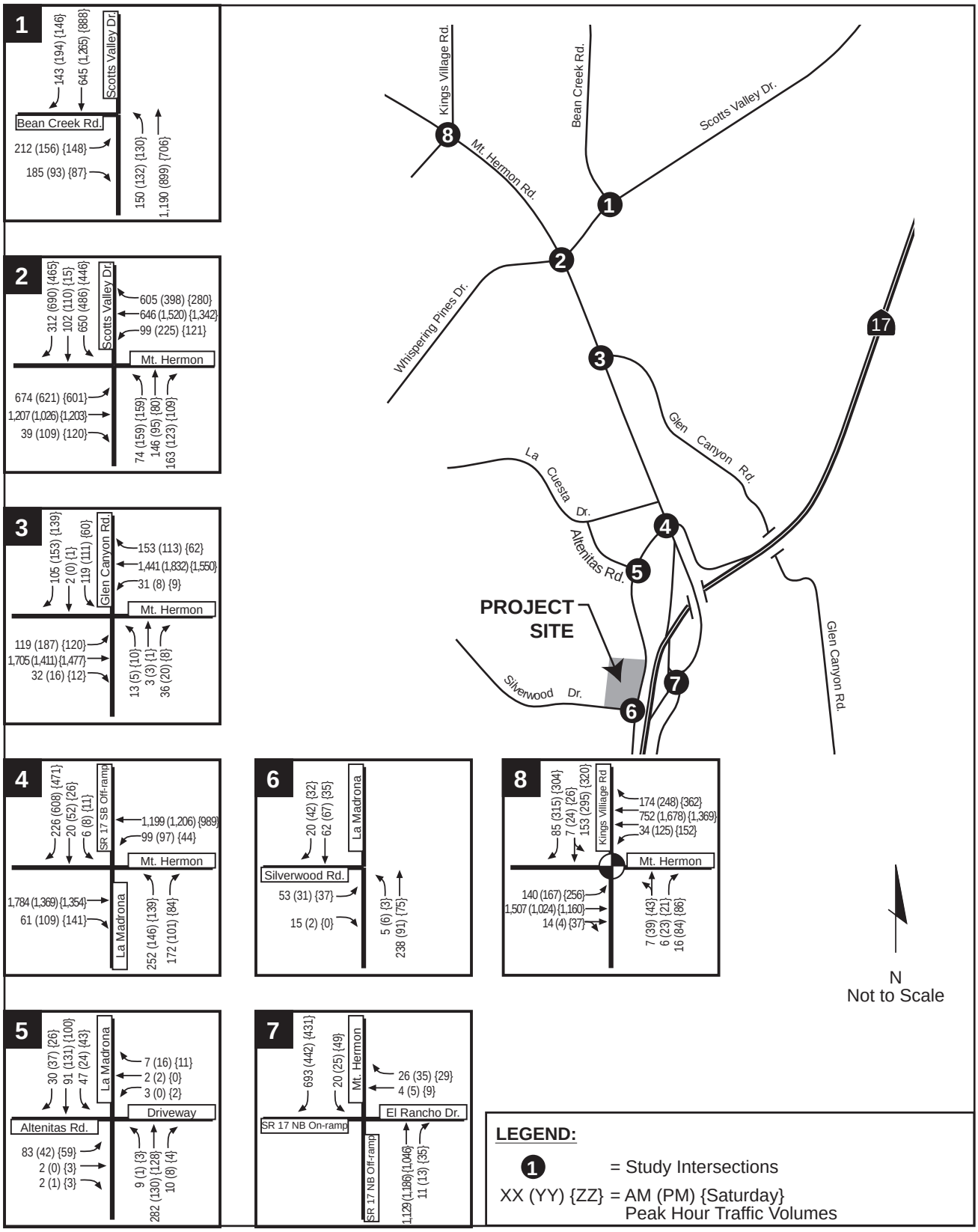
[3] ITE (7th Edition, 2003) rates were used, as this edition was current at the time the Notice of Preparation for the Environmental Impact Report was released. Most trip rates used in the approved and pending project trip generation did not change between the 7th and 8th Editions.



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CUMULATIVE CONDITIONS PEAK-HOUR VOLUMES

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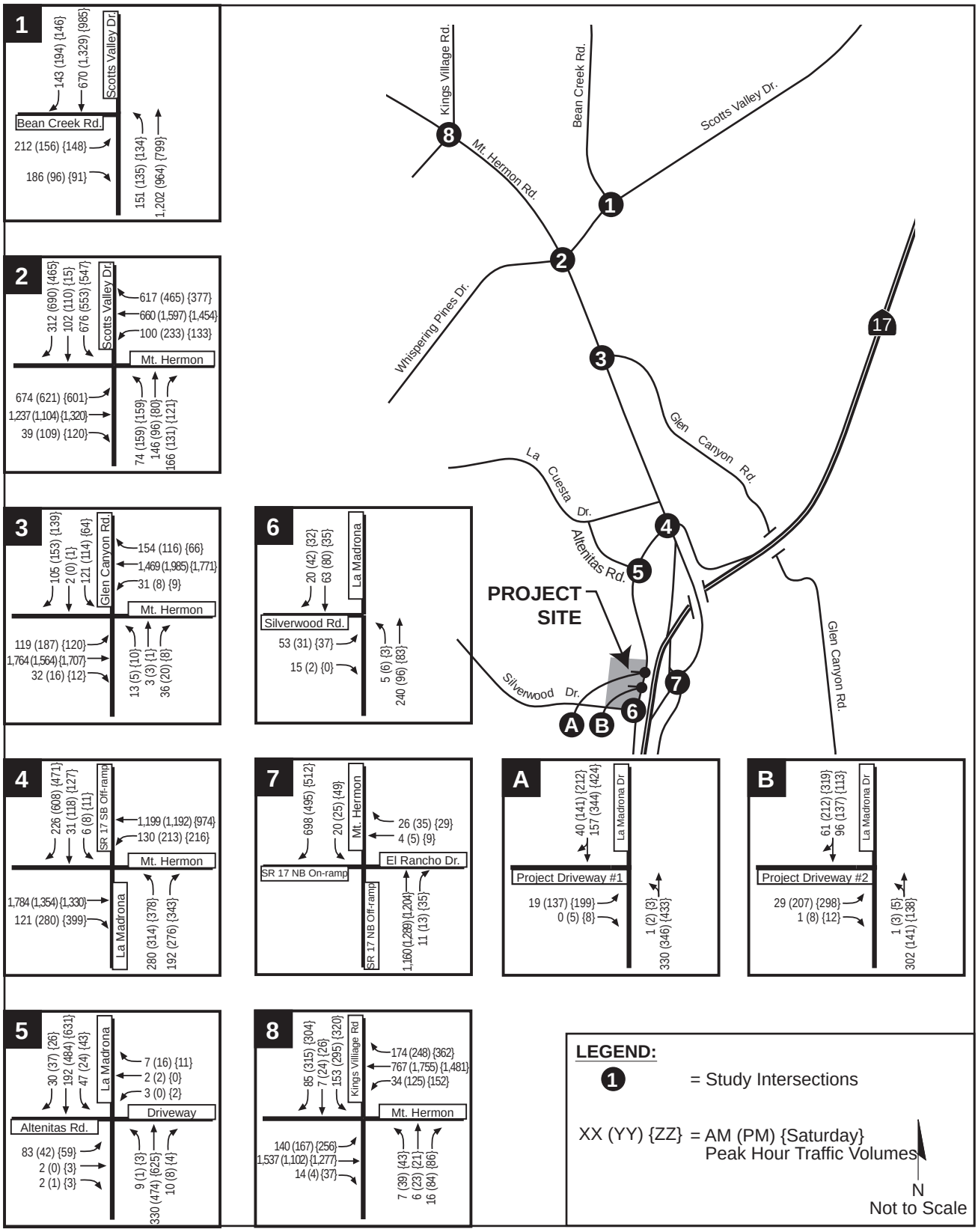
FIGURE 7



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CUMULATIVE PLUS PROJECT PEAK-HOUR VOLUMES

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FIGURE 8

CUMULATIVE ROADWAY IMPROVEMENTS

No planned or funded improvements to study locations were identified for this scenario, so the roadway network is assumed to be the same under Cumulative Conditions as it is under Existing Conditions.

CUMULATIVE INTERSECTION LEVELS OF SERVICE

Levels of service were calculated for all of the study intersections using the Cumulative traffic volumes and the existing intersection lane configurations and traffic control devices. **Table 12** presents the LOS results under Cumulative Conditions for both No Project and Plus Project Conditions. The corresponding LOS calculation sheets are included in **Appendix B**.

Operations at the study intersections of Mt. Hermon Road/Scotts Valley Drive, Mt. Hermon Road/La Madrona Drive-SR 17 Southbound off-ramp, Mt. Hermon Road/Kings Village Road, and Mt. Hermon Road/El Rancho Drive-SR 17 Northbound ramp are projected to degrade to unacceptable levels of service during at least one peak hour under Cumulative Conditions. All of the remaining study intersections are projected to operate at acceptable levels.

The addition of project traffic is projected to degrade operations at these signalized intersections during at least one peak hour:

- Mt. Hermon Road/Scotts Valley Drive
- Mt. Hermon Road/La Madrona Drive-SR 17 Southbound off-ramp
- Mt. Hermon Road/Kings Village Road

Project-added traffic would worsen unacceptable operations at the Mt. Hermon Road/Scotts Valley Drive and Mt. Hermon Road/La Madrona Drive/SR 17 Southbound off-ramp intersections during the AM, PM, and Saturday peak hours. Project-added traffic would also worsen unacceptable intersection operations at Mt. Hermon Road/Kings Village Road during the PM and Saturday. These are considered significant impacts.

The eastbound approach to the La Madrona Drive/Altenitas Road intersection is expected to degrade to unacceptable levels under Cumulative Plus Project Conditions during the AM, PM, and Saturday peak hours. The southbound approach to the Mt. Hermon Road/El Rancho Drive-SR 17 Northbound ramps intersection is projected to degrade from LOS D to LOS E during the PM and Saturday peak hours. These are considered significant impacts.

Cumulative Plus Project Mitigation Measures

Intersection impacts were identified at the Mt. Hermon Road/Scotts Valley Drive, Mt. Hermon Road/La Madrona Drive/SR 17 Southbound off-ramp, and Mt. Hermon Road/Kings Village Road intersections. This section describes possible measures to mitigate the project's impact to these intersections. Mitigated levels of service for the impacted intersections are presented in **Table 13**.

TABLE 12
CUMULATIVE AND CUMULATIVE PLUS PROJECT INTERSECTION LEVELS OF SERVICE

Intersection	Peak Hour	Cumulative Conditions		Cumulative Plus Project Conditions	
		Delay[1]	LOS[2]	Delay[1]	LOS[2]
1. Scotts Valley Drive / Bean Creek Road	AM	22.7	C	22.7	C
	PM	15.3	B	15.3	B
	SAT	15.2	B	15.2	B
2. Mt. Hermon Road / Scotts Valley Drive	AM	59.4	E	**60.3**	**E**
	PM	92.1	F	**101.4**	**F**
	SAT	64.6	E	**88.3**	**F**
3. Mt. Hermon Road / Glen Canyon Road	AM	18.1	B	18.3	B
	PM	25.8	C	29.7	C
	SAT	16.7	B	18.9	B
4. Mt. Hermon Road / La Madrona Drive-SR 17 SB off-ramp	AM	27.6	C	29.1	C
	PM	37.0	D	**49.2**	**D**
	SAT	35.1	D	**60.9**	**E**
5. La Madrona Drive / Altenitas Road[3]	AM	20.9	C	**31.7**	**D**
	PM	12.4	B	**46.0**	**E**
	SAT	12.2	B	**123.9**	**F**
6. La Madrona Drive / Silverwood Road[3]	AM	11.5	B	11.5	B
	PM	9.9	A	10.1	B
	SAT	9.6	A	9.8	A
7. Mt. Hermon Road / El Rancho Drive-SR 17 NB ramp[3]	AM	26.9	D	**28.1**	**D**
	PM	32.0	D	**37.6**	**E**
	SAT	32.4	D	**44.1**	**E**
8. Mt. Hermon Road / Kings Village Road	AM	23.7	C	23.7	C
	PM	38.2	D	**44.5**	**D**
	SAT	40.5	D	**42.0**	**D**

Notes: [1] Average control delay per vehicle in seconds. Delay and LOS at unsignalized intersections are for the worst-case movement.
[2] LOS = Level of service.
[3] Unsignalized intersection
Project impacts highlighted in **bold text.**

Mt. Hermon Road/Scotts Valley Drive

The following improvements reduce delay at the Mt. Hermon Road/Scotts Valley Drive intersection:

- Add second westbound (Mt. Hermon Road) left-turn lane.
- Restripe the northbound (Whispering Pines Drive) approach to provide a separate left-turn, through, and right-turn lanes. Convert split phasing to protected left-turn phasing for the north- and southbound (Whispering Pines Drive – Mt Hermon Road) approaches.

- Add westbound (Mt. Hermon Road) and northbound (Whispering Pines Drive) right-turn overlap phases.

Implementation of the improvements identified above would improve operations to LOS D during the AM peak hour and LOS E during the PM and Saturday analysis periods. However, intersection operations do not meet the City's standard of LOS D for this intersection during the PM and Saturday peak hours; therefore, the project's impacts are significant and unavoidable per the City's impact criteria.

Mt. Hermon Road/La Madrona Drive/SR 17 Southbound off-ramp

The intersection of Mt. Hermon Road/La Madrona Drive/SR 17 Southbound off-ramp is operated by Caltrans, but is within the City's jurisdiction. To mitigate this intersection's impact to a less than significant level, operations must be returned to acceptable levels.

The operations at the Mt. Hermon Road/La Madrona Drive/SR 17 Southbound off-ramp intersection would be improved by making two improvements:

- Add an eastbound right-turn overlap phase on Mt. Hermon Road
- Add a second southbound right-turn lane from the southbound off-ramp.

These improvements would improve operations; however, the intersection is projected to operate at an unacceptable LOS D during the PM and Saturday peak hours. As intersection operations do not meet the standard of LOS C for this intersection, the project's impact to this intersection is significant and unavoidable per the City's impact criteria.

Mt. Hermon Road/Kings Village Road

The following improvement was identified for the Mt. Hermon Road/Kings Village Road intersection to reduce or mitigate the project's impacts:

- Restripe the southbound (Kings Village Road) approach to a left-turn lane and a shared through-right-turn lane.

This improvement reduces the delay at the intersection to acceptable LOS C during the PM peak hour and improves operations during the Saturday peak hour. However, during the Saturday peak hour, the intersection is projected to continue to operate at LOS D. The project's impact at this intersection is considered significant and unavoidable, since the improvements identified do not achieve acceptable operations.

La Madrona Drive/Altenitas Road and Mt. Hermon Road/El Rancho Road-SR 17 Northbound off-ramp

Peak-hour warrants were analyzed for both of the unsignalized intersections of La Madrona Drive/ Altenitas Road and Mt. Hermon Road/El Rancho Road-SR 17 Northbound off-ramp for the AM, PM, and Saturday peak hours under Project Conditions. A review of the *Manual on Uniform Traffic Control Devices* (MUTCD, 2003) traffic signal warrants shows that the peak hour signal warrants are not met, indicating that traffic volumes at these intersections do not meet the minimum peak-hour volume criteria necessary to justify installation of a traffic signal[1] (see Appendix D for calculation sheets). No other feasible mitigation measures were identified, and the project's impacts are considered significant and unavoidable.

TABLE 13
MITIGATED CUMULATIVE CONDITIONS INTERSECTION LEVELS OF SERVICE

Intersection	Peak Hour	Cumulative		Cumulative plus Project		Mitigated Cumulative plus Project	
		Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
2. Mt. Hermon Road / Scotts Valley Drive	AM	**59.4**	**E**	**60.3**	**E**	44.6	D
	PM	**92.1**	**F**	**101.4**	**F**	**79.9**	**E**
	SAT	**64.6**	**E**	**88.3**	**F**	**63.4**	**E**
4. Mt. Hermon Road / La Madrona Drive-SR 17 SB off-ramp	AM	27.6	C	29.1	C	27.4	C
	PM	**37.0**	**D**	**49.2**	**D**	**37.2**	**D**
	SAT	**35.1**	**D**	**60.9**	**E**	**37.9**	**D**
5. La Madrona Drive / Altenitas Road[3]	AM	20.9	C	**31.7**	**D**	S/U[3]	
	PM	12.4	B	**46.0**	**E**	S/U[3]	
	SAT	12.2	B	**123.9**	**F**	S/U[3]	
7. Mt. Hermon Road / El Rancho Drive-SR 17 NB ramp[3]	AM	26.9	D	**28.1**	**D**	S/U[3]	
	PM	32.0	D	**37.6**	**E**	S/U[3]	
	SAT	32.4	D	**44.1**	**E**	S/U[3]	
8. Mt. Hermon Road / Kings Village Road	AM	23.7	C	23.7	C	20.0	B
	PM	**38.2**	**D**	**44.5**	**D**	27.8	C
	SAT	**40.5**	**D**	**42.0**	**D**	**39.7**	**D**

Notes: [1] Average control delay per vehicle in seconds
[2] LOS = Level of service.
[3] S/U = significant and unavoidable project impact.
Unacceptable levels of service highlighted in **bold text.**

CUMULATIVE RAMP JUNCTION LEVELS OF SERVICE

Freeway ramp merge and diverge operations on SR 17 were evaluated at the Mt. Hermon Road interchange using the Cumulative and Cumulative Plus Project conditions. **Table 14** presents the Cumulative Conditions freeway merge/diverge levels of service. All of the freeway LOS calculation worksheets are included in **Appendix C**.

All study locations will operate at acceptable levels of service under Cumulative Conditions, both with and without the proposed project. Thus, the project's cumulative impact to the freeway ramp junctions is considered less-than-significant.

TABLE 14
CUMULATIVE AND CUMULATIVE PLUS PROJECT FREEWAY RAMP JUNCTION LEVELS OF SERVICE

Location and Direction	Peak Hour	Cumulative Conditions		Cumulative Plus Project Conditions	
		Density[1]	LOS[2]	Density[1]	LOS[2]
Mt. Hermon Road Interchange					
Northbound Loop On-ramp	AM	22.3	C	22.4	C
	PM	18.7	B	19.0	B
	SAT	18.1	B	18.4	B
Northbound Slip Off-ramp	AM	26.6	C	26.9	C
	PM	26.0	C	26.8	C
	SAT	26.3	C	27.4	C
Southbound Slip On-ramp	AM	22.9	C	23.0	C
	PM	22.1	C	22.7	C
	SAT	25.2	C	26.0	C
Southbound Slip Off-ramp	AM	17.8	B	17.9	B
	PM	21.2	C	21.5	C
	SAT	22.1	C	22.5	C

Notes: [1] Density = passenger car equivalents per lane mile per hour (pce/ln-mi/hr).
[2] LOS = Level of service.

CHAPTER 5. CUMULATIVE CONDITIONS WITH THE MID-TOWN INTERCHANGE

The City of Scotts Valley's *General Plan* (1993) identifies a future Mid-Town interchange on SR 17 between the Granite Creek Road and Mt. Hermon Road interchanges. This chapter analyzes the impacts of the proposed retail project on the surrounding roadway system with construction of the Mid-Town interchange. The operations of the study intersections and freeway ramp junctions were analyzed under Cumulative (No Project) and Plus Project Conditions with level of service (LOS) calculations.

CUMULATIVE WITH MID-TOWN INTERCHANGE TRAFFIC VOLUMES

No Project Conditions

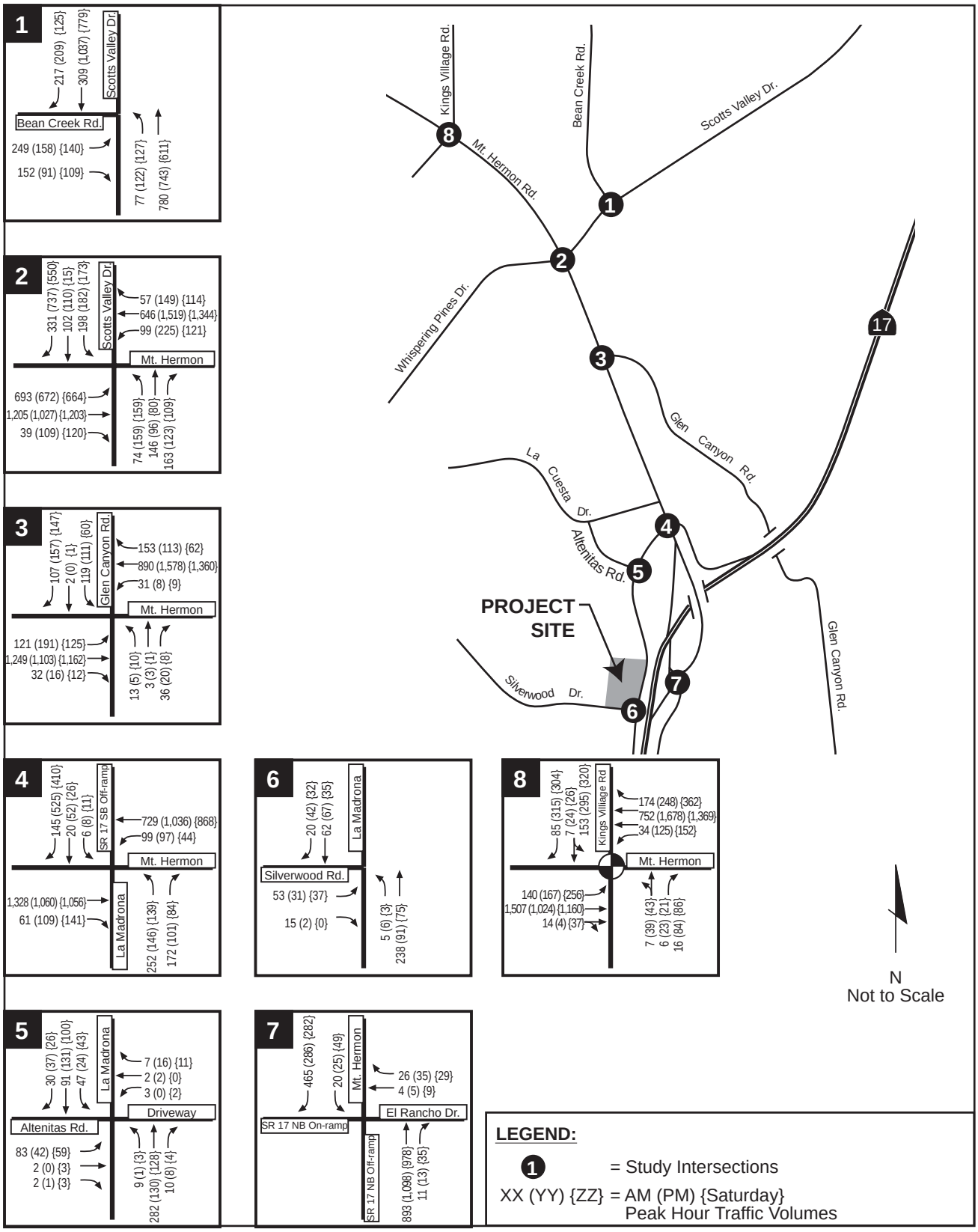
Cumulative Conditions volumes were adjusted to reflect the changes to traffic patterns expected with the construction of the Mid-Town interchange. This interchange is included as a mid-term transportation improvement (action item CA 133) in the City's *General Plan* (1993), and would be located between Mt. Hermon Road and Granite Creek Road on SR 17, connecting El Pueblo Road to Green Hills Road. The interchange is not fully funded, but is evaluated here for informational purposes.

Construction of the Mid-Town interchange would shift some traffic away from the existing interchanges at Mt. Hermon Road and Granite Creek Road. The new freeway access would improve access to the homes and businesses on Scotts Valley Drive in the vicinity of Carbonero Way, and would also likely serve some regional traffic seeking to avoid congestion on Mt. Hermon Road. Some drivers who currently drive eastbound on Mt. Hermon Road to northbound SR 17 might instead turn left to northbound Scotts Valley Drive to access SR 17 via the Mid-Town interchange; however, the eastbound left-turn movement at the Mt. Hermon Road/Scotts Valley Drive intersection is currently near capacity, making this route less desirable. Similarly, the reverse movements (southbound SR 17 to westbound Mt. Hermon Road) would also see a minor shift in traffic as some drivers exit at the new interchange. However, since drivers on Mt. Hermon Road do not experience excessive delays (defined as having to wait through multiple cycles of a signal to clear an intersection), and that Scotts Valley Drive also experiences moderate congestion, the Mid-Town interchange is not expected to cause a substantial shift in travel patterns for regional traffic.

Local traffic, particularly traffic to and from Scotts Valley Drive, would be shifted away from the Mt. Hermon Road and Granite Creek Road interchanges to the new Mid-Town interchange. Traffic volumes for Cumulative Conditions with the Mid-Town Interchange are presented on **Figure 9**.

Plus Project Conditions

Traffic generated by the proposed project was added to the roadway network following the process described in Chapter 3. Given the proximity of the proposed site to the Mt. Hermon interchange, travel patterns of project traffic are not expected to divert to use the proposed the Mid-Town interchange; thus, the trip distribution and assignment presented in Chapter 4 were added to Cumulative (No Project) with Mid-Town Interchange traffic volumes to represent Cumulative Plus Project with Mid-Town Interchange peak-hour volumes, as presented on **Figure 10**.



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CUMULATIVE WITH MID-TOWN INTERCHANGE PEAK-HOUR VOLUMES

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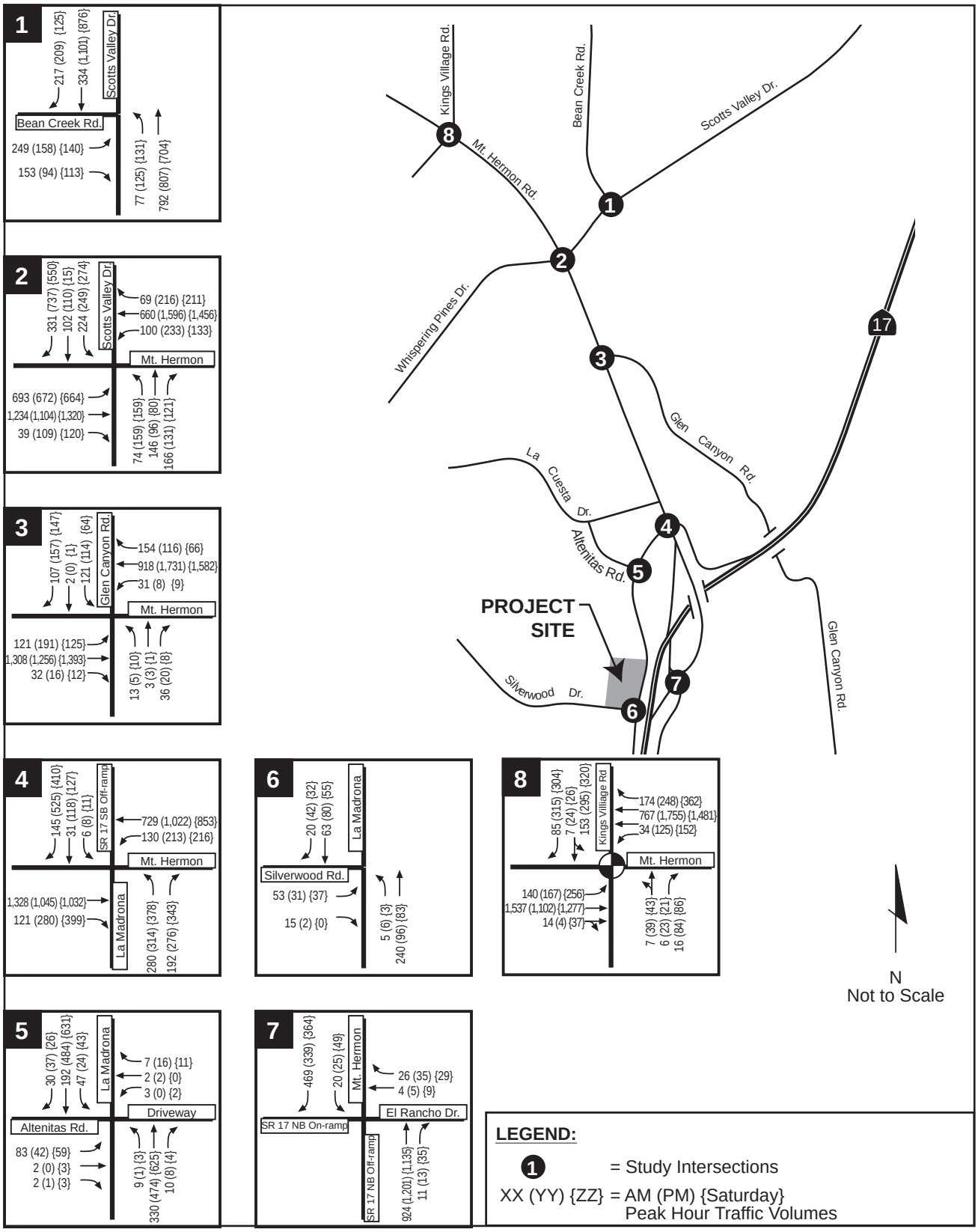
FIGURE 9



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CUMULATIVE PLUS PROJECT WITH MID-TOWN INTERCHANGE PEAK-HOUR VOLUMES

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FIGURE 10

CUMULATIVE WITH MID-TOWN INTERCHANGE INTERSECTION LEVELS OF SERVICE

Intersection LOS calculations were conducted to evaluate intersection operations under Cumulative with Mid-Town Interchange Conditions. The results of the LOS analysis for both Cumulative and Cumulative Plus Project Conditions with the Mid-Town Interchange are summarized in **Table 15**. The corresponding LOS calculation sheets are included in **Appendix B**.

The addition of project traffic is projected to degrade operations at the signalized intersections of Mt. Hermon Road/Scotts Valley Drive, Mt. Hermon Road/La Madrona Drive-SR 17 Southbound off-ramp, and Mt. Hermon Road/Kings Village Road during at least one peak hour. Project-added traffic would worsen operations at these intersections during the AM, PM, and Saturday peak hours. These are considered significant impacts.

The eastbound approach to the La Madrona Drive/Altenitas Road intersection is expected to degrade to unacceptable levels under Cumulative Plus Project Conditions during the AM, PM, and Saturday peak hours. The southbound approach to the Mt. Hermon Road/El Rancho Drive-SR 17 Northbound ramps intersection is projected to degrade by one letter grade during the AM and PM peak hours. These are considered significant impacts.

TABLE 15
CUMULATIVE AND CUMULATIVE PLUS PROJECT WITH MID-TOWN INTERCHANGE INTERSECTION LEVELS OF SERVICE

Intersection	Peak Hour	Cumulative Conditions		Cumulative Plus Project Project Conditions	
		Delay[1]	LOS[2]	Delay[1]	LOS[2]
1. Scotts Valley Drive / Bean Creek Road	AM	23.7	C	23.5	C
	PM	15.3	B	15.4	B
	SAT	15.2	B	15.2	B
2. Mt. Hermon Road / Scotts Valley Drive	AM	60.4	E	**60.1**	**E**
	PM	97.9	F	**103.4**	**F**
	SAT	58.3	E	**74.5**	**E**
3. Mt. Hermon Road / Glen Canyon Road	AM	16.7	B	16.7	B
	PM	23.5	C	24.7	C
	SAT	15.9	B	17.2	C
4. Mt. Hermon Road / La Madrona Drive-SR 17 SB off-ramp	AM	21.0	C	23.0	C
	PM	24.4	C	**36.3**	**D**
	SAT	23.2	C	**41.9**	**D**
5. La Madrona Drive / Altenitas Road[3]	AM	20.9	C	**31.7**	**D**
	PM	12.4	B	**45.8**	**E**
	SAT	12.2	B	**123.5**	**F**
6. La Madrona Drive / Silverwood Road[3]	AM	11.5	B	11.5	B
	PM	9.9	A	10.1	B
	SAT	9.6	A	9.8	A
7. Mt. Hermon Road / El Rancho Drive-SR 17 NB ramp[3]	AM	20.1	C	20.8	C
	PM	28.1	D	**32.7**	**D**
	SAT	28.8	D	**38.3**	**E**

TABLE 15
CUMULATIVE AND CUMULATIVE PLUS PROJECT WITH MID-TOWN INTERCHANGE INTERSECTION LEVELS OF SERVICE

Intersection	Peak Hour	Cumulative Conditions		Cumulative Plus Project Project Conditions	
		Delay[1]	LOS[2]	Delay[1]	LOS[2]
8. Mt. Hermon Road / Kings Village Road	AM	22.5	C	22.5	C
	PM	39.6	D	**46.2**	**D**
	SAT	41.3	D	**45.0**	**D**

Notes: [1] Average control delay per vehicle in seconds. Delay and LOS at unsignalized intersections are for the worst-case movement.
[2] LOS = Level of service.
[3] Unsignalized intersection
Project impacts highlighted in **bold text.**

Cumulative Plus Project Mitigation Measures

Intersection impacts were identified at the Mt. Hermon Road/Scotts Valley Drive and Mt. Hermon Road/La Madrona Drive/SR 17 Southbound off-ramp intersections. This section describes possible measures to mitigate the project's impact to these intersections with the Mid-Town interchange in place. Mitigated levels of service for the impacted intersections are presented in **Table 16**.

Mt. Hermon Road/Scotts Valley Drive

Similar to the scenarios without the Mid-Town interchange, addition of the following improvements would improve operations at the Mt. Hermon Road/Scotts Valley Drive intersection:

- Add second westbound (Mt. Hermon Road) left-turn lane.
- Restripe the northbound (Whispering Pines Drive) approach to provide a separate left-turn, through, and right-turn lanes. Convert split phasing to protected left-turn phasing for the north- and southbound approaches (Whispering Pines Drive – Mt. Hermon Road).
- Add westbound (Mt. Hermon Road) and northbound (Whispering Pines Drive) right-turn overlap phases.

Implementation of the improvements identified above would improve operations to acceptable LOS D or better during the AM and Saturday peak hours and LOS E during the PM analysis period. Since intersection operations do not meet the City's standard of LOS D for this intersection during the PM peak hour, the project's impacts are significant and unavoidable.

Mt. Hermon Road/La Madrona Drive/SR 17 Southbound off-ramp

The intersection of Mt. Hermon Road/La Madrona Drive/SR 17 Southbound off-ramp is operated by Caltrans, but is within the City's jurisdiction. To mitigate this intersection's impact to a less than significant level, operations must be returned to acceptable levels.

Unlike the scenarios without the Mid-Town interchange, the impacts at the Mt. Hermon Road/La Madrona Drive/SR 17 Southbound off-ramp intersection could be mitigated by implementing both of the improvements below:

- Add an eastbound right turn overlap phase on Mt. Hermon Road.
- Add a second southbound right-turn lane from the Southbound off-ramp.

These improvements would reduce Cumulative Plus Project Conditions delay to acceptable levels during the AM, PM, and Saturday peak hours. With the above mitigation measures, the project's impact to this intersection is considered less-than-significant.

Mt. Hermon Road/Kings Village Road

The following mitigation measure was identified for the Mt. Hermon Road/Kings Village Road intersection to reduce or mitigate the project's impacts:

- Restripe the southbound (Kings Village Road) approach to a left-turn lane and a shared through-right-turn lane.

This improvement reduces the delay at the intersection to acceptable LOS C during the AM and PM peak hours and reduces the delay during the Saturday peak hour. The project's impact at this intersection is considered significant and unavoidable, since the improvements identified do not achieve acceptable LOS C operations during the Saturday peak hour.

La Madrona Drive/Altenitas Road and Mt. Hermon Road/El Rancho Road-SR 17 Northbound off-ramp

Peak-hour warrants were analyzed for both of these intersections for the AM, PM, and Saturday peak hours under Project Conditions. A review of the *Manual on Uniform Traffic Control Devices* (MUTCD, 2003) traffic signal warrants shows that the peak hour signal warrants are not met, indicating that traffic volumes at these intersections do not meet the minimum peak-hour volume criteria necessary to justify installation of a traffic signal[1] (see Appendix D for calculation sheets). No other feasible mitigation measures were identified, and the project's impacts are considered significant and unavoidable.

TABLE 16
MITIGATED MID-TOWN INTERCHANGE CONDITIONS INTERSECTION LEVELS OF SERVICE

Intersection	Peak Hour	Cumulative		Cumulative Plus Project		Mitigated Cumulative Plus Project	
		Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
2. Mt. Hermon Road / Scotts Valley Drive	AM	**60.4**	**E**	**60.1**	**E**	34.2	C
	PM	**97.9**	**F**	**103.4**	**F**	**61.0**	**E**
	SAT	**58.3**	**E**	**74.5**	**E**	51.3	D
4. Mt. Hermon Road / La Madrona Drive-SR 17 SB off-ramp	AM	21.0	C	23.0	C	22.2	C
	PM	24.4	C	**36.3**	**D**	29.4	C
	SAT	23.2	C	**41.9**	**D**	30.6	C
5. La Madrona Drive / Altenitas Road	AM	20.9	C	**31.7**	**D**	S/U[3]	
	PM	12.4	B	**45.8**	**E**	S/U[3]	
	SAT	12.2	B	**123.5**	**F**	S/U[3]	

TABLE 16
MITIGATED MID-TOWN INTERCHANGE CONDITIONS INTERSECTION LEVELS OF SERVICE

Intersection	Peak Hour	Cumulative		Cumulative Plus Project		Mitigated Cumulative Plus Project	
		Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
7. Mt. Hermon Road / El Rancho Drive-SR 17 NB ramp	AM	20.1	C	20.8	C	N/A	
	PM	**28.1**	**D**	**32.7**	**D**	S/U[3]	
	SAT	**28.8**	**D**	**38.3**	**E**	S/U[3]	
8. Mt. Hermon Road / Kings Village Road	AM	22.5	C	22.5	C	22.2	C
	PM	**39.6**	**D**	**46.2**	**D**	30.4	C
	SAT	**41.3**	**D**	**45.0**	**D**	**38.8**	**D**

Notes: [1] Average control delay per vehicle in seconds.
[2] LOS = Level of service.
[3] S/U = significant and unavoidable project impact.Unacceptable levels of service highlighted in **bold text.**

CUMULATIVE RAMP JUNCTION LEVELS OF SERVICE

Table 17 presents the freeway ramp junction levels of service for Cumulative and Cumulative Plus Project Conditions with the Mid-Town interchange. All ramps are projected to continue operating at the same level of service as under Cumulative Conditions. Thus, the project's impact to the freeway ramp junctions is considered less-than-significant.

TABLE 17
CUMULATIVE AND CUMULATIVE PLUS PROJECT FREEWAY RAMP JUNCTION LEVELS OF SERVICE

Location and Direction	Peak Hour	Cumulative		Cumulative Plus Project	
		Density[1]	LOS[2]	Density[1]	LOS[2]
Mt. Hermon Road Interchange					
Northbound Loop On-ramp	AM	22.3	C	22.3	C
	PM	18.7	B	19.0	B
	SAT	18.1	B	18.4	B
Northbound Slip Off-ramp	AM	26.6	C	26.9	C
	PM	26.0	C	26.8	C
	SAT	26.3	C	27.4	C
Southbound Slip On-ramp	AM	22.9	C	23.0	C
	PM	22.1	C	22.7	C
	SAT	25.2	C	26.0	C
Southbound Slip Off-ramp	AM	17.8	B	17.9	B
	PM	21.2	C	21.5	C
	SAT	22.1	C	22.5	C

Notes: [1] Density = passenger car equivalents per lane mile per hour (pce/ln-mi/hr).
[2] LOS = Level of service.

CHAPTER 6. ALTERNATIVE PROJECT SITE

This chapter analyzes the potential impacts of locating the proposed project at an alternative site, on the east side of SR 17 on Santa's Village Road just north of the existing Enterprise Technology Center. The alternative proposed project site and project study area are presented on **Figure 11**. Four study intersections were identified and levels of service were evaluated for each location. Additionally, ramp junction levels of service (LOSs) at the Granite Creek Road interchange and the Santa's Village Road northbound hook ramps were evaluated. LOS calculations were completed for the same analysis scenarios as for the proposed project site on La Madrona Drive.

Intersections

1. Scotts Valley Drive / Granite Creek Road
2. Scotts Valley Drive / SR 17 Southbound Ramps
3. Granite Creek Road – SR 17 Northbound Ramps / Santa's Village Road
4. Santa's Village Road / SR 17 Northbound Hook Ramps

Freeway Ramp Junctions

1. SR 17 / Granite Creek Road interchange
2. SR 17 / Santa's Village Road northbound interchange

The study locations were evaluated for the weekday AM (7:00 – 9:00) and PM (4:00 – 6:00) peak periods, both with and without the proposed project. Saturday conditions were not analyzed for the alternative site, since all the study intersections operate acceptably for weekday conditions. It is expected that Saturday operations would be better than those during weekday conditions; thus, no additional impacts are anticipated for the Saturday peak hour. Operations were also evaluated with a new Mid-Town interchange on SR 17, which would alter traffic volumes and distribution patterns in the study area. The project is also expected to have the same effect on operations (as described in Chapters 4 and 5) at the Kings Village Drive/Mount Hermon Road intersection.

EXISTING CONDITIONS

Existing Traffic Volumes

Intersection and freeway ramp operations were evaluated during weekday AM and PM peak traffic conditions. A peak period traffic count was conducted in March 2009 at the unsignalized study intersection of Santa's Village Road / SR 17 Northbound Ramps. Recent traffic counts for the signalized study intersections were obtained from the City of Scotts Valley. The new peak hour counts are contained in Appendix A. The highest one-hour total or peak-hour traffic volume at each study intersection is shown on **Figure 12**.

Existing Levels of Service

Intersections

The existing lane configurations and the peak-hour turning movement volumes on **Figure 12** were used to calculate the levels of service for each of the four study intersections during the AM and PM peak periods. The results of the existing LOS analysis are presented in **Table 18** and the corresponding calculation sheets are contained in **Appendix B**. The unsignalized intersection of Santa's Village Road

and SR 17 Northbound hook ramps is an all-way stop controlled intersection. The LOS method for this type of intersection calculates the average control delay of all movements and correlates it to a LOS based on the delay ranges in Table 2.

TABLE 18
ALTERNATIVE SITE – EXISTING INTERSECTION LEVELS OF SERVICE

Intersection	Type of Control	Count Date	Peak Hour	Delay[1]	LOS[2]
1. Scotts Valley Drive / Granite Creek Road	Signal	9/26/2006 9/26/2006	AM PM	21.6 18.8	C B
2. Scotts Valley Drive / SR 17 Southbound Ramps	Signal	9/26/2006 9/26/2006	AM PM	24.0 20.1	C C
3. Granite Creek Road-SR 17 Northbound Ramps/Santa's Village Road	Signal	9/26/2006 9/26/2006	AM PM	27.2 24.4	C C
4. Santa's Village Road/SR 17 Northbound Hook Ramps	All-Way Stop	3/24/2009 3/24/2009	AM PM	7.2 7.2	A A

Notes: [1]Average control delay per vehicle in seconds
[2] LOS = Level of service.
Unacceptable levels of service are indicated in **bold**.

The results indicate that all of the intersections are operating at acceptable levels during both peak hours.

Freeway Ramp Junctions

Freeway ramp merge or diverge operations on SR 17 were evaluated at the Granite Creek Road and Santa's Village Road interchanges since these will be primary access points for project-generated traffic. The analysis evaluates ramp operations where they connect with the mainline freeway, either as a merge or a diverge section. SR 17 has two travel lanes in each direction in the vicinity of the alternative project site. **Table 19** presents the existing freeway ramp junction merge/diverge levels of service. The LOS calculation worksheets are included in **Appendix C**. All ramps operate acceptably at LOS C or better during the peak hours.

TABLE 19
ALTERNATIVE SITE – EXISTING CONDITIONS RAMP JUNCTION LEVELS OF SERVICE

Location and Direction	Peak Hour	Density[1]	LOS[2]
SR 17/Granite Creek Road Interchange			
Northbound Slip On-ramp	AM PM	20.8 17.4	C B
Northbound Slip Off-ramp	AM PM	24.1 19.4	C B
Southbound Slip On-ramp	AM PM	14.0 16.6	B B

TABLE 19
ALTERNATIVE SITE – EXISTING CONDITIONS RAMP JUNCTION LEVELS OF SERVICE

Location and Direction	Peak Hour	Density[1]	LOS[2]
Southbound Slip Off-ramp	AM PM	15.3 18.7	B B
SR 17/Santa's Village Road Interchange			
Northbound Slip Off-ramp	AM PM	21.3 17.6	C B
Northbound Slip On-ramp	AM PM	17.3 14.6	B B

Notes: [1] Density = passenger car equivalents per lane mile per hour (pce/ln-mi/hr).
[2] LOS = Level of service.

EXISTING PLUS PROJECT CONDITIONS

The impacts of the proposed retail development on an alternative site on the surrounding roadway system are discussed in this section. A similar process was used to assign project traffic to the adjacent roadway network as under the La Madrona Drive site analysis. This section describes the operations of the study intersections and freeway ramps with LOS calculations, and project impacts are identified by comparing the LOS results under Project Conditions to those under Existing Conditions.

Project Description and Project Conditions Traffic Volumes

The project description and trip generation estimates are assumed to be the same for the Santa's Village Road alternative site as the La Madrona Drive site. The project trip distribution patterns were defined for the alternative site location as shown on **Figure 13**. The distribution pattern was generally assumed to be the same as that analyzed for the La Madrona Drive site for regional traffic; local traffic distribution was revised to account for relative locations of complementary land uses and existing travel patterns. The project trips were then assigned to the roadway system based on the directions of approach and departure shown on **Figure 13**.

Project-generated trips for both peak hours were added to existing traffic volumes to estimate total volumes under Project Conditions. The project trip assignment and Existing Plus Project traffic volumes are presented on **Figure 13**.

Existing Plus Project Intersection Levels of Service

Levels of service were calculated for all of the study intersections using the Existing Plus Project traffic volumes and the existing intersection lane configurations and traffic control devices. **Table 20** presents the LOS results under Existing Conditions, both without and with the proposed project. The corresponding LOS calculation sheets are included in **Appendix B**.

Operations of the study intersections are projected to continue to operate at acceptable levels under Project conditions, with the exception of Granite Creek Road/SR17 Northbound Ramps/Santa's Village Road which degrades to unacceptable LOS E during the PM peak hour. This is considered a significant project impact.

TABLE 20
ALTERNATIVE SITE – PROJECT CONDITIONS INTERSECTION LEVELS OF SERVICE

Intersection	Type of Control	Peak Hour	Existing Conditions		Project Conditions	
			Delay[1]	LOS[2]	Delay[1]	LOS[2]
1. Scotts Valley Drive / Granite Creek Road	Signal	AM PM	21.6 18.8	C B	23.5 25.7	C C
2. Scotts Valley Drive / SR 17 Southbound Ramps	Signal	AM PM	24.0 20.1	C C	24.1 22.4	C C
3. Granite Creek Road-SR 17 Northbound Ramps/Santa's Village Road	Signal	AM PM	27.2 24.4	C C	28.5 **62.6**	C **E**
4. Santa's Village Road/SR 17 Northbound Hook Ramps	All-Way Stop	AM PM	7.2 7.2	A A	7.7 11.1	A B

Notes: [1]Average control delay per vehicle in seconds.
[2] LOS = Level of service.
Significant impacts are indicated in **bold**.

Existing Plus Project Mitigation Measures

An intersection impact was identified at the Granite Creek Road/Santa's Village/SR 17 Northbound Ramp intersection for the PM peak hour. The following improvements were identified for the Granite Creek Road/Santa's Village/SR 17 Northbound Ramp intersection to mitigate the project's impacts:

- Restripe the southbound (Santa's Village Road) approach to provide a shared right-turn/through lane and a separate left-turn lane. Convert split phasing to protected left-turn phasing for the north- and southbound (Granite Creek Road – Santa's Village Road) approaches.

With the addition of these improvements, the intersection is projected to operate at acceptable levels with 32.9 seconds of delay during the PM peak hour. These improvements mitigate the project's impacts to a less-than-significant level. The feasibility of truck turning maneuvers was evaluated to verify this improvement is possible. The truck turn template diagram and conceptual design are presented in Appendix F.

CUMULATIVE CONDITIONS

Cumulative Conditions, both without and with the proposed project, representing conditions ten (10) years from Existing Conditions, or approximately year 2018, are described in this section.

Cumulative Traffic Volumes

Cumulative traffic volumes were estimated using a similar process as described in Chapter 3. An annual growth rate of 0.6%, determined from the Association of Monterey Bay Area Governments (AMBAG) regional travel demand model were applied to regional roadway facilities, including SR 17, Granite Creek Road, and Scotts Valley Drive. In addition, traffic estimates for approved (but not yet constructed) projects in the vicinity of the site were added to the Existing plus regional growth traffic volumes. The approved

developments analyzed in this study are consistent with the *Scotts Valley Town Center Specific Plan EIR (2008).* The resulting Cumulative traffic volumes are shown on **Figure 12**.

Traffic volumes under Cumulative Conditions with the proposed project were determined by adding the Cumulative traffic volumes and the project trip assignment (from Figure 13), as shown on **Figure 14**.

Cumulative Roadway Improvements

No planned or funded improvements to study locations were identified for this scenario, so the roadway network is assumed to be the same under Cumulative Conditions as it is under Existing Conditions.

Cumulative Intersection Levels of Service

Levels of service were calculated for all of the study intersections using the Cumulative traffic volumes and the existing intersection lane configurations and traffic control devices. **Table 21** presents the LOS results under Cumulative Conditions, both without and with the proposed project. The corresponding LOS calculation sheets are included in **Appendix B**.

TABLE 21
ALTERNATIVE SITE – CUMULATIVE INTERSECTION LEVELS OF SERVICE

Intersection	Type of Control	Peak Hour	Cumulative		Cumulative Plus Project	
			Delay[1]	LOS[2]	Delay[1]	LOS[2]
1. Scotts Valley Drive / Granite Creek Road	Signal	AM PM	20.0 27.0	C C	21.0 36.3	C D
2. Scotts Valley Drive / SR 17 Southbound Ramps	Signal	AM PM	23.1 26.3	C C	23.3 27.9	C C
3. Granite Creek Road-SR 17 Northbound Ramps/Santa's Village Road	Signal	AM PM	28.5 33.3	C C	32.1 **53.5**	C **D**
4. Santa's Village Road/SR 17 Northbound Hook Ramps	All-Way Stop	AM PM	7.2 7.5	A A	7.6 10.8	A B

Notes: [1]Average control delay per vehicle in seconds.
[2] LOS = Level of service.
Significant impacts are indicated in **bold**.

Operations of the study intersections are projected to continue to operate at acceptable levels under Cumulative Conditions, with the exception of Granite Creek Road/SR 17 Northbound Ramps/Santa's Village Road. The addition of project traffic is projected to degrade operations at the Granite Creek Road/Santa's Village/SR 17 Northbound Ramp intersection to unacceptable LOS D during the PM peak hour. ***This is considered a significant project impact.***

<u>Queuing Analysis</u>

A queuing analysis was completed at the all-way stop controlled Santa's Village Road/SR 17 Northbound Hook Ramp intersection to review possible queuing impacts on the SR 17 freeway operations. The results showed that, based on the projected traffic volumes and available gaps, no more than two

vehicles are estimated to be queued on any one approach during the AM or PM peak hours. Additionally, SimTraffic results were reviewed qualitatively to confirm the results of the queuing calculations, and no significant vehicular queues were observed. Queuing calculations are included in **Appendix D**.

Cumulative Ramp Junction Levels of Service

Freeway ramp merge and diverge operations on SR 17 were evaluated at the Granite Creek Road and Santa's Village Road interchanges using the Cumulative traffic volumes. **Table 22** presents the Cumulative Conditions freeway ramp merge/diverge levels of service. The LOS calculation worksheets are included in **Appendix C**. All study locations will operate at acceptable levels of service under Cumulative Conditions.

TABLE 22
ALTERNATIVE SITE – CUMULATIVE RAMP JUNCTION LEVELS OF SERVICE

Location and Direction	Peak Hour	Cumulative Conditions		Cumulative Plus Project Conditions	
		Density[1]	LOS[2]	Density[1]	LOS[2]
SR 17/Granite Creek Road Interchange					
Northbound Slip On-ramp	AM	21.6	C	22.0	C
	PM	18.2	B	19.0	B
Northbound Slip Off-ramp	AM	25.1	C	25.4	C
	PM	20.6	C	21.5	C
Southbound Slip On-ramp	AM	14.7	B	14.8	B
	PM	17.8	B	18.6	B
Southbound Slip Off-ramp	AM	15.9	B	16.0	B
	PM	19.5	B	19.8	B
SR 17/Santa's Village Road Interchange					
Northbound Slip Off-ramp	AM	17.7	B	17.7	B
	PM	15.6	B	15.6	B
Northbound Slip On-ramp	AM	22.3	C	22.6	C
	PM	18.4	B	19.3	B

Notes: [1] Density = passenger cars per lane mile per hour (pc/mi/hr).
[2] LOS = Level of service.

Cumulative Plus Project Mitigation Measures

An intersection impact was identified at the Granite Creek Road/Santa's Village/SR 17 Northbound Ramp intersection for the PM peak hour. This section identifies improvements to mitigate the project's impact to this intersection.

The following two improvements were identified for the Granite Creek Road/Santa's Village/SR 17 Northbound Ramp intersection:

- Restripe the southbound (Santa's Village Road) approach to provide a shared right-turn and through lane, and a separate left-turn lane. Convert split phasing to protected left-turn phasing for the north- and southbound (Granite Creek Road – Santa's Village Road) approaches.

- Add northbound (Granite Creek Road) right-turn overlap phases.

With the addition of these improvements, the intersection is projected to operate at acceptable levels with 32.2 seconds of delay for the AM peak hour, but still operate at an unacceptable level of service with 43.0 seconds of delay for the PM peak hour. To fully mitigate the project's impact, the following mitigation measure was identified:

- Restripe the southbound (Santa's Village Road) approach to provide a shared right-turn/through lane, and a shared left-turn/through lane and maintain split phasing for the north- and southbound (Granite Creek Road – Santa's Village Road) approaches.

With the addition of these improvements, the intersection is projected to operate at acceptable levels for both peak-hours with 33.7 seconds and 29.9 seconds of delay. These improvements mitigate the project's impacts to a less-than-significant level.

No significant impacts were identified for the SR 17 ramp junctions, thus no mitigation measures are proposed for these facilities.

CUMULATIVE CONDITIONS WITH MID-TOWN INTERCHANGE

As described in Chapter 5, the City of Scotts Valley's *General Plan* (1993) identifies a future Mid-Town interchange on SR 17 between the Granite Creek Road and Mt. Hermon Road interchanges. This section describes operations of the study intersections and freeway ramp junctions with the Mid-Town interchange in place.

Cumulative with Mid-Town Interchange Traffic Volumes

Construction of this interchange would shift some traffic away from the existing interchanges at Mt. Hermon Road and Granite Creek Road. Some drivers who currently drive northbound on Scotts Valley Drive to Granite Creek Road and SR 17 might instead access SR 17 from the Mid-Town interchange. Local traffic, particularly traffic to and from Scotts Valley Drive, would be shifted away from the Mt. Hermon Road and Granite Creek Road interchanges to the new Mid-Town interchange. Traffic volumes for Cumulative Conditions with the Mid-Town Interchange are presented on **Figure 12**.

Cumulative Plus Project with Mid-town Interchange Traffic Volumes

Traffic generated by the proposed project on the alternative site was added to the roadway network following the process described above. Given the proximity of the alternative site to the Granite Creek interchange, travel patterns of project traffic are not expected to divert to use the proposed the Mid-Town interchange; thus, the trip distribution and assignment presented earlier in this chapter were added to Cumulative (No Project) with Mid-Town Interchange traffic volumes to represent Cumulative Plus Project with Mid-Town Interchange peak-hour volumes, as presented on **Figure 14**.

Cumulative with Mid-Town Interchange Intersection Levels of Service

Intersection LOS calculations were conducted to evaluate intersection operations under Cumulative and Cumulative Plus Project conditions with the Mid-Town Interchange. The results of the LOS analysis for both scenarios with the Mid-Town Interchange are summarized in **Table 23**. The corresponding LOS calculation sheets are included in **Appendix B**.

The addition of project traffic is projected to degrade operations at the Granite Creek Road/Santa's Village/SR 17 Northbound Ramp intersection to unacceptable LOS D. This is considered a significant

project impact. The remaining intersections are projected to operate at acceptable levels under Project conditions.

TABLE 23
ALTERNATIVE SITE – CUMULATIVE WITH MID-TOWN INTERCHANGE
INTERSECTION LEVELS OF SERVICE

Intersection	Type of Control	Peak Hour	Cumulative with Mid-Town		Cumulative Plus Project with Mid-Town	
			Delay[1]	LOS[2]	Delay[1]	LOS[2]
1. Scotts Valley Drive / Granite Creek Road	Signal	AM PM	18.5 26.8	B C	19.2 32.2	B C
2. Scotts Valley Drive / SR 17 Southbound Ramps	Signal	AM PM	22.0 26.4	C C	22.1 28.4	C C
3. Granite Creek Road-SR 17 Northbound Ramps/Santa's Village Road	Signal	AM PM	28.3 29.6	C C	32.2 **43.9**	C **D**
4. Santa's Village Road/SR 17 Northbound Hook Ramps	All-Way Stop	AM PM	7.2 7.5	A A	7.6 10.8	A B

Notes: [1]Average control delay per vehicle in seconds.
[2] LOS = Level of service.
Significant impacts are indicated in **bold**.

Queuing Analysis

As described in the Cumulative Plus Project Conditions section for the Santa's Village alternative site, a queuing analysis was completed at the all-way stop controlled Santa's Village Road/SR 17 Northbound Hook Ramp intersection to review possible queuing impacts on the SR 17 freeway operations. As traffic volumes at the Santa's Village Road/SR 17 Northbound Hook Ramp intersection are not expected to change with construction of the Mid-Town interchange, the queuing analysis described previously is applicable to the Mid-Town interchange scenario as well.

Cumulative Plus Project Ramp Junction Levels of Service

Table 24 presents the freeway ramp junction levels of service for Cumulative and Cumulative Plus Project Conditions. All ramps are projected to continue operating at acceptable levels. Thus, the project's impact to the freeway ramp junctions is considered less-than-significant.

TABLE 24
ALTERNATIVE SITE – CUMULATIVE WITH MID-TOWN INTERCHANGE RAMP JUNCTION LEVELS OF SERVICE

Location and Direction	Peak Hour	Cumulative with Mid-Town Interchange Conditions		Cumulative Plus Project with Mid-Town Interchange Conditions	
		Density[1]	LOS[2]	Density[1]	LOS[2]

TABLE 24
ALTERNATIVE SITE – CUMULATIVE WITH MID-TOWN INTERCHANGE RAMP JUNCTION LEVELS OF SERVICE

Location and Direction	Peak Hour	Cumulative with Mid-Town Interchange Conditions		Cumulative Plus Project with Mid-Town Interchange Conditions	
		Density[1]	LOS[2]	Density[1]	LOS[2]
SR 17/Granite Creek Road Interchange					
Northbound Slip On-ramp	AM	21.6	C	22.0	C
	PM	18.2	B	19.0	B
Northbound Slip Off-ramp	AM	25.0	C	25.4	C
	PM	20.5	C	21.4	C
Southbound Slip On-ramp	AM	14.6	B	14.8	B
	PM	17.8	B	18.6	B
Southbound Slip Off-ramp	AM	15.9	B	16.0	B
	PM	19.5	B	19.8	B
SR 17/Santa's Village Road Interchange					
Northbound Slip Off-ramp	AM	17.7	B	17.7	B
	PM	15.6	B	15.6	B
Northbound Slip On-ramp	AM	22.3	C	22.6	C
	PM	18.4	B	19.3	B

Notes: [1] Density = passenger car equivalents per lane mile per hour (pce/ln-mi/hr).
[2] LOS = Level of service.

Cumulative Plus Project Mitigation Measures

An intersection impact was identified at the Granite Creek Road/Santa's Village/SR 17 Northbound Ramp intersection. This section describes improvements to mitigate the project's impact to this intersection:

- Restripe the southbound (Santa's Village Road) approach to provide a shared right-turn and through lane, and a separate left-turn lane. Convert split phasing to protected left-turn phasing for the north- and southbound (Granite Creek Road – Santa's Village Road) approaches.

- Add northbound (Granite Creek Road) right-turn overlap phases.

With the addition of these improvements, the intersection is projected to operate at acceptable levels with 31.2 seconds of delay for the AM peak-hour and 33.5 seconds of delay for the PM peak-hour. With these improvements, the project's impact is considered less-than-significant.

No significant impacts were identified for the SR 17 ramp junctions, thus no mitigation measures are proposed for these facilities.

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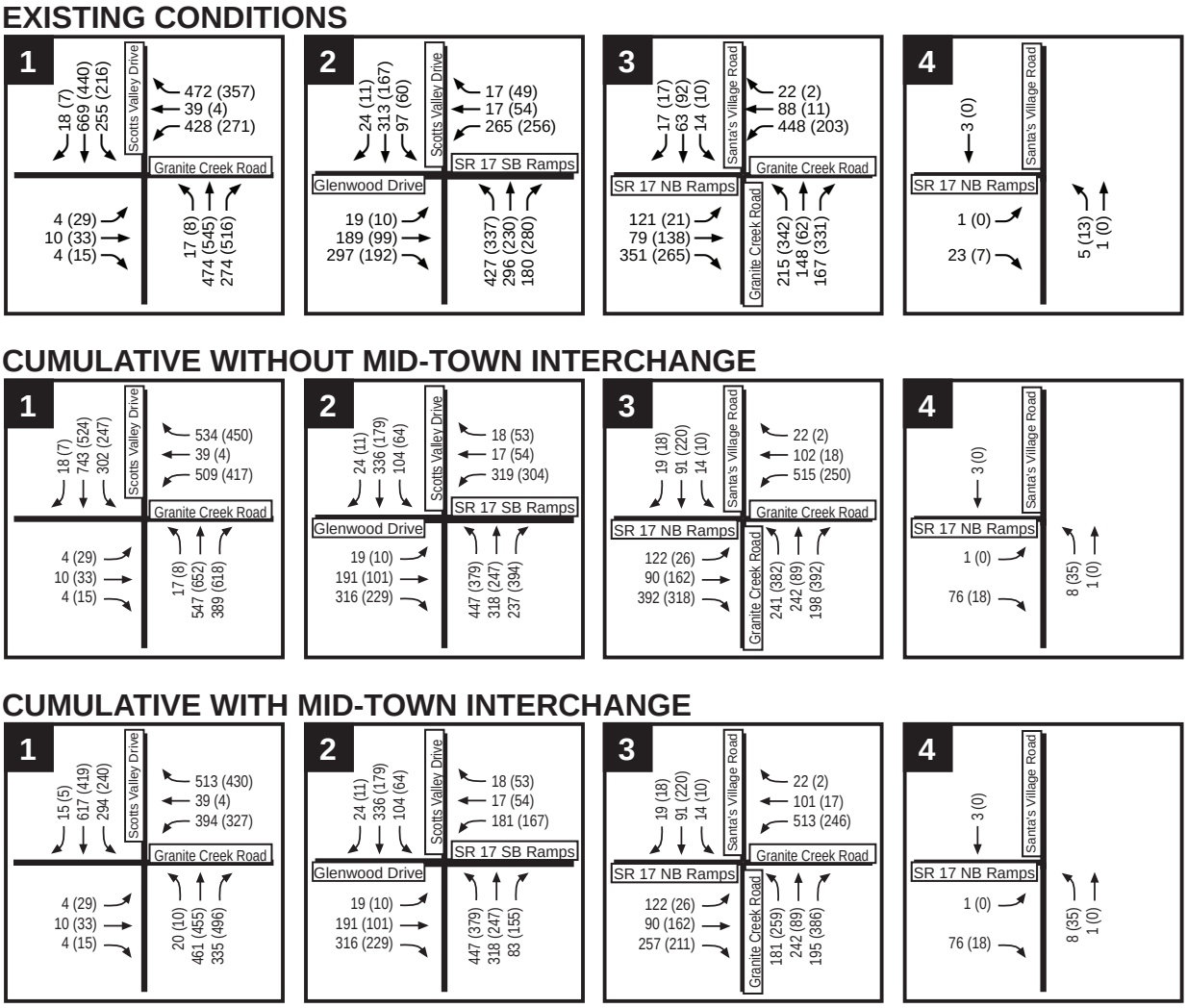
ALTERNATIVE PROJECT SITE LOCATION AND STUDY INTERSECTIONS

FIGURE 11

March 2009
SJ07-980



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ALTERNATIVE SITE NO PROJECT PEAK-HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, AND TRAFFIC CONTROL DEVICES

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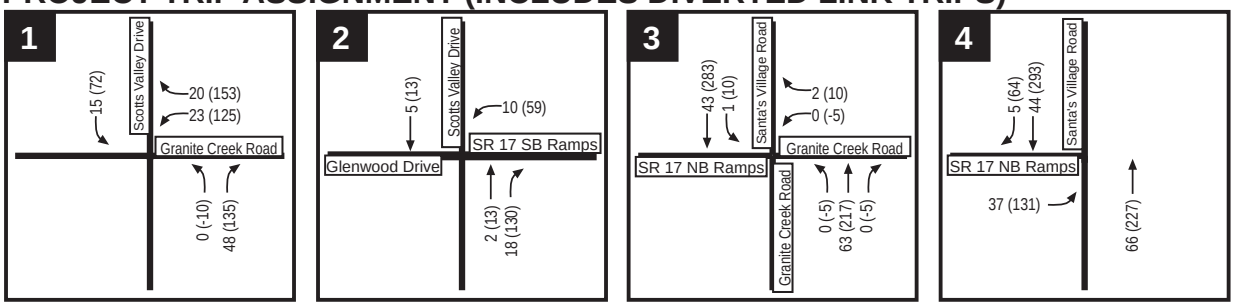
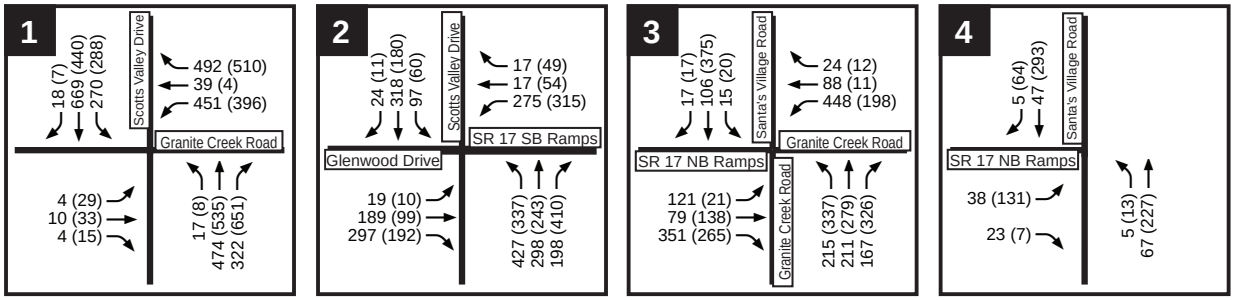
SJ07-980

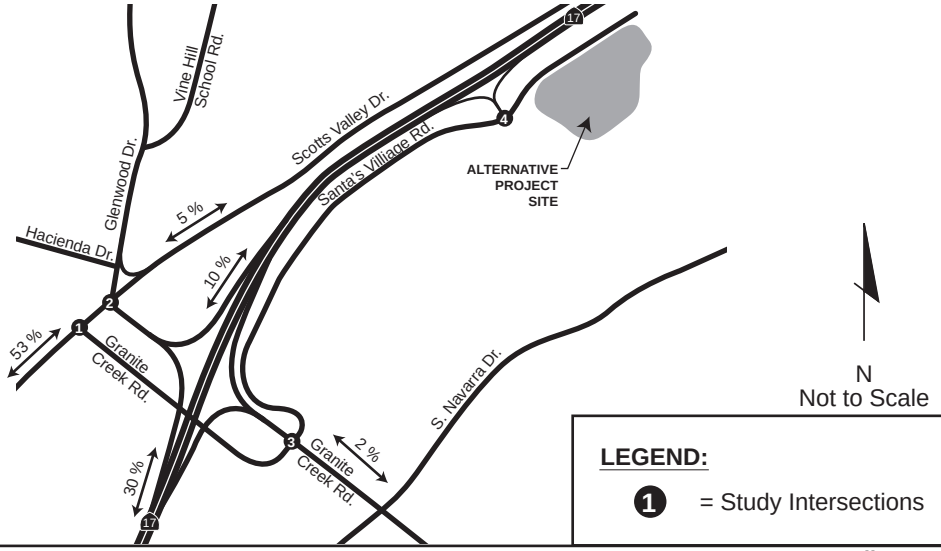
FIGURE 12

PROJECT TRIP ASSIGNMENT (INCLUDES DIVERTED LINK TRIPS)



EXISTING PLUS PROJECT





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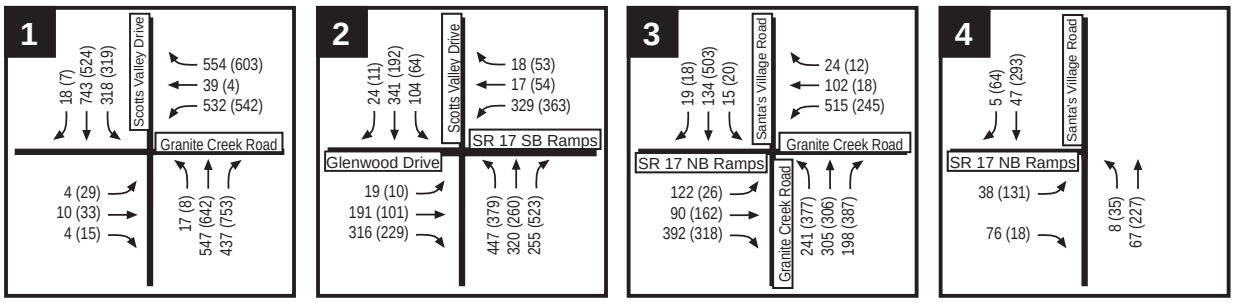
ALTERNATIVE SITE NEAR-TERM PLUS PROJECT PEAK-HOUR TRAFFIC VOLUMES

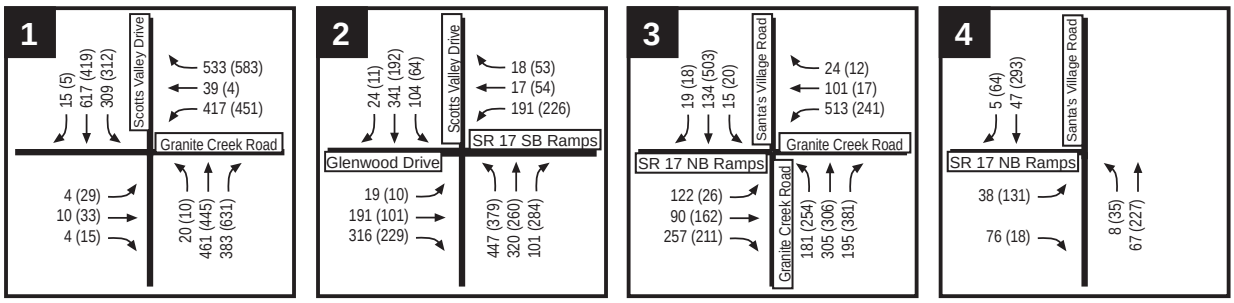
March 2009
SJ07-980

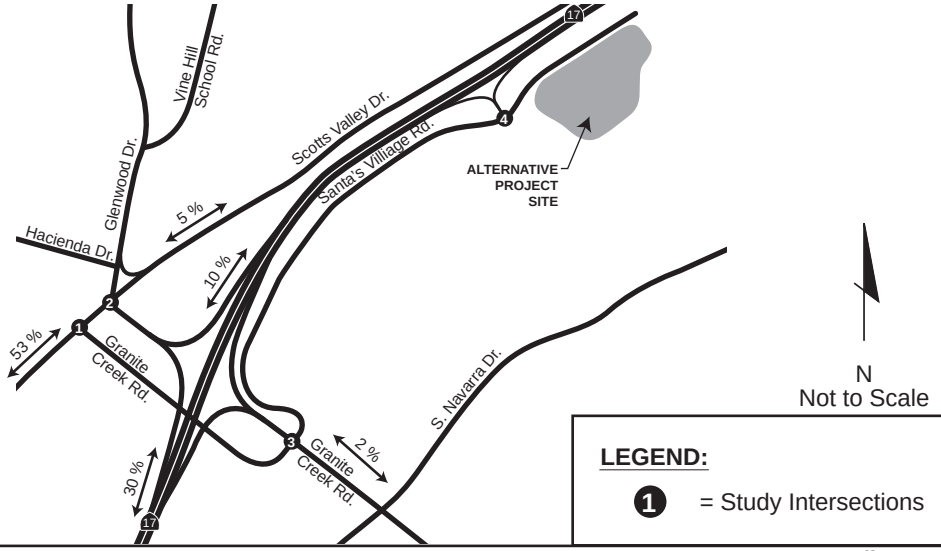
FIGURE 13

CUMULATIVE PLUS PROJECT



CUMULATIVE PLUS PROJECT WITH MID-TOWN INTERCHANGE





Scotts Valley Target

FEHR & PEERS
TRANSPORTATION CONSULTANTS

ALTERNATIVE SITE CUMULATIVE PLUS PROJECT PEAK-HOUR TRAFFIC VOLUMES

March 2009
SJ07-980

FIGURE 14

APPENDIX A:
TRAFFIC COUNTS

Traffic Data Service

Campbell, CA

(408) 377-2988

tdsbay@cs.com

File Name : 1AM FINAL
Site Code : 00000001
Start Date : 8/7/2007
Page No : 1

Groups Printed- Vehicles

	MT HERMON RD Southbound					EL RANCHO DR Westbound					SR-17 NB RAMPS Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	141	0	4	0	145	3	0	0	0	3	2	106	0	0	108	0	0	0	0	0	256
07:15 AM	142	0	3	0	145	3	2	0	0	5	2	160	0	0	162	0	0	0	0	0	312
07:30 AM	150	0	2	0	152	4	0	0	0	4	5	238	0	0	243	0	0	0	0	0	399
07:45 AM	146	0	10	0	156	6	2	0	0	8	1	266	0	0	267	0	0	0	0	0	431
Total	579	0	19	0	598	16	4	0	0	20	10	770	0	0	780	0	0	0	0	0	1398
08:00 AM	168	0	5	0	173	5	0	0	0	5	4	253	0	0	257	0	0	0	0	0	435
08:15 AM	146	0	3	0	149	11	2	0	0	13	1	226	0	0	227	0	0	0	0	0	389
08:30 AM	137	0	3	0	140	8	1	0	0	9	6	215	0	0	221	0	0	0	0	0	370
08:45 AM	150	0	7	0	157	6	0	0	0	6	2	269	0	0	271	0	0	0	0	0	434
Total	601	0	18	0	619	30	3	0	0	33	13	963	0	0	976	0	0	0	0	0	1628
Grand Total	1180	0	37	0	1217	46	7	0	0	53	23	1733	0	0	1756	0	0	0	0	0	3026
Apprch %	97	0	3	0		86.8	13.2	0	0		1.3	98.7	0	0		0	0	0	0		
Total %	39	0	1.2	0	40.2	1.5	0.2	0	0	1.8	0.8	57.3	0	0	58	0	0	0	0	0	

	MT HERMON RD Southbound					EL RANCHO DR Westbound					SR-17 NB RAMPS Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	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	150	0	2	0	152	4	0	0	0	4	**5**	238	0	0	243	0	0	0	0	0	399
07:45 AM	146	0	**10**	0	156	6	**2**	0	0	8	1	**266**	0	0	**267**	0	0	0	0	0	431
08:00 AM	**168**	0	5	0	**173**	5	0	0	0	5	4	253	0	0	257	0	0	0	0	0	**435**
08:15 AM	146	0	3	0	149	**11**	2	0	0	**13**	1	226	0	0	227	0	0	0	0	0	389
Total Volume	610	0	20	0	630	26	4	0	0	30	11	983	0	0	994	0	0	0	0	0	1654
% App. Total	96.8	0	3.2	0		86.7	13.3	0	0		1.1	98.9	0	0		0	0	0	0		
PHF	.908	.000	.500	.000	.910	.591	.500	.000	.000	.577	.550	.924	.000	.000	.931	.000	.000	.000	.000	.000	.951

Traffic Data Service

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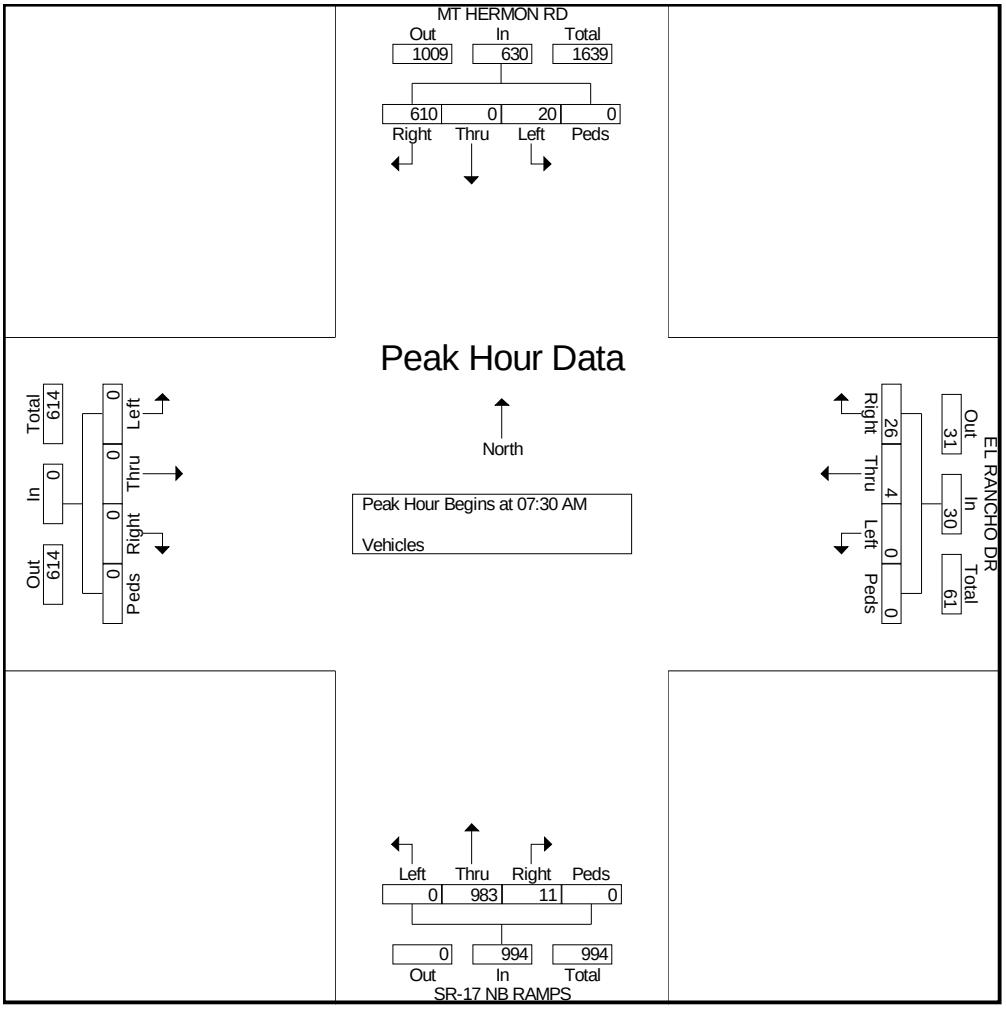

Traffic Data Service

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File Name : 1PM FINAL
Site Code : 00000001
Start Date : 8/7/2007
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Groups Printed- Vehicles

	MT HERMON RD Southbound					EL RANCHO DR Westbound					SR-17 NB RAMPS Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	74	0	4	0	78	11	0	0	0	11	3	229	0	0	232	0	0	0	0	0	321
04:15 PM	67	0	4	0	71	6	0	0	0	6	3	253	0	0	256	0	0	0	0	0	333
04:30 PM	77	0	8	0	85	10	8	0	0	18	7	240	1	0	248	0	0	0	0	0	351
04:45 PM	83	0	5	0	88	10	0	0	0	10	6	215	0	0	221	0	0	0	0	0	319
Total	301	0	21	0	322	37	8	0	0	45	19	937	1	0	957	0	0	0	0	0	1324
05:00 PM	98	0	5	0	103	6	3	0	0	9	3	259	0	0	262	0	0	0	0	0	374
05:15 PM	90	0	3	0	93	14	1	0	0	15	2	265	0	0	267	0	0	0	0	0	375
05:30 PM	77	0	12	0	89	5	1	0	0	6	2	220	0	0	222	0	0	0	0	0	317
05:45 PM	61	0	5	0	66	1	2	0	0	3	4	207	0	0	211	0	0	0	0	0	280
Total	326	0	25	0	351	26	7	0	0	33	11	951	0	0	962	0	0	0	0	0	1346
Grand Total	627	0	46	0	673	63	15	0	0	78	30	1888	1	0	1919	0	0	0	0	0	2670
Apprch %	93.2	0	6.8	0		80.8	19.2	0	0		1.6	98.4	0.1	0		0	0	0	0		
Total %	23.5	0	1.7	0	25.2	2.4	0.6	0	0	2.9	1.1	70.7	0	0	71.9	0	0	0	0	0	

	MT HERMON RD Southbound					EL RANCHO DR Westbound					SR-17 NB RAMPS Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	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 04:30 PM																					
04:30 PM	77	0	**8**	0	85	10	**8**	0	0	**18**	**7**	240	**1**	0	248	0	0	0	0	0	351
04:45 PM	83	0	5	0	88	10	0	0	0	10	6	215	0	0	221	0	0	0	0	0	319
05:00 PM	**98**	0	5	0	**103**	6	3	0	0	9	3	259	0	0	262	0	0	0	0	0	374
05:15 PM	90	0	3	0	93	**14**	1	0	0	15	2	**265**	0	0	**267**	0	0	0	0	0	**375**
Total Volume	348	0	21	0	369	40	12	0	0	52	18	979	1	0	998	0	0	0	0	0	1419
% App. Total	94.3	0	5.7	0		76.9	23.1	0	0		1.8	98.1	0.1	0		0	0	0	0		
PHF	.888	.000	.656	.000	.896	.714	.375	.000	.000	.722	.643	.924	.250	.000	.934	.000	.000	.000	.000	.000	.946

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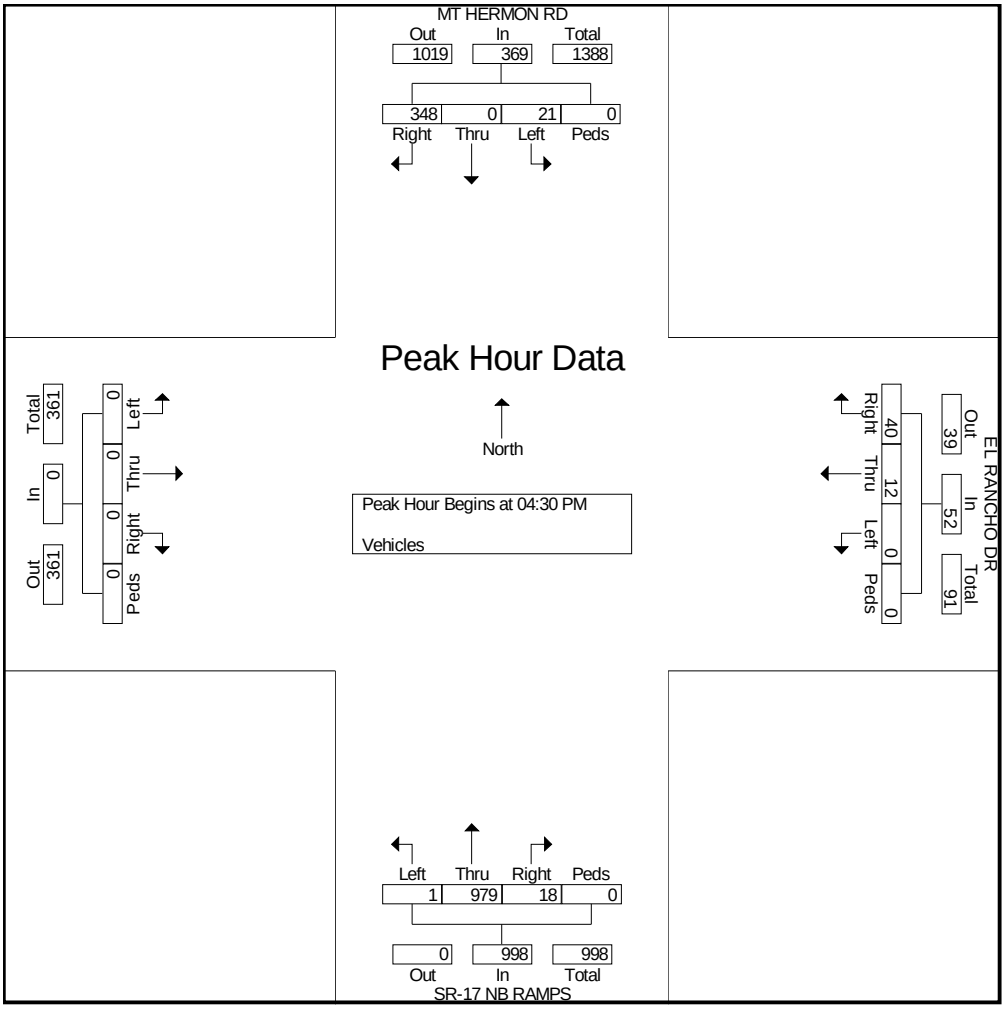

Traffic Data Service

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File Name : 3AM FINAL
Site Code : 00000003
Start Date : 11/18/2008
Page No : 1

Groups Printed- Vehicles

	LA MADRONA DR Southbound					DRIVEWAY Westbound					LA MADRONA DR Northbound					ALTENITAS RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	1	8	13	0	22	1	0	0	0	1	0	15	0	0	15	0	1	9	0	10	48
07:15 AM	0	7	18	0	25	3	0	1	0	4	2	32	1	0	35	1	3	15	0	19	83
07:30 AM	4	8	15	0	27	2	0	0	0	2	3	35	0	0	38	0	2	18	0	20	87
07:45 AM	14	15	15	0	44	3	1	1	0	5	2	45	1	0	48	1	1	29	0	31	128
Total	19	38	61	0	118	9	1	2	0	12	7	127	2	0	136	2	7	71	0	80	346
08:00 AM	4	21	14	0	39	2	1	0	0	3	2	83	6	0	91	1	0	31	0	32	165
08:15 AM	3	21	8	0	32	0	0	0	0	0	4	91	2	0	97	0	0	8	0	8	137
08:30 AM	9	21	10	0	40	2	0	2	0	4	2	40	0	0	42	0	1	15	0	16	102
08:45 AM	3	20	13	0	36	1	0	1	0	2	0	36	1	0	37	1	2	11	0	14	89
Total	19	83	45	0	147	5	1	3	0	9	8	250	9	0	267	2	3	65	0	70	493
Grand Total	38	121	106	0	265	14	2	5	0	21	15	377	11	0	403	4	10	136	0	150	839
Apprch %	14.3	45.7	40	0		66.7	9.5	23.8	0		3.7	93.5	2.7	0		2.7	6.7	90.7	0		
Total %	4.5	14.4	12.6	0	31.6	1.7	0.2	0.6	0	2.5	1.8	44.9	1.3	0	48	0.5	1.2	16.2	0	17.9	

	LA MADRONA DR Southbound					DRIVEWAY Westbound					LA MADRONA DR Northbound					ALTENITAS RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	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	**14**	15	**15**	0	**44**	**3**	**1**	1	0	**5**	2	45	1	0	48	**1**	**1**	29	0	31	128
08:00 AM	4	**21**	14	0	39	2	1	0	0	3	2	83	**6**	0	91	1	0	**31**	0	**32**	**165**
08:15 AM	3	21	8	0	32	0	0	0	0	0	**4**	**91**	2	0	**97**	0	0	8	0	8	137
08:30 AM	9	21	10	0	40	2	0	**2**	0	4	2	40	0	0	42	0	1	15	0	16	102
Total Volume	30	78	47	0	155	7	2	3	0	12	10	259	9	0	278	2	2	83	0	87	532
% App. Total	19.4	50.3	30.3	0		58.3	16.7	25	0		3.6	93.2	3.2	0		2.3	2.3	95.4	0		
PHF	.536	.929	.783	.000	.881	.583	.500	.375	.000	.600	.625	.712	.375	.000	.716	.500	.500	.669	.000	.680	.806

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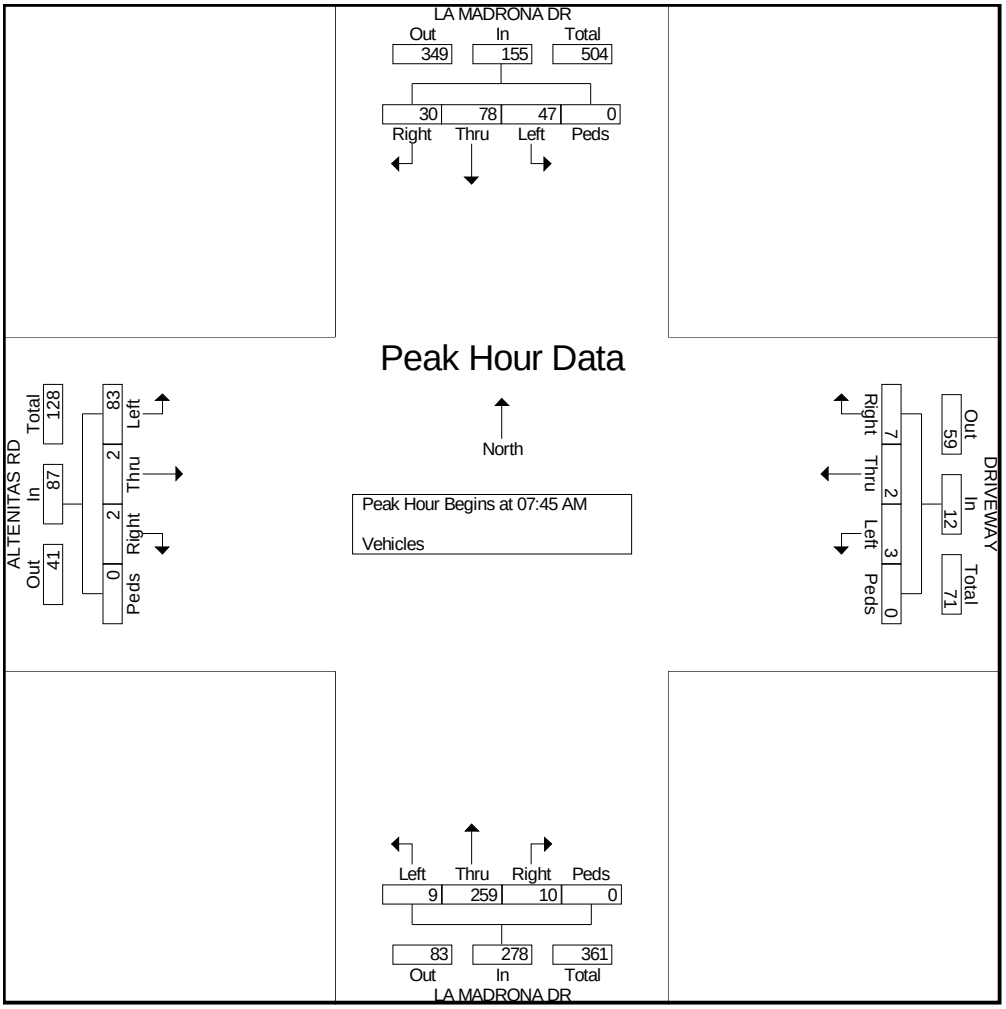

Traffic Data Service

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File Name : 3PM FINAL
Site Code : 00000003
Start Date : 11/18/2008
Page No : 1

Groups Printed- Vehicles

	LA MADRONA DR Southbound					DRIVEWAY Westbound					LA MADRONA DR Northbound					ALTENITAS RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	5	25	5	0	35	7	0	0	0	7	5	25	0	0	30	0	0	10	0	10	82
04:15 PM	7	26	7	0	40	4	1	0	0	5	3	34	0	0	37	1	0	12	0	13	95
04:30 PM	15	29	6	0	50	4	0	0	0	4	0	28	1	0	29	0	0	8	0	8	91
04:45 PM	10	28	6	0	44	1	1	0	0	2	0	19	0	0	19	0	0	12	0	12	77
Total	37	108	24	0	169	16	2	0	0	18	8	106	1	0	115	1	0	42	0	43	345
05:00 PM	12	25	7	0	44	7	0	1	0	8	1	21	0	0	22	1	0	6	0	7	81
05:15 PM	14	27	9	0	50	2	1	0	0	3	0	15	0	0	15	0	0	14	0	14	82
05:30 PM	10	28	3	0	41	1	0	1	0	2	0	33	1	0	34	1	0	12	0	13	90
05:45 PM	16	24	3	0	43	2	0	0	0	2	3	24	0	0	27	1	0	8	0	9	81
Total	52	104	22	0	178	12	1	2	0	15	4	93	1	0	98	3	0	40	0	43	334
Grand Total	89	212	46	0	347	28	3	2	0	33	12	199	2	0	213	4	0	82	0	86	679
Apprch %	25.6	61.1	13.3	0		84.8	9.1	6.1	0		5.6	93.4	0.9	0		4.7	0	95.3	0		
Total %	13.1	31.2	6.8	0	51.1	4.1	0.4	0.3	0	4.9	1.8	29.3	0.3	0	31.4	0.6	0	12.1	0	12.7	

	LA MADRONA DR Southbound					DRIVEWAY Westbound					LA MADRONA DR Northbound					ALTENITAS RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	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 04:00 PM																					
04:00 PM	5	25	5	0	35	**7**	0	0	0	**7**	**5**	25	0	0	30	0	0	10	0	10	82
04:15 PM	7	26	**7**	0	40	4	**1**	0	0	5	3	**34**	0	0	**37**	**1**	0	**12**	0	**13**	**95**
04:30 PM	**15**	**29**	6	0	**50**	4	0	0	0	4	0	28	**1**	0	29	0	0	8	0	8	91
04:45 PM	10	28	6	0	44	1	1	0	0	2	0	19	0	0	19	0	0	12	0	12	77
Total Volume	37	108	24	0	169	16	2	0	0	18	8	106	1	0	115	1	0	42	0	43	345
% App. Total	21.9	63.9	14.2	0		88.9	11.1	0	0		7	92.2	0.9	0		2.3	0	97.7	0		
PHF	.617	.931	.857	.000	.845	.571	.500	.000	.000	.643	.400	.779	.250	.000	.777	.250	.000	.875	.000	.827	.908

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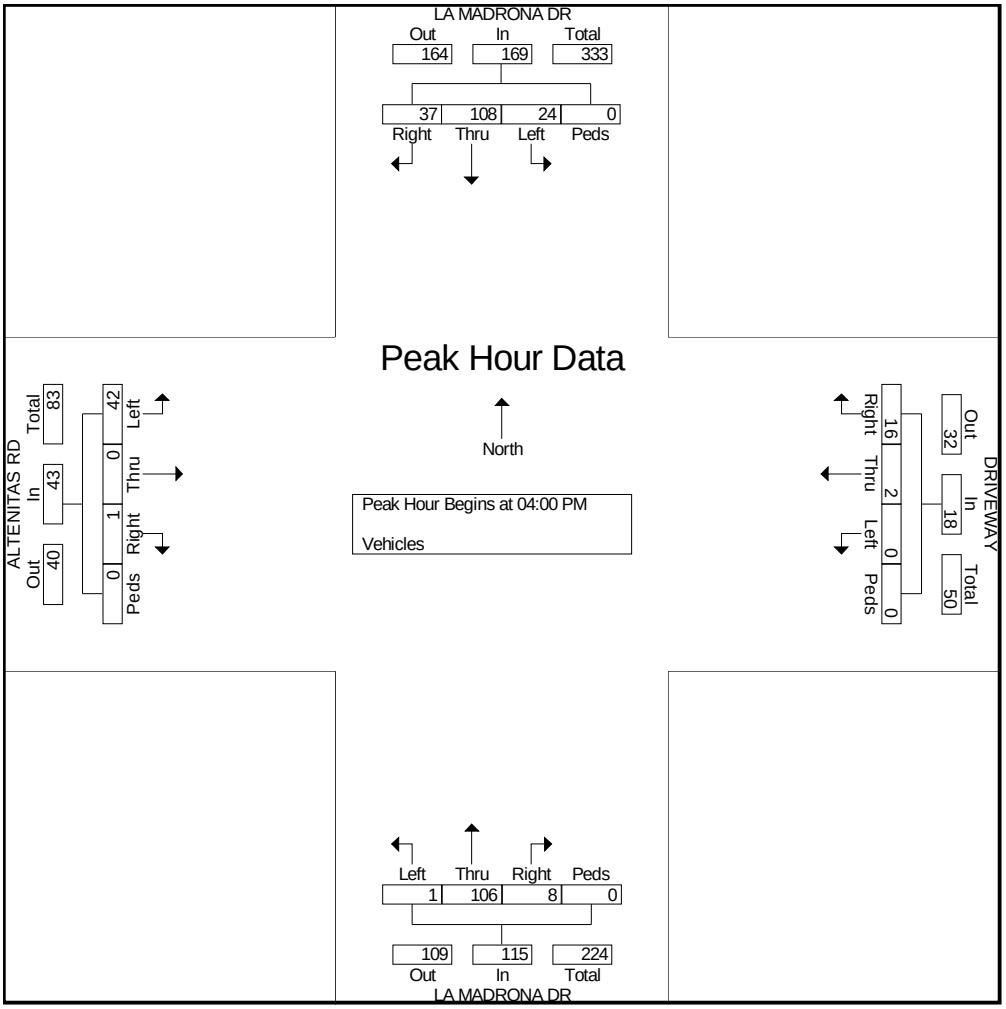

Traffic Data Service
Campbell, CA
(408) 377-2988
tdsbay@cs.com

File Name : 4AM FINAL
Site Code : 00000004
Start Date : 11/18/2008
Page No : 1

Groups Printed- Vehicles

	LA MADRONA DR Southbound					Westbound					LA MADRONA DR Northbound					SILVERWOOD DR Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	3	4	0	0	7	0	0	0	0	0	0	12	0	0	12	0	0	0	0	0	19
07:15 AM	0	6	0	0	6	0	0	0	0	0	0	27	2	0	29	0	0	5	0	5	40
07:30 AM	5	5	0	0	10	0	0	0	0	0	0	26	0	0	26	0	0	13	0	13	49
07:45 AM	3	14	0	0	17	0	0	0	0	0	0	37	1	0	38	6	0	12	0	18	73
Total	11	29	0	0	40	0	0	0	0	0	0	102	3	0	105	6	0	30	0	36	181
08:00 AM	5	19	0	0	24	0	0	0	0	0	0	70	2	0	72	6	0	19	0	25	121
08:15 AM	8	13	0	0	21	0	0	0	0	0	0	85	2	0	87	2	0	10	0	12	120
08:30 AM	4	12	0	0	16	0	0	0	0	0	0	32	0	0	32	1	0	12	0	13	61
08:45 AM	5	19	0	0	24	0	0	0	0	0	0	30	0	0	30	1	0	6	0	7	61
Total	22	63	0	0	85	0	0	0	0	0	0	217	4	0	221	10	0	47	0	57	363
Grand Total	33	92	0	0	125	0	0	0	0	0	0	319	7	0	326	16	0	77	0	93	544
Apprch %	26.4	73.6	0	0		0	0	0	0		0	97.9	2.1	0		17.2	0	82.8	0		
Total %	6.1	16.9	0	0	23	0	0	0	0	0	0	58.6	1.3	0	59.9	2.9	0	14.2	0	17.1	

	LA MADRONA DR Southbound					Westbound					LA MADRONA DR Northbound					SILVERWOOD DR Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	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	3	14	0	0	17	0	0	0	0	0	0	37	1	0	38	**6**	0	12	0	18	73
08:00 AM	5	**19**	0	0	**24**	0	0	0	0	0	0	70	**2**	0	72	6	0	**19**	0	**25**	**121**
08:15 AM	**8**	13	0	0	21	0	0	0	0	0	0	**85**	2	0	**87**	2	0	10	0	12	120
08:30 AM	4	12	0	0	16	0	0	0	0	0	0	32	0	0	32	1	0	12	0	13	61
Total Volume	20	58	0	0	78	0	0	0	0	0	0	224	5	0	229	15	0	53	0	68	375
% App. Total	25.6	74.4	0	0		0	0	0	0		0	97.8	2.2	0		22.1	0	77.9	0		
PHF	.625	.763	.000	.000	.813	.000	.000	.000	.000	.000	.000	.659	.625	.000	.658	.625	.000	.697	.000	.680	.775

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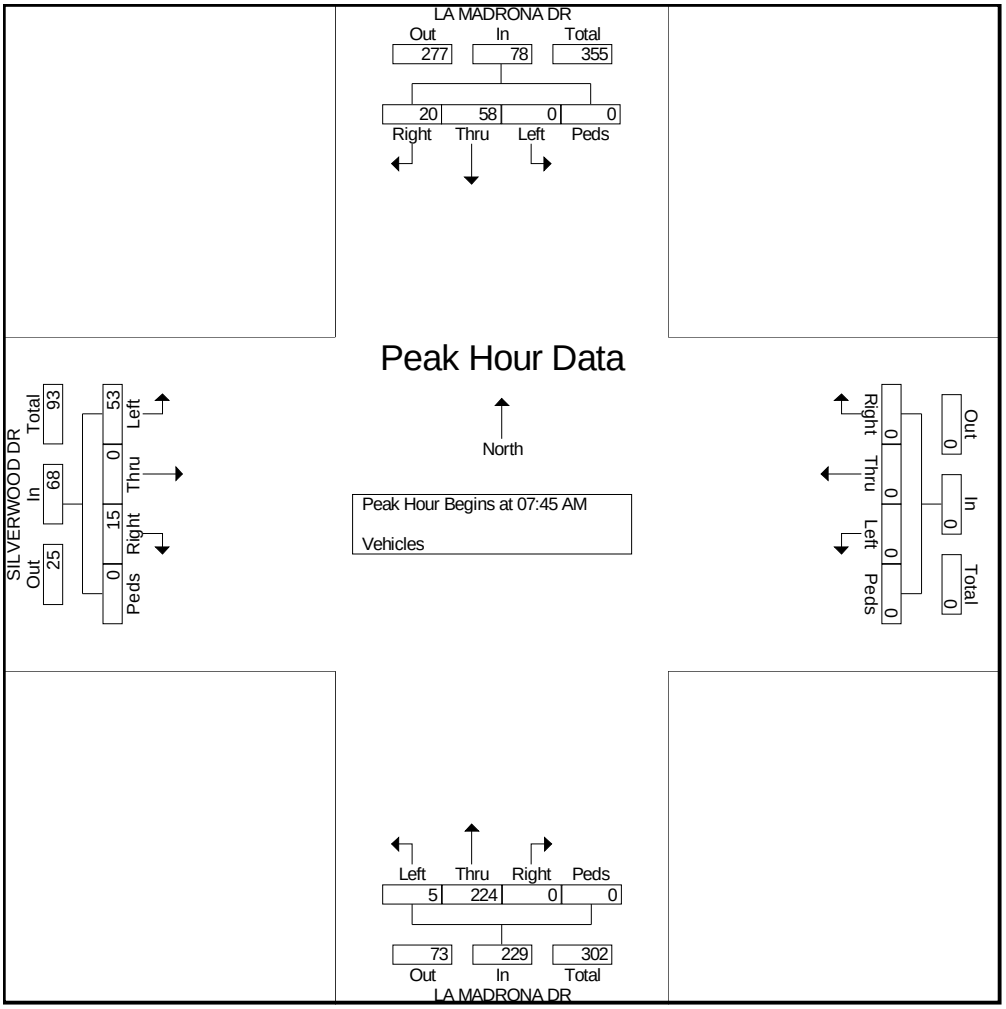

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Groups Printed- Vehicles

	LA MADRONA DR Southbound					Westbound					LA MADRONA DR Northbound					SILVERWOOD DR Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	7	17	0	0	24	0	0	0	0	0	0	23	3	0	26	1	0	6	0	7	57
04:15 PM	12	15	0	0	27	0	0	0	0	0	0	25	0	0	25	1	0	10	0	11	63
04:30 PM	11	16	0	0	27	0	0	0	0	0	0	19	2	0	21	0	0	10	0	10	58
04:45 PM	12	15	0	0	27	0	0	0	0	0	0	19	1	0	20	0	0	5	0	5	52
Total	42	63	0	0	105	0	0	0	0	0	0	86	6	0	92	2	0	31	0	33	230
05:00 PM	12	12	0	0	24	0	0	0	0	0	0	15	0	0	15	1	0	8	0	9	48
05:15 PM	11	17	0	0	28	0	0	0	0	0	0	15	0	0	15	1	0	3	0	4	47
05:30 PM	13	16	0	0	29	0	0	0	0	0	0	27	0	0	27	0	0	5	0	5	61
05:45 PM	13	12	0	0	25	0	0	0	0	0	0	19	0	0	19	1	0	2	0	3	47
Total	49	57	0	0	106	0	0	0	0	0	0	76	0	0	76	3	0	18	0	21	203
Grand Total	91	120	0	0	211	0	0	0	0	0	0	162	6	0	168	5	0	49	0	54	433
Apprch %	43.1	56.9	0	0		0	0	0	0		0	96.4	3.6	0		9.3	0	90.7	0		
Total %	21	27.7	0	0	48.7	0	0	0	0	0	0	37.4	1.4	0	38.8	1.2	0	11.3	0	12.5	

	LA MADRONA DR Southbound					Westbound					LA MADRONA DR Northbound					SILVERWOOD DR Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	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 04:00 PM																					
04:00 PM	7	**17**	0	0	24	0	0	0	0	0	0	23	**3**	0	**26**	**1**	0	6	0	7	57
04:15 PM	**12**	15	0	0	**27**	0	0	0	0	0	0	**25**	0	0	25	1	0	**10**	0	**11**	**63**
04:30 PM	11	16	0	0	27	0	0	0	0	0	0	19	2	0	21	0	0	10	0	10	58
04:45 PM	12	15	0	0	27	0	0	0	0	0	0	19	1	0	20	0	0	5	0	5	52
Total Volume	42	63	0	0	105	0	0	0	0	0	0	86	6	0	92	2	0	31	0	33	230
% App. Total	40	60	0	0		0	0	0	0		0	93.5	6.5	0		6.1	0	93.9	0		
PHF	.875	.926	.000	.000	.972	.000	.000	.000	.000	.000	.000	.860	.500	.000	.885	.500	.000	.775	.000	.750	.913

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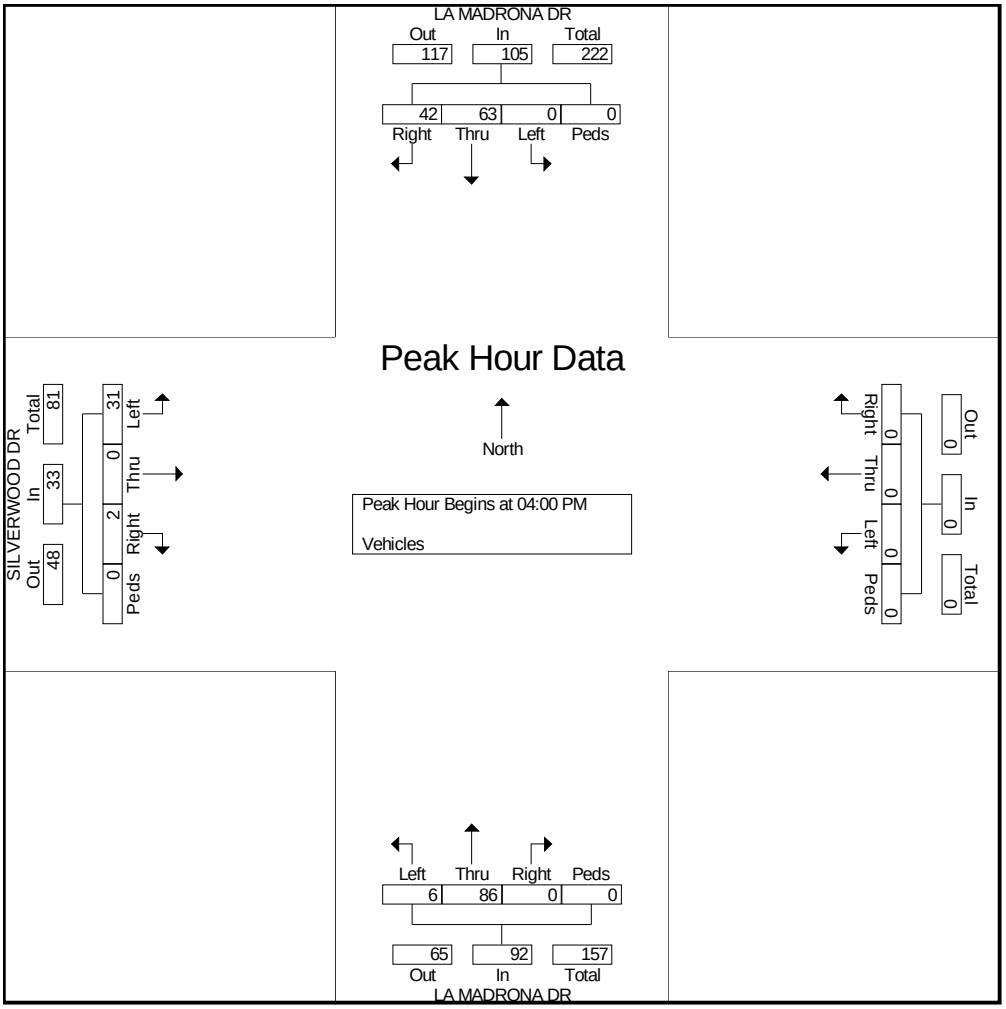

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File Name : 1AM FINAL
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Start Date : 11/8/2008
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Groups Printed- Vehicles

	SCOTTS VALLEY DR Southbound					Westbound					SCOTTS VALLEY DR Northbound					BEAN CREEK RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
11:00 AM	18	122	1	0	141	0	0	0	0	0	0	47	14	0	61	11	0	10	0	21	223
11:15 AM	9	126	1	0	136	0	0	0	0	0	0	43	22	0	65	8	0	13	0	21	222
11:30 AM	8	97	1	0	106	0	0	0	0	0	0	67	26	0	93	14	0	15	0	29	228
11:45 AM	17	140	0	0	157	0	0	0	0	0	0	95	24	0	119	16	0	16	0	32	308
Total	52	485	3	0	540	0	0	0	0	0	0	252	86	0	338	49	0	54	0	103	981
12:00 PM	29	136	1	0	166	0	0	0	0	0	0	104	24	0	128	19	0	25	0	44	338
12:15 PM	23	141	0	0	164	0	0	0	0	0	0	118	34	0	152	18	0	27	0	45	361
12:30 PM	10	149	1	0	160	0	0	0	0	0	0	117	25	0	142	24	0	29	0	53	355
12:45 PM	20	165	1	0	186	0	0	0	0	0	0	115	36	0	151	15	0	14	0	29	366
Total	82	591	3	0	676	0	0	0	0	0	0	454	119	0	573	76	0	95	0	171	1420
Grand Total	134	1076	6	0	1216	0	0	0	0	0	0	706	205	0	911	125	0	149	0	274	2401
Apprch %	11	88.5	0.5	0		0	0	0	0		0	77.5	22.5	0		45.6	0	54.4	0		
Total %	5.6	44.8	0.2	0	50.6	0	0	0	0	0	0	29.4	8.5	0	37.9	5.2	0	6.2	0	11.4	

	SCOTTS VALLEY DR Southbound					Westbound					SCOTTS VALLEY DR Northbound					BEAN CREEK RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	**29**	136	**1**	0	166	0	0	0	0	0	0	104	24	0	128	19	0	25	0	44	338
12:15 PM	23	141	0	0	164	0	0	0	0	0	0	**118**	34	0	**152**	18	0	27	0	45	361
12:30 PM	10	149	1	0	160	0	0	0	0	0	0	117	25	0	142	**24**	0	**29**	0	**53**	355
12:45 PM	20	**165**	1	0	**186**	0	0	0	0	0	0	115	**36**	0	151	15	0	14	0	29	**366**
Total Volume	82	591	3	0	676	0	0	0	0	0	0	454	119	0	573	76	0	95	0	171	1420
% App. Total	12.1	87.4	0.4	0		0	0	0	0		0	79.2	20.8	0		44.4	0	55.6	0		
PHF	.707	.895	.750	.000	.909	.000	.000	.000	.000	.000	.000	.962	.826	.000	.942	.792	.000	.819	.000	.807	.970

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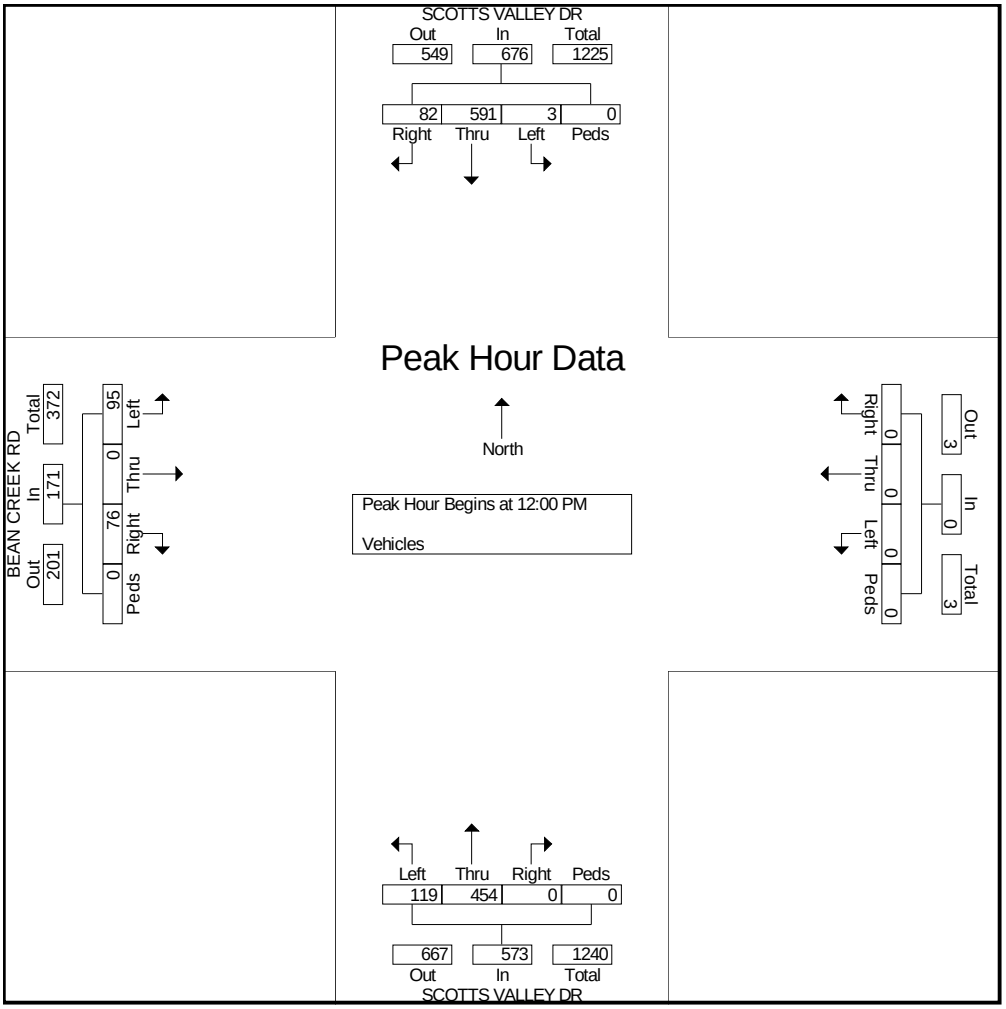

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File Name : 2AM FINAL
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Groups Printed- Vehicles

	GLEN CANYON RD Southbound					MT HERMON RD Westbound					GLEN CANYON RD Northbound					MT HERMON RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
11:00 AM	22	0	14	0	36	10	258	3	0	271	5	0	4	0	9	5	288	14	0	307	623
11:15 AM	20	0	9	0	29	14	262	1	0	277	2	0	1	0	3	3	274	16	0	293	602
11:30 AM	28	1	6	0	35	9	279	2	0	290	1	0	3	0	4	3	272	16	0	291	620
11:45 AM	21	0	10	0	31	5	274	3	0	282	0	1	2	0	3	1	258	30	0	289	605
Total	91	1	39	0	131	38	1073	9	0	1120	8	1	10	0	19	12	1092	76	0	1180	2450
12:00 PM	24	0	6	0	30	14	269	4	0	287	0	0	4	0	4	3	256	18	0	277	598
12:15 PM	16	0	13	0	29	11	243	2	0	256	0	1	5	0	6	4	278	21	0	303	594
12:30 PM	19	1	8	0	28	11	271	1	0	283	1	0	1	0	2	3	259	17	0	279	592
12:45 PM	14	1	15	0	30	17	296	1	0	314	0	2	7	0	9	3	270	24	0	297	650
Total	73	2	42	0	117	53	1079	8	0	1140	1	3	17	0	21	13	1063	80	0	1156	2434
Grand Total	164	3	81	0	248	91	2152	17	0	2260	9	4	27	0	40	25	2155	156	0	2336	4884
Apprch %	66.1	1.2	32.7	0		4	95.2	0.8	0		22.5	10	67.5	0		1.1	92.3	6.7	0		
Total %	3.4	0.1	1.7	0	5.1	1.9	44.1	0.3	0	46.3	0.2	0.1	0.6	0	0.8	0.5	44.1	3.2	0	47.8	

	GLEN CANYON RD Southbound					MT HERMON RD Westbound					GLEN CANYON RD Northbound					MT HERMON RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	22	0	**14**	0	**36**	10	258	**3**	0	271	**5**	0	**4**	0	**9**	**5**	**288**	14	0	**307**	**623**
11:15 AM	20	0	9	0	29	**14**	262	1	0	277	2	0	1	0	3	3	274	16	0	293	602
11:30 AM	**28**	**1**	6	0	35	9	**279**	2	0	**290**	1	0	3	0	4	3	272	16	0	291	620
11:45 AM	21	0	10	0	31	5	274	3	0	282	0	**1**	2	0	3	1	258	**30**	0	289	605
Total Volume	91	1	39	0	131	38	1073	9	0	1120	8	1	10	0	19	12	1092	76	0	1180	2450
% App. Total																					
PHF	.813	.250	.696	.000	.910	.679	.961	.750	.000	.966	.400	.250	.625	.000	.528	.600	.948	.633	.000	.961	.983

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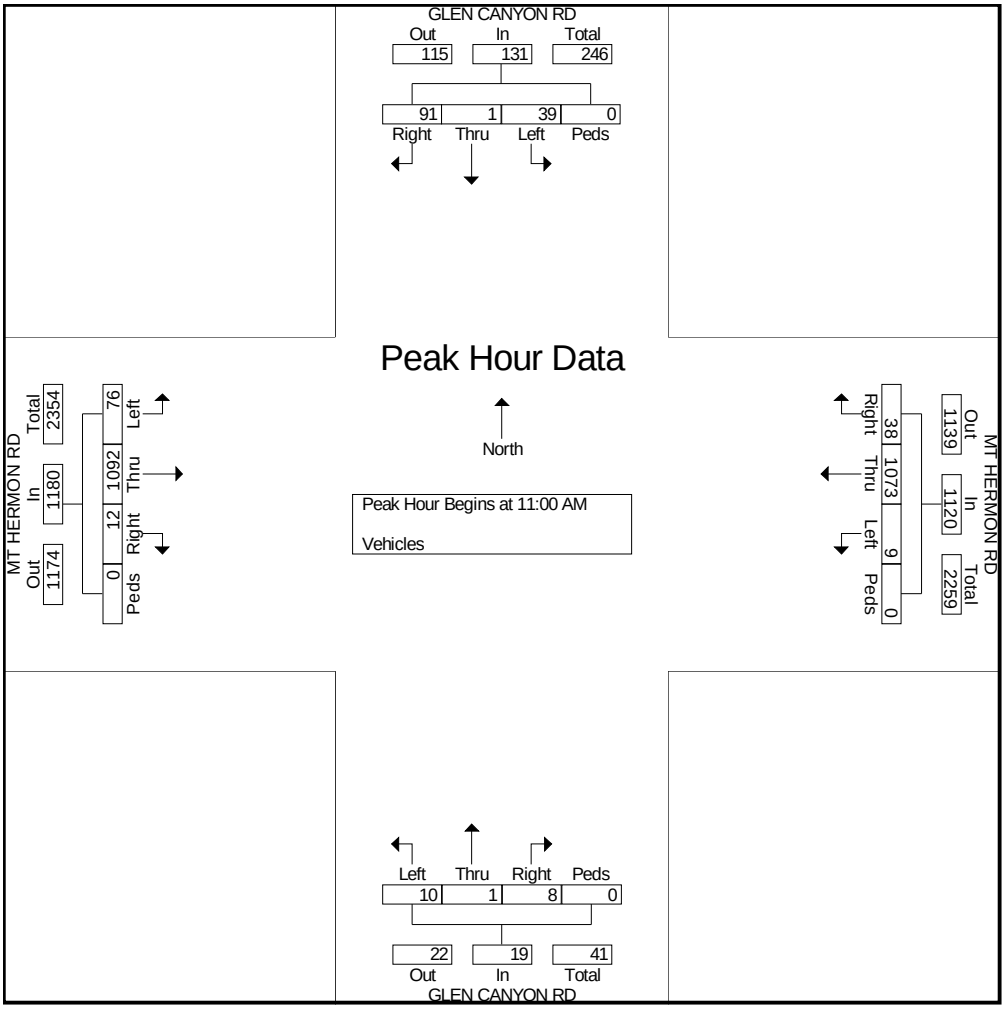

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File Name : 3AM FINAL
Site Code : 00000003
Start Date : 11/8/2008
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Groups Printed- Vehicles

	LA MADRONA DR Southbound					DRIVEWAY Westbound					LA MADRONA DR Northbound					ALTENITAS RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
11:00 AM	4	26	12	0	42	4	0	0	0	4	0	26	0	0	26	0	0	6	0	6	78
11:15 AM	6	14	7	0	27	3	0	1	0	4	2	33	0	0	35	0	0	6	0	6	72
11:30 AM	4	13	6	0	23	3	0	0	0	3	1	19	0	0	20	0	2	14	0	16	62
11:45 AM	5	16	16	0	37	1	0	1	0	2	1	25	0	0	26	0	0	14	0	14	79
Total	19	69	41	0	129	11	0	2	0	13	4	103	0	0	107	0	2	40	0	42	291
12:00 PM	7	15	5	0	27	5	0	1	0	6	1	19	0	0	20	0	0	14	0	14	67
12:15 PM	5	22	8	0	35	2	0	0	0	2	1	31	2	0	34	1	0	14	0	15	86
12:30 PM	9	14	14	0	37	3	0	0	0	3	1	19	1	0	21	2	3	17	0	22	83
12:45 PM	6	22	7	0	35	3	1	2	0	6	0	26	1	0	27	1	0	8	0	9	77
Total	27	73	34	0	134	13	1	3	0	17	3	95	4	0	102	4	3	53	0	60	313
Grand Total	46	142	75	0	263	24	1	5	0	30	7	198	4	0	209	4	5	93	0	102	604
Apprch %	17.5	54	28.5	0		80	3.3	16.7	0		3.3	94.7	1.9	0		3.9	4.9	91.2	0		
Total %	7.6	23.5	12.4	0	43.5	4	0.2	0.8	0	5	1.2	32.8	0.7	0	34.6	0.7	0.8	15.4	0	16.9	

	LA MADRONA DR Southbound					DRIVEWAY Westbound					LA MADRONA DR Northbound					ALTENITAS RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	5	16	**16**	0	**37**	1	0	**1**	0	2	**1**	25	0	0	26	0	0	14	0	14	79
12:00 PM	7	15	5	0	27	**5**	0	1	0	**6**	1	19	0	0	20	0	0	14	0	14	67
12:15 PM	5	**22**	8	0	35	2	0	0	0	2	1	**31**	**2**	0	**34**	1	0	14	0	15	**86**
12:30 PM	**9**	14	14	0	37	3	0	0	0	3	1	19	1	0	21	**2**	**3**	**17**	0	**22**	83
Total Volume	26	67	43	0	136	11	0	2	0	13	4	94	3	0	101	3	3	59	0	65	315
% App. Total	19.1	49.3	31.6	0		84.6	0	15.4	0		4	93.1	3	0		4.6	4.6	90.8	0		
PHF	.722	.761	.672	.000	.919	.550	.000	.500	.000	.542	1.000	.758	.375	.000	.743	.375	.250	.868	.000	.739	.916

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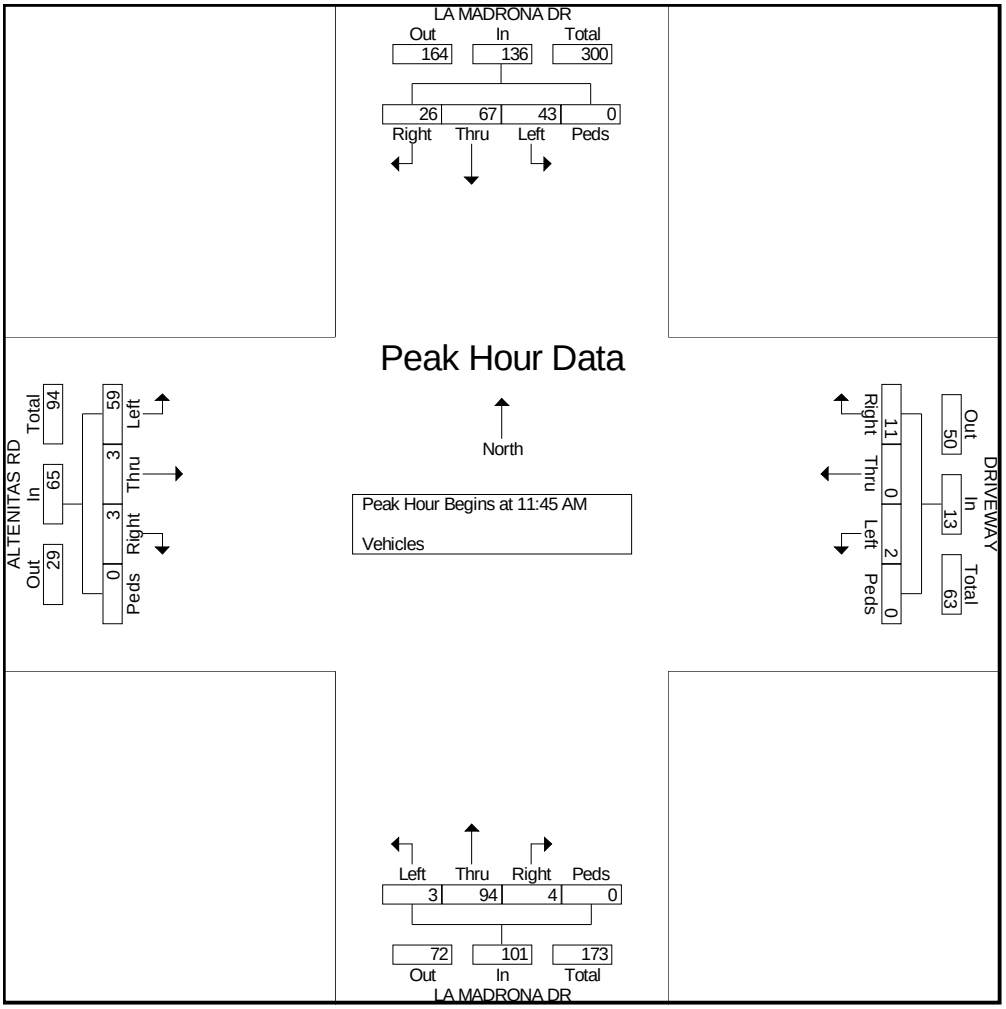

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File Name : 4AM FINAL
Site Code : 00000004
Start Date : 11/8/2008
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Groups Printed- Vehicles

	LA MADRONA DR Southbound					Westbound					LA MADRONA DR Northbound					SILVERWOOD DR Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
11:00 AM	11	14	0	0	25	0	0	0	0	0	0	19	1	0	20	0	0	8	0	8	53
11:15 AM	6	8	0	0	14	0	0	0	0	0	0	23	1	0	24	0	0	10	0	10	48
11:30 AM	3	5	0	0	8	0	0	0	0	0	0	14	0	0	14	0	0	5	0	5	27
11:45 AM	12	6	0	0	18	0	0	0	0	0	0	15	1	0	16	0	0	14	0	14	48
Total	32	33	0	0	65	0	0	0	0	0	0	71	3	0	74	0	0	37	0	37	176
12:00 PM	9	6	0	0	15	0	0	0	0	0	0	17	0	0	17	0	0	2	0	2	34
12:15 PM	10	10	0	0	20	0	0	0	0	0	0	20	0	0	20	0	0	13	0	13	53
12:30 PM	8	8	0	0	16	0	0	0	0	0	0	11	2	0	13	0	0	8	0	8	37
12:45 PM	5	15	0	0	20	0	0	0	0	0	0	15	2	0	17	0	0	10	0	10	47
Total	32	39	0	0	71	0	0	0	0	0	0	63	4	0	67	0	0	33	0	33	171
Grand Total	64	72	0	0	136	0	0	0	0	0	0	134	7	0	141	0	0	70	0	70	347
Apprch %	47.1	52.9	0	0		0	0	0	0		0	95	5	0		0	0	100	0		
Total %	18.4	20.7	0	0	39.2	0	0	0	0	0	0	38.6	2	0	40.6	0	0	20.2	0	20.2	

	LA MADRONA DR Southbound					Westbound					LA MADRONA DR Northbound					SILVERWOOD DR Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	11	**14**	0	0	**25**	0	0	0	0	0	0	19	**1**	0	20	0	0	8	0	8	**53**
11:15 AM	6	8	0	0	14	0	0	0	0	0	0	**23**	1	0	**24**	0	0	10	0	10	48
11:30 AM	3	5	0	0	8	0	0	0	0	0	0	14	0	0	14	0	0	5	0	5	27
11:45 AM	**12**	6	0	0	18	0	0	0	0	0	0	15	1	0	16	0	0	**14**	0	**14**	48
Total Volume	32	33	0	0	65	0	0	0	0	0	0	71	3	0	74	0	0	37	0	37	176
% App. Total	49.2	50.8	0	0		0	0	0	0		0	95.9	4.1	0		0	0	100	0		
PHF	.667	.589	.000	.000	.650	.000	.000	.000	.000	.000	.000	.772	.750	.000	.771	.000	.000	.661	.000	.661	.830

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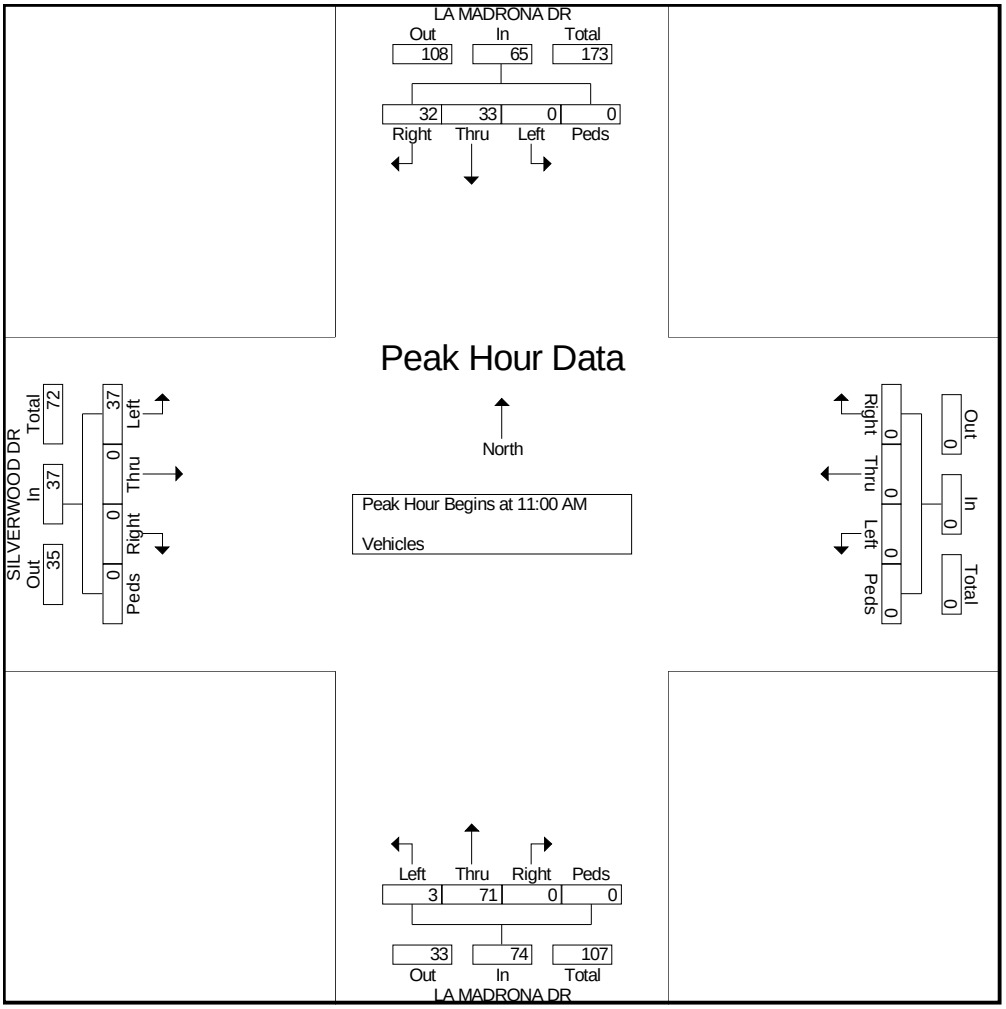

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File Name : 5AM FINAL
Site Code : 00000005
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Groups Printed- Vehicles

	MT HERMON RD Southbound					EL RANCHO DR Westbound					SR-17 NB OFF-RAMP Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
11:00 AM	83	0	7	0	90	10	3	0	0	13	7	171	1	0	179	0	0	0	0	0	282
11:15 AM	78	0	11	0	89	7	1	0	0	8	5	179	2	0	186	0	0	0	0	0	283
11:30 AM	82	0	4	0	86	17	1	0	0	18	0	204	0	0	204	0	0	0	0	0	308
11:45 AM	84	0	3	0	87	8	1	0	0	9	3	192	1	0	196	0	0	0	0	0	292
Total	327	0	25	0	352	42	6	0	0	48	15	746	4	0	765	0	0	0	0	0	1165
12:00 PM	83	0	10	1	94	7	6	0	0	13	5	160	2	0	167	0	0	0	0	0	274
12:15 PM	89	0	9	0	98	6	0	0	0	6	6	174	1	0	181	0	0	0	0	0	285
12:30 PM	79	0	13	0	92	9	0	0	0	9	10	216	3	0	229	0	0	0	0	0	330
12:45 PM	76	0	17	0	93	7	3	0	0	10	14	176	4	0	194	0	0	0	0	0	297
Total	327	0	49	1	377	29	9	0	0	38	35	726	10	0	771	0	0	0	0	0	1186
Grand Total	654	0	74	1	729	71	15	0	0	86	50	1472	14	0	1536	0	0	0	0	0	2351
Apprch %	89.7	0	10.2	0.1		82.6	17.4	0	0		3.3	95.8	0.9	0		0	0	0	0		
Total %	27.8	0	3.1	0	31	3	0.6	0	0	3.7	2.1	62.6	0.6	0	65.3	0	0	0	0	0	

	MT HERMON RD Southbound					EL RANCHO DR Westbound					SR-17 NB OFF-RAMP Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	83	0	10	**1**	94	7	**6**	0	0	**13**	5	160	2	0	167	0	0	0	0	0	274
12:15 PM	**89**	0	9	0	**98**	6	0	0	0	6	6	174	1	0	181	0	0	0	0	0	285
12:30 PM	79	0	13	0	92	**9**	0	0	0	9	10	**216**	3	0	**229**	0	0	0	0	0	**330**
12:45 PM	76	0	**17**	0	93	7	3	0	0	10	**14**	176	**4**	0	194	0	0	0	0	0	297
Total Volume	327	0	49	1	377	29	9	0	0	38	35	726	10	0	771	0	0	0	0	0	1186
% App. Total	86.7	0	13	0.3		76.3	23.7	0	0		4.5	94.2	1.3	0		0	0	0	0		
PHF	.919	.000	.721	.250	.962	.806	.375	.000	.000	.731	.625	.840	.625	.000	.842	.000	.000	.000	.000	.000	.898

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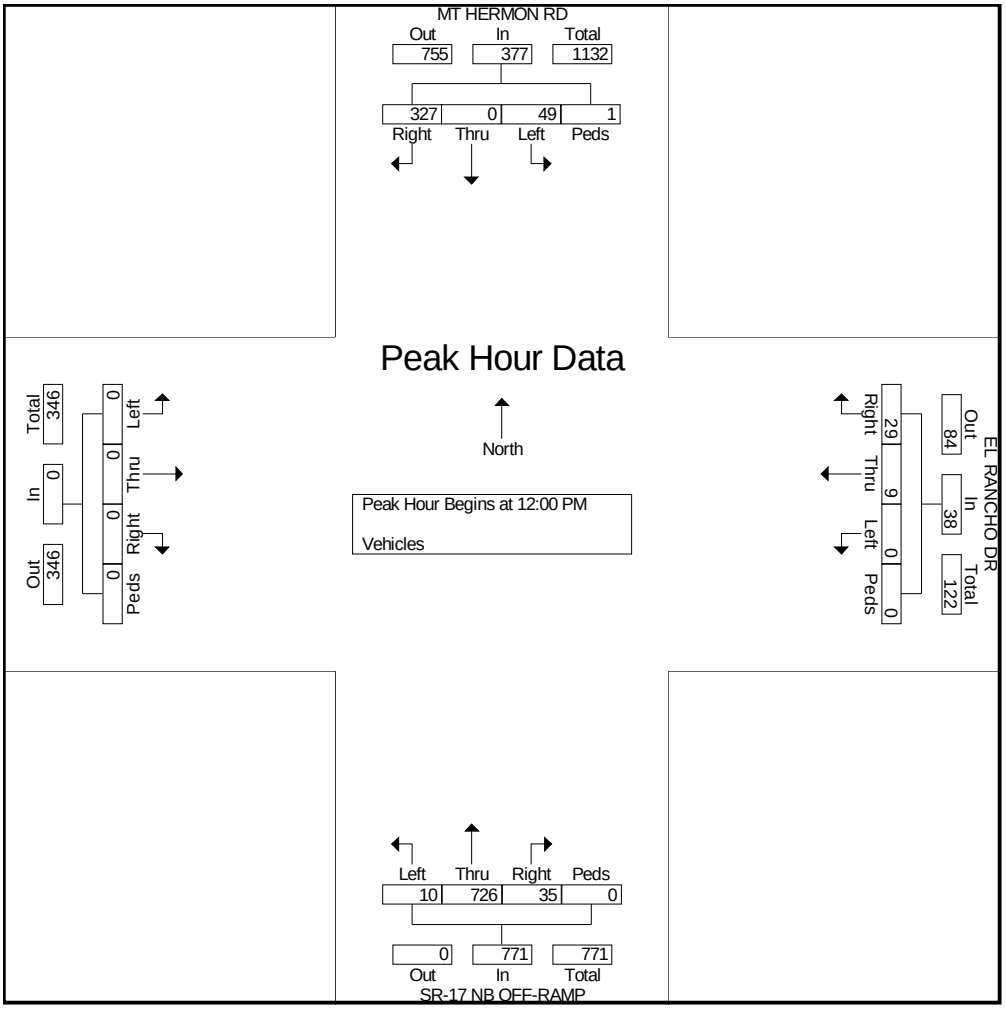

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Site Code : 00000001
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Groups Printed- Vehicles

	KINGS VILLAGE RD Southbound					MT. HERMON RD Westbound					SPRING LAKES DR Northbound					MT. HERMON RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
11:00 AM	54	6	19	0	79	22	240	22	0	284	11	3	7	0	21	6	211	44	0	261	645
11:15 AM	45	2	21	0	68	23	206	23	0	252	25	6	10	0	41	6	204	42	0	252	613
11:30 AM	49	3	21	0	73	17	214	27	0	258	12	3	8	0	23	8	193	41	0	242	596
11:45 AM	51	8	31	0	90	33	206	21	0	260	18	5	7	0	30	9	205	39	0	253	633
Total	199	19	92	0	310	95	866	93	0	1054	66	17	32	0	115	29	813	166	0	1008	2487
12:00 PM	54	2	23	0	79	25	226	42	0	293	14	6	13	0	33	12	213	50	0	275	680
12:15 PM	64	4	26	0	94	20	218	41	0	279	22	2	12	0	36	9	199	43	0	251	660
12:30 PM	54	9	21	0	84	18	234	32	0	284	29	5	9	0	43	4	210	50	0	264	675
12:45 PM	64	11	26	0	101	31	253	37	0	321	21	8	9	0	38	12	208	36	0	256	716
Total	236	26	96	0	358	94	931	152	0	1177	86	21	43	0	150	37	830	179	0	1046	2731
Grand Total	435	45	188	0	668	189	1797	245	0	2231	152	38	75	0	265	66	1643	345	0	2054	5218
Apprch %	65.1	6.7	28.1	0		8.5	80.5	11	0		57.4	14.3	28.3	0		3.2	80	16.8	0		
Total %	8.3	0.9	3.6	0	12.8	3.6	34.4	4.7	0	42.8	2.9	0.7	1.4	0	5.1	1.3	31.5	6.6	0	39.4	

	KINGS VILLAGE RD Southbound					MT. HERMON RD Westbound					SPRING LAKES DR Northbound					MT. HERMON RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	54	2	23	0	79	25	226	42	0	293	14	6	13	0	33	12	213	50	0	275	680
12:15 PM	64	4	26	0	94	20	218	41	0	279	22	2	12	0	36	9	199	43	0	251	660
12:30 PM	54	9	21	0	84	18	234	32	0	284	29	5	9	0	43	4	210	50	0	264	675
12:45 PM	64	11	26	0	101	31	253	37	0	321	21	8	9	0	38	12	208	36	0	256	716
Total Volume	236	26	96	0	358	94	931	152	0	1177	86	21	43	0	150	37	830	179	0	1046	2731
% App. Total	65.9	7.3	26.8	0		8	79.1	12.9	0		57.3	14	28.7	0		3.5	79.3	17.1	0		
PHF	.922	.591	.923	.000	.886	.758	.920	.905	.000	.917	.741	.656	.827	.000	.872	.771	.974	.895	.000	.951	.954

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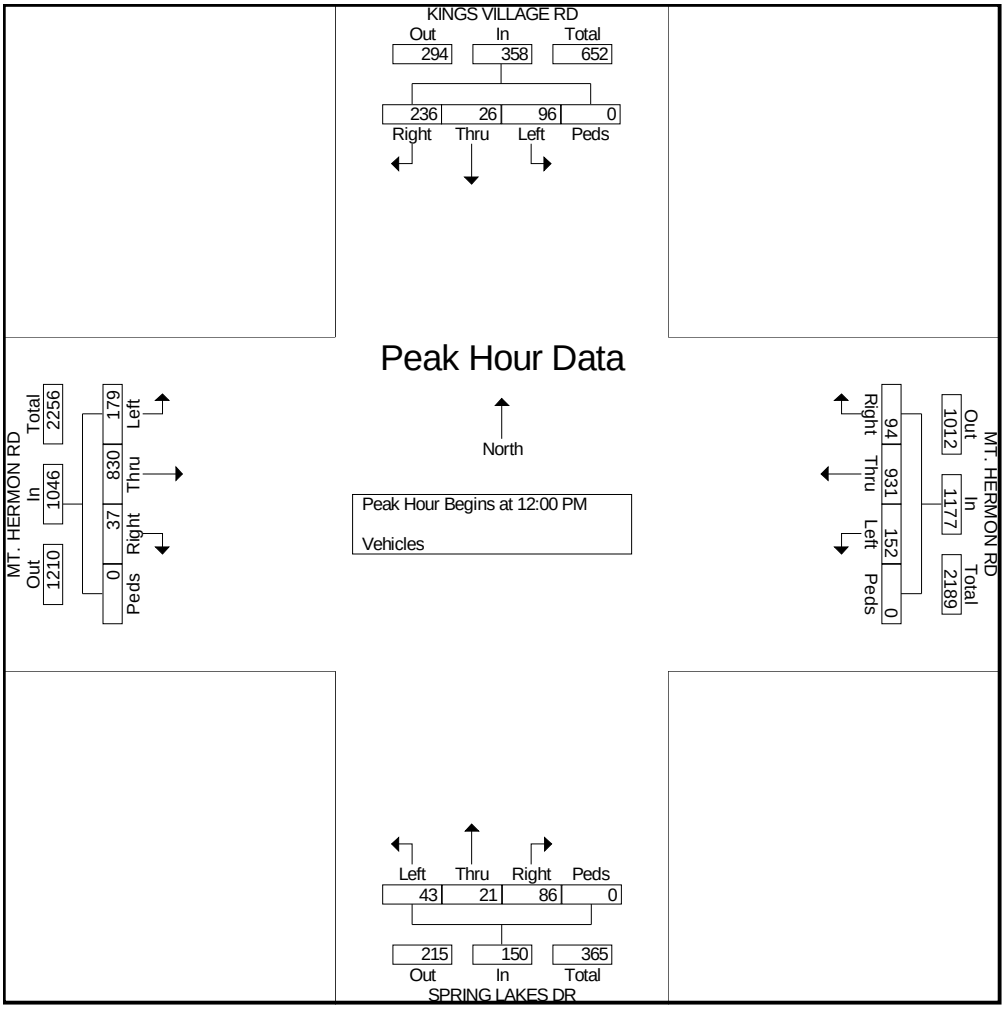

APPENDIX B:
INTERSECTION LEVEL OF SERVICE CALCULATIONS

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frpb, ped/bikes	1.00	0.96	1.00	1.00	1.00	0.88
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1515	1770	3539	5085	1393
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1515	1770	3539	5085	1393
Volume (vph)	184	174	145	1010	508	124
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	204	193	161	1122	564	138
RTOR Reduction (vph)	0	150	0	0	0	57
Lane Group Flow (vph)	204	43	161	1122	564	81
Confl. Peds. (#/hr)	30	30				30
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	25.1	25.1	13.8	82.9	65.1	65.1
Effective Green, g (s)	26.1	26.1	14.8	83.9	66.1	66.1
Actuated g/C Ratio	0.23	0.23	0.13	0.72	0.57	0.57
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)	398	341	226	2560	2898	794
v/s Ratio Prot	c0.12		c0.09	c0.32	0.11	
v/s Ratio Perm		0.03				0.06
v/c Ratio	0.51	0.13	0.71	0.44	0.19	0.10
Uniform Delay, d1	39.4	35.9	48.6	6.5	12.1	11.4
Progression Factor	1.00	1.00	1.07	0.58	1.00	1.00
Incremental Delay, d2	1.1	0.2	6.7	0.4	0.2	0.3
Delay (s)	40.5	36.0	58.4	4.1	12.2	11.7
Level of Service	D	D	E	A	B	B
Approach Delay (s)	38.3			10.9	12.1	
Approach LOS	D			B	B	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3427		1770	3438	1583	1681	1770	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3427		1770	3438	1583	1681	1770	1583	3433	1863	1583
Volume (vph)	566	1026	28	96	516	541	62	132	155	571	92	235
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)	596	1080	29	101	543	569	65	139	163	601	97	247
RTOR Reduction (vph)	0	1	0	0	0	392	0	0	136	0	0	0
Lane Group Flow (vph)	596	1108	0	101	543	177	65	139	27	601	97	247
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	22.4	45.9		10.4	33.9	33.9	19.4	19.4	19.4	23.8	23.8	116.0
Effective Green, g (s)	22.4	46.4		10.4	34.4	34.4	19.4	19.4	19.4	23.8	23.8	116.0
Actuated g/C Ratio	0.19	0.40		0.09	0.30	0.30	0.17	0.17	0.17	0.21	0.21	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	663	1371		159	1020	469	281	296	265	704	382	1583
v/s Ratio Prot	c0.17	c0.32		0.06	0.16		0.04	c0.08		c0.18	0.05	
v/s Ratio Perm						0.11			0.02			0.16
v/c Ratio	0.90	0.81		0.64	0.53	0.38	0.23	0.47	0.10	0.85	0.25	0.16
Uniform Delay, d1	45.7	30.9		51.0	34.1	32.3	41.8	43.7	40.9	44.4	38.7	0.0
Progression Factor	0.84	0.84		1.41	0.78	1.51	1.00	1.00	1.00	0.83	0.78	1.00
Incremental Delay, d2	13.2	4.5		6.8	1.7	1.9	0.4	1.2	0.2	9.8	0.3	0.2
Delay (s)	51.6	30.2		78.6	28.1	50.6	42.3	44.8	41.1	46.7	30.6	0.2
Level of Service	D	C		E	C	D	D	D	D	D	C	A
Approach Delay (s)		37.7			42.9			42.7			32.9	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	38.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.0%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3429		1770	3438	1583		1789	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84	1.00	0.75	0.76	1.00
Satd. Flow (perm)	1770	3429		1770	3438	1583		1573	1583	1321	1347	1583
Volume (vph)	88	1469	32	31	1241	127	13	3	36	108	2	88
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)	93	1546	34	33	1306	134	14	3	38	114	2	93
RTOR Reduction (vph)	0	1	0	0	0	34	0	0	30	0	0	74
Lane Group Flow (vph)	93	1579	0	33	1306	100	0	17	8	57	59	19
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	8.5	76.7		4.7	72.9	72.9		22.6	22.6	22.6	22.6	22.6
Effective Green, g (s)	9.5	77.7		5.7	73.9	73.9		23.6	23.6	23.6	23.6	23.6
Actuated g/C Ratio	0.08	0.67		0.05	0.64	0.64		0.20	0.20	0.20	0.20	0.20
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	145	2297		87	2190	1008		320	322	269	274	322
v/s Ratio Prot	c0.05	c0.46		0.02	0.38							
v/s Ratio Perm						0.06		0.01	0.00	0.04	c0.04	0.01
v/c Ratio	0.64	0.69		0.38	0.60	0.10		0.05	0.02	0.21	0.22	0.06
Uniform Delay, d1	51.6	11.7		53.4	12.3	8.2		37.2	37.0	38.5	38.5	37.2
Progression Factor	0.94	0.88		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.7	1.0		2.8	1.2	0.2		0.1	0.0	0.4	0.4	0.1
Delay (s)	54.4	11.4		56.2	13.5	8.4		37.3	37.0	38.9	38.9	37.3
Level of Service	D	B		E	B	A		D	D	D	D	D
Approach Delay (s)		13.8			14.0			37.1			38.2	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.3%	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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1841	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1841	1538
Volume (vph)	0	1551	53	90	1046	0	231	0	157	6	18	179
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	1633	56	95	1101	0	243	0	165	6	19	188
RTOR Reduction (vph)	0	0	9	0	0	0	0	0	143	0	0	23
Lane Group Flow (vph)	0	1633	47	95	1101	0	243	0	22	0	25	165
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		custom
Protected Phases		2		1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		48.8	48.8	6.1	44.5		10.9		10.9		8.9	19.3
Effective Green, g (s)		49.8	49.8	7.1	45.5		11.9		11.9		9.9	21.3
Actuated g/C Ratio		0.55	0.55	0.08	0.50		0.13		0.13		0.11	0.23
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1888	869	139	1775		450		208		201	361
v/s Ratio Prot		c0.47		c0.05	0.31		c0.07				0.01	c0.06
v/s Ratio Perm			0.03						0.01			0.05
v/c Ratio		0.86	0.05	0.68	0.62		0.54		0.10		0.12	0.46
Uniform Delay, d1		17.6	9.5	40.7	16.4		36.8		34.7		36.5	29.7
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		4.4	0.0	13.0	0.7		1.3		0.2		0.3	0.9
Delay (s)		22.0	9.5	53.7	17.0		38.2		34.9		36.8	30.7
Level of Service		C	A	D	B		D		C		D	C
Approach Delay (s)		21.6			19.9			36.9			31.4	
Approach LOS		C			B			D			C	

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.7	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	83	2	2	3	2	7	9	259	10	47	78	30
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	112	3	3	4	3	9	12	350	14	64	105	41
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											420	
pX, platoon unblocked												
vC, conflicting volume	638	641	126	638	654	357	146			364		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	638	641	126	638	654	357	146			364		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	69	99	100	99	99	99	99			95		
cM capacity (veh/h)	364	369	925	368	363	687	1436			1195		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	118	16	12	364	209
Volume Left	112	4	12	0	64
Volume Right	3	9	0	14	41
cSH	369	503	1436	1700	1195
Volume to Capacity	0.32	0.03	0.01	0.21	0.05
Queue Length 95th (ft)	34	2	1	0	4
Control Delay (s)	19.2	12.4	7.5	0.0	2.8
Lane LOS	C	B	A		A
Approach Delay (s)	19.2	12.4	0.2		2.8
Approach LOS	C	B			

Intersection Summary			
Average Delay	4.4		
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)	53	15	5	224	58	20
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	63	18	6	267	69	24
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	360	81	93			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	360	81	93			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	98	100			
cM capacity (veh/h)	637	979	1502			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	63	18	273	93
Volume Left	63	0	6	0
Volume Right	0	18	0	24
cSH	637	979	1502	1700
Volume to Capacity	0.10	0.02	0.00	0.05
Queue Length 95th (ft)	8	1	0	0
Control Delay (s)	11.3	8.7	0.2	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.7		0.2	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	25.8%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	20	0	0	4	26	0	983	11	0	0	610
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)	0	21	0	0	4	27	0	1035	12	0	0	642
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1056	1046	0	1372	1041	1041	0			1046		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1056	1046	0	1372	1041	1041	0			1046		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	91	100	100	98	90	100			100		
cM capacity (veh/h)	181	228	1085	114	230	280	1623			665		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	32	1046	642
Volume Left	0	0	0	0
Volume Right	0	27	12	642
cSH	228	323	1623	1700
Volume to Capacity	0.09	0.10	0.00	0.38
Queue Length 95th (ft)	8	8	0	0
Control Delay (s)	22.4	19.5	0.0	0.0
Lane LOS	C	C		
Approach Delay (s)	22.4	19.5	0.0	0.0
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	103.5%	ICU Level of Service	G
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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3433		1770	3438	1583		1814	1583		1781	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.90	1.00		0.75	1.00
Satd. Flow (perm)	1770	3433		1770	3438	1583		1671	1583		1388	1583
Volume (vph)	128	1294	14	34	601	115	7	6	16	80	7	75
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	142	1438	16	38	668	128	8	7	18	89	8	83
RTOR Reduction (vph)	0	1	0	0	0	52	0	0	15	0	0	67
Lane Group Flow (vph)	142	1453	0	38	668	76	0	15	3	0	97	16
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	14.2	77.3		5.2	68.3	68.3		21.5	21.5		21.5	21.5
Effective Green, g (s)	15.2	78.3		6.2	69.3	69.3		22.5	22.5		22.5	22.5
Actuated g/C Ratio	0.13	0.67		0.05	0.60	0.60		0.19	0.19		0.19	0.19
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	232	2317		95	2054	946		324	307		269	307
v/s Ratio Prot	c0.08	c0.42		0.02	0.19							
v/s Ratio Perm						0.05		0.01	0.00		c0.07	0.01
v/c Ratio	0.61	0.63		0.40	0.33	0.08		0.05	0.01		0.36	0.05
Uniform Delay, d1	47.6	10.6		53.1	11.7	9.9		38.0	37.8		40.5	38.1
Progression Factor	1.00	1.00		0.90	1.13	3.32		1.00	1.00		1.00	1.00
Incremental Delay, d2	4.7	1.3		2.6	0.4	0.2		0.1	0.0		0.8	0.1
Delay (s)	52.3	11.9		50.3	13.6	33.0		38.1	37.8		41.3	38.1
Level of Service	D	B		D	B	C		D	D		D	D
Approach Delay (s)		15.5			18.2			37.9			39.9	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	114	84	119	668	1003	147
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	127	93	132	742	1114	163
RTOR Reduction (vph)	0	73	0	0	0	40
Lane Group Flow (vph)	127	20	132	742	1114	123
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	23.9	23.9	13.0	84.1	67.1	67.1
Effective Green, g (s)	24.9	24.9	14.0	85.1	68.1	68.1
Actuated g/C Ratio	0.21	0.21	0.12	0.73	0.59	0.59
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)	380	340	214	2596	2985	929
v/s Ratio Prot	c0.07		c0.07	0.21	c0.22	
v/s Ratio Perm		0.01				0.08
v/c Ratio	0.33	0.06	0.62	0.29	0.37	0.13
Uniform Delay, d1	38.5	36.2	48.5	5.2	12.7	10.7
Progression Factor	1.00	1.00	0.70	0.61	1.00	1.00
Incremental Delay, d2	0.5	0.1	3.6	0.2	0.4	0.3
Delay (s)	39.1	36.3	37.4	3.4	13.0	11.0
Level of Service	D	D	D	A	B	B
Approach Delay (s)	37.9			8.5	12.8	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	44.3%	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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3397		1770	3438	1583	1681	1748	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3397		1770	3438	1583	1681	1748	1583	3433	1863	1583
Volume (vph)	456	733	79	217	1199	329	132	82	118	418	92	517
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)	480	772	83	228	1262	346	139	86	124	440	97	544
RTOR Reduction (vph)	0	6	0	0	0	99	0	0	104	0	0	0
Lane Group Flow (vph)	480	849	0	228	1262	247	110	115	20	440	97	544
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	17.9	41.4		17.2	40.7	40.7	19.1	19.1	19.1	21.8	21.8	116.0
Effective Green, g (s)	17.9	41.9		17.2	41.2	41.2	19.1	19.1	19.1	21.8	21.8	116.0
Actuated g/C Ratio	0.15	0.36		0.15	0.36	0.36	0.16	0.16	0.16	0.19	0.19	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	530	1227		262	1221	562	277	288	261	645	350	1583
v/s Ratio Prot	c0.14	0.25		0.13	c0.37		0.07	0.07		c0.13	0.05	
v/s Ratio Perm						0.16			0.01			c0.34
v/c Ratio	0.91	0.69		0.87	1.03	0.44	0.40	0.40	0.08	0.68	0.28	0.34
Uniform Delay, d1	48.2	31.5		48.3	37.4	28.6	43.3	43.3	41.0	43.9	40.4	0.0
Progression Factor	0.90	0.98		0.66	1.16	1.30	1.00	1.00	1.00	0.67	0.59	1.00
Incremental Delay, d2	18.4	3.1		19.6	31.0	1.8	0.9	0.9	0.1	2.8	0.4	0.6
Delay (s)	61.7	34.0		51.4	74.6	38.9	44.2	44.2	41.1	32.3	24.4	0.6
Level of Service	E	C		D	E	D	D	D	D	C	C	A
Approach Delay (s)		44.0			65.0			43.1			15.6	
Approach LOS		D			E			D			B	

Intersection Summary			
HCM Average Control Delay	45.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.7%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3432		1770	3438	1583		1806	1583	1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.92	1.00	0.75	0.75	1.00
Satd. Flow (perm)	1770	3432		1770	3438	1583		1706	1583	1332	1332	1583
Volume (vph)	154	1076	16	8	1470	97	5	3	20	85	0	112
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)	162	1133	17	8	1547	102	5	3	21	89	0	118
RTOR Reduction (vph)	0	1	0	0	0	22	0	0	16	0	0	92
Lane Group Flow (vph)	162	1149	0	8	1547	80	0	8	5	45	44	26
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	14.7	78.2		1.4	64.9	64.9		24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	15.7	79.2		2.4	65.9	65.9		25.4	25.4	25.4	25.4	25.4
Actuated g/C Ratio	0.14	0.68		0.02	0.57	0.57		0.22	0.22	0.22	0.22	0.22
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	240	2343		37	1953	899		374	347	292	292	347
v/s Ratio Prot	c0.09	0.33		0.00	c0.45							
v/s Ratio Perm						0.05		0.00	0.00	c0.03	0.03	0.02
v/c Ratio	0.68	0.49		0.22	0.79	0.09		0.02	0.01	0.15	0.15	0.07
Uniform Delay, d1	47.7	8.8		55.9	19.7	11.4		35.5	35.5	36.6	36.6	36.0
Progression Factor	0.83	0.94		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	0.6		2.9	3.4	0.2		0.0	0.0	0.2	0.2	0.1
Delay (s)	45.2	8.8		58.8	23.1	11.6		35.6	35.5	36.9	36.8	36.1
Level of Service	D	A		E	C	B		D	D	D	D	D
Approach Delay (s)		13.3			22.5			35.5			36.4	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.2%	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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1851	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1851	1538
Volume (vph)	0	1056	94	86	977	0	128	0	87	7	46	500
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	1112	99	91	1028	0	135	0	92	7	48	526
RTOR Reduction (vph)	0	0	25	0	0	0	0	0	82	0	0	32
Lane Group Flow (vph)	0	1112	74	91	1028	0	135	0	10	0	55	494
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		custom
Protected Phases		2		1	6		8		8	4	4	5
Permitted Phases			2									4
Actuated Green, G (s)		42.2	42.2	6.1	30.5		7.2		7.2		7.9	25.7
Effective Green, g (s)		43.2	43.2	7.1	31.5		8.2		8.2		8.9	27.7
Actuated g/C Ratio		0.54	0.54	0.09	0.40		0.10		0.10		0.11	0.35
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1871	861	158	1404		355		163		207	537
v/s Ratio Prot		0.32		0.05	c0.29		c0.04		0.01		0.03	c0.22
v/s Ratio Perm			0.05									0.10
v/c Ratio		0.59	0.09	0.58	0.73		0.38		0.06		0.27	0.92
Uniform Delay, d1		12.2	8.7	34.7	20.4		33.2		32.1		32.3	24.8
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		0.5	0.0	5.0	2.0		0.7		0.2		0.7	21.2
Delay (s)		12.7	8.7	39.7	22.4		33.9		32.3		33.0	46.0
Level of Service		B	A	D	C		C		C		C	D
Approach Delay (s)		12.4			23.8			33.2			44.7	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM Average Control Delay	23.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	79.4	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	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	42	0	1	0	2	16	1	106	8	24	108	37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	49	0	1	0	2	19	1	125	9	28	127	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)											420	
pX, platoon unblocked												
vC, conflicting volume	352	342	149	338	359	129	171			134		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	352	342	149	338	359	129	171			134		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	100	100	100	100	98	100			98		
cM capacity (veh/h)	579	569	898	605	556	920	1407			1450		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	51	21	1	134	199
Volume Left	49	0	1	0	28
Volume Right	1	19	0	9	44
cSH	584	858	1407	1700	1450
Volume to Capacity	0.09	0.02	0.00	0.08	0.02
Queue Length 95th (ft)	7	2	0	0	1
Control Delay (s)	11.7	9.3	7.6	0.0	1.2
Lane LOS	B	A	A		A
Approach Delay (s)	11.7	9.3	0.1		1.2
Approach LOS	B	A			

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	31.7%	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)	31	2	6	86	63	42
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	35	2	7	98	72	48
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	207	95	119			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	207	95	119			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	778	961	1469			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	35	2	105	119
Volume Left	35	0	7	0
Volume Right	0	2	0	48
cSH	778	961	1469	1700
Volume to Capacity	0.05	0.00	0.00	0.07
Queue Length 95th (ft)	4	0	0	0
Control Delay (s)	9.8	8.8	0.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.8		0.5	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	1.6		
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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	25	0	0	5	35	0	959	13	0	0	348
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)	0	27	0	0	5	38	0	1042	14	0	0	378
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											1293	
pX, platoon unblocked												
vC, conflicting volume	1071	1057	0	1252	1049	1049	0			1057		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1071	1057	0	1252	1049	1049	0			1057		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	88	100	100	98	86	100			100		
cM capacity (veh/h)	168	225	1085	135	227	276	1623			659		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	43	1057	378
Volume Left	0	0	0	0
Volume Right	0	38	14	378
cSH	225	316	1623	1700
Volume to Capacity	0.12	0.14	0.00	0.22
Queue Length 95th (ft)	10	12	0	0
Control Delay (s)	23.2	20.2	0.0	0.0
Lane LOS	C	C		
Approach Delay (s)	23.2	20.2	0.0	0.0
Approach LOS	C	C		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	86.1%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3436		1770	3438	1583		1806	1583		1786	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.69	1.00		0.69	1.00
Satd. Flow (perm)	1770	3436		1770	3438	1583		1293	1583		1285	1583
Volume (vph)	139	715	4	125	1337	89	39	23	84	145	24	276
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	154	794	4	139	1486	99	43	26	93	161	27	307
RTOR Reduction (vph)	0	0	0	0	0	19	0	0	73	0	0	168
Lane Group Flow (vph)	154	798	0	139	1486	80	0	69	20	0	188	139
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	13.5	69.1		11.4	67.0	67.0		23.5	23.5		23.5	23.5
Effective Green, g (s)	14.5	70.1		12.4	68.0	68.0		24.5	24.5		24.5	24.5
Actuated g/C Ratio	0.12	0.60		0.11	0.59	0.59		0.21	0.21		0.21	0.21
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	221	2076		189	2015	928		273	334		271	334
v/s Ratio Prot	0.09	0.23		c0.08	c0.43							
v/s Ratio Perm						0.05		0.05	0.01		c0.15	0.09
v/c Ratio	0.70	0.38		0.74	0.74	0.09		0.25	0.06		0.69	0.42
Uniform Delay, d1	48.6	11.8		50.2	17.5	10.5		38.1	36.5		42.3	39.6
Progression Factor	1.00	1.00		1.29	0.82	0.33		1.00	1.00		1.00	1.00
Incremental Delay, d2	9.2	0.5		8.4	1.4	0.1		0.5	0.1		7.5	0.8
Delay (s)	57.8	12.4		73.3	15.8	3.6		38.6	36.6		49.8	40.4
Level of Service	E	B		E	B	A		D	D		D	D
Approach Delay (s)		19.7			19.8			37.5			44.0	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	95	76	119	454	591	82
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	98	78	123	468	609	85
RTOR Reduction (vph)	0	63	0	0	0	33
Lane Group Flow (vph)	98	15	123	468	609	52
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	20.8	20.8	12.6	87.2	70.6	70.6
Effective Green, g (s)	21.8	21.8	13.6	88.2	71.6	71.6
Actuated g/C Ratio	0.19	0.19	0.12	0.76	0.62	0.62
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)	333	297	208	2691	3139	977
v/s Ratio Prot	c0.06		c0.07	0.13	c0.12	
v/s Ratio Perm		0.01				0.03
v/c Ratio	0.29	0.05	0.59	0.17	0.19	0.05
Uniform Delay, d1	40.5	38.6	48.6	3.8	9.7	8.8
Progression Factor	1.00	1.00	1.39	0.30	1.00	1.00
Incremental Delay, d2	0.5	0.1	3.5	0.1	0.1	0.1
Delay (s)	41.0	38.7	70.9	1.3	9.8	8.9
Level of Service	D	D	E	A	A	A
Approach Delay (s)	40.0			15.8	9.7	
Approach LOS	D			B	A	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	36.3%	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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3400		1770	3438	1583	1681	1745	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3400		1770	3438	1583	1681	1745	1583	3433	1863	1583
Volume (vph)	409	844	84	116	886	215	111	64	104	374	55	243
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)	431	888	88	122	933	226	117	67	109	394	58	256
RTOR Reduction (vph)	0	6	0	0	0	90	0	0	93	0	0	0
Lane Group Flow (vph)	431	970	0	122	933	136	90	94	16	394	58	256
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	18.0	53.0		11.2	46.2	46.2	16.6	16.6	16.6	18.7	18.7	116.0
Effective Green, g (s)	18.0	53.5		11.2	46.7	46.7	16.6	16.6	16.6	18.7	18.7	116.0
Actuated g/C Ratio	0.16	0.46		0.10	0.40	0.40	0.14	0.14	0.14	0.16	0.16	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	533	1568		171	1384	637	241	250	227	553	300	1583
v/s Ratio Prot	c0.13	0.29		0.07	c0.27		0.05	c0.05		c0.11	0.03	
v/s Ratio Perm						0.09			0.01			0.16
v/c Ratio	0.81	0.62		0.71	0.67	0.21	0.37	0.38	0.07	0.71	0.19	0.16
Uniform Delay, d1	47.3	23.6		50.8	28.4	22.6	45.0	45.0	43.0	46.1	42.1	0.0
Progression Factor	1.16	0.85		0.93	1.26	2.10	1.00	1.00	1.00	1.14	1.14	1.00
Incremental Delay, d2	8.5	1.8		12.2	2.4	0.7	1.0	1.0	0.1	4.3	0.3	0.2
Delay (s)	63.2	21.8		59.7	38.1	48.3	46.0	46.0	43.1	56.7	48.3	0.2
Level of Service	E	C		E	D	D	D	D	D	E	D	A
Approach Delay (s)		34.5			42.0			44.9			35.6	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	38.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3434		1770	3438	1583		1782	1583	1681	1689	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86	1.00	0.75	0.83	1.00
Satd. Flow (perm)	1770	3434		1770	3438	1583		1611	1583	1328	1467	1583
Volume (vph)	76	1092	12	9	1073	38	10	1	8	39	1	91
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	78	1114	12	9	1095	39	10	1	8	40	1	93
RTOR Reduction (vph)	0	0	0	0	0	10	0	0	6	0	0	74
Lane Group Flow (vph)	78	1126	0	9	1095	29	0	11	2	20	21	19
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	9.0	80.1		1.5	72.6	72.6		22.4	22.4	22.4	22.4	22.4
Effective Green, g (s)	10.0	81.1		2.5	73.6	73.6		23.4	23.4	23.4	23.4	23.4
Actuated g/C Ratio	0.09	0.70		0.02	0.63	0.63		0.20	0.20	0.20	0.20	0.20
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	153	2401		38	2181	1004		325	319	268	296	319
v/s Ratio Prot	c0.04	0.33		0.01	c0.32							
v/s Ratio Perm						0.02		0.01	0.00	c0.02	0.01	0.01
v/c Ratio	0.51	0.47		0.24	0.50	0.03		0.03	0.01	0.07	0.07	0.06
Uniform Delay, d1	50.7	7.8		55.8	11.4	7.9		37.2	37.0	37.5	37.5	37.4
Progression Factor	1.33	0.31		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.5		3.2	0.8	0.1		0.0	0.0	0.1	0.1	0.1
Delay (s)	69.5	2.9		59.0	12.2	7.9		37.3	37.0	37.6	37.6	37.5
Level of Service	E	A		E	B	A		D	D	D	D	D
Approach Delay (s)		7.3			12.4			37.2			37.5	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	57.2%	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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.98	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1831	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.98	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1831	1538
Volume (vph)	0	1009	119	33	680	0	117	0	67	10	20	349
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	1062	125	35	716	0	123	0	71	11	21	367
RTOR Reduction (vph)	0	0	44	0	0	0	0	0	63	0	0	120
Lane Group Flow (vph)	0	1062	81	35	716	0	123	0	8	0	32	247
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		Perm
Protected Phases		2		1	6		8			4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		28.6	28.6	3.3	35.9		7.5		7.5		18.3	18.3
Effective Green, g (s)		29.6	29.6	4.3	36.9		8.5		8.5		19.3	19.3
Actuated g/C Ratio		0.40	0.40	0.06	0.50		0.12		0.12		0.26	0.26
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1381	636	103	1772		396		183		479	403
v/s Ratio Prot		c0.31		0.02	c0.20		c0.04				0.02	
v/s Ratio Perm			0.05						0.01			c0.16
v/c Ratio		0.77	0.13	0.34	0.40		0.31		0.04		0.07	0.61
Uniform Delay, d1		19.1	13.9	33.3	11.5		29.9		29.0		20.4	23.9
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		2.6	0.1	2.0	0.2		0.4		0.1		0.1	2.7
Delay (s)		21.7	14.0	35.3	11.7		30.4		29.1		20.5	26.7
Level of Service		C	B	D	B		C		C		C	C
Approach Delay (s)		20.9			12.8			29.9			26.2	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	73.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.6%	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												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	59	3	3	2	0	11	3	94	4	43	67	26
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)	64	3	3	2	0	12	3	102	4	47	73	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											420	
pX, platoon unblocked												
vC, conflicting volume	301	293	87	296	305	104	101			107		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	301	293	87	296	305	104	101			107		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	99	100	100	100	99	100			97		
cM capacity (veh/h)	627	597	972	634	588	950	1491			1484		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	71	14	3	107	148
Volume Left	64	2	3	0	47
Volume Right	3	12	0	4	28
cSH	635	883	1491	1700	1484
Volume to Capacity	0.11	0.02	0.00	0.06	0.03
Queue Length 95th (ft)	9	1	0	0	2
Control Delay (s)	11.4	9.1	7.4	0.0	2.5
Lane LOS	B	A	A		A
Approach Delay (s)	11.4	9.1	0.2		2.5
Approach LOS	B	A			

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	31.1%	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)	37	0	3	71	33	32
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	45	0	4	86	40	39
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	152	59	78			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	152	59	78			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	838	1007	1520			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	45	0	89	78
Volume Left	45	0	4	0
Volume Right	0	0	0	39
cSH	838	1700	1520	1700
Volume to Capacity	0.05	0.00	0.00	0.05
Queue Length 95th (ft)	4	0	0	0
Control Delay (s)	9.5	0.0	0.3	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.5		0.3	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	16.2%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	49	0	0	9	29	0	726	35	0	0	327
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	54	0	0	10	32	0	807	39	0	0	363
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	847	846	0	1035	826	826	0			846		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	847	846	0	1035	826	826	0			846		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	82	100	100	97	91	100			100		
cM capacity (veh/h)	251	299	1085	181	307	372	1623			791		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	54	42	846	363
Volume Left	0	0	0	0
Volume Right	0	32	39	363
cSH	299	487	1623	1700
Volume to Capacity	0.18	0.09	0.00	0.21
Queue Length 95th (ft)	16	7	0	0
Control Delay (s)	19.7	16.0	0.0	0.0
Lane LOS	C	C		
Approach Delay (s)	19.7	16.0	0.0	0.0
Approach LOS	C	C		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	73.9%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3420		1770	3438	1583		1802	1583		1792	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.77	1.00		0.73	1.00
Satd. Flow (perm)	1770	3420		1770	3438	1583		1443	1583		1366	1583
Volume (vph)	179	830	37	152	931	94	43	21	86	96	26	236
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)	188	874	39	160	980	99	45	22	91	101	27	248
RTOR Reduction (vph)	0	2	0	0	0	27	0	0	73	0	0	199
Lane Group Flow (vph)	188	911	0	160	980	72	0	67	18	0	128	49
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	17.2	66.6		15.5	64.9	64.9		21.9	21.9		21.9	21.9
Effective Green, g (s)	18.2	67.6		16.5	65.9	65.9		22.9	22.9		22.9	22.9
Actuated g/C Ratio	0.16	0.58		0.14	0.57	0.57		0.20	0.20		0.20	0.20
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	278	1993		252	1953	899		285	313		270	313
v/s Ratio Prot	c0.11	0.27		0.09	c0.29							
v/s Ratio Perm						0.05		0.05	0.01		c0.09	0.03
v/c Ratio	0.68	0.46		0.63	0.50	0.08		0.24	0.06		0.47	0.16
Uniform Delay, d1	46.1	13.8		46.9	15.1	11.3		39.2	37.8		41.2	38.6
Progression Factor	1.00	1.00		0.98	0.90	1.23		1.00	1.00		1.00	1.00
Incremental Delay, d2	6.4	0.8		4.4	0.8	0.1		0.4	0.1		1.3	0.2
Delay (s)	52.5	14.5		50.4	14.4	14.1		39.6	37.9		42.5	38.8
Level of Service	D	B		D	B	B		D	D		D	D
Approach Delay (s)		21.0			19.0			38.6			40.1	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frpb, ped/bikes	1.00	0.96	1.00	1.00	1.00	0.88
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1515	1770	3539	5085	1393
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1515	1770	3539	5085	1393
Volume (vph)	184	175	145	1022	533	124
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	204	194	161	1136	592	138
RTOR Reduction (vph)	0	150	0	0	0	54
Lane Group Flow (vph)	204	44	161	1136	592	84
Confl. Peds. (#/hr)	30	30				30
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	25.1	25.1	14.0	82.9	64.9	64.9
Effective Green, g (s)	26.1	26.1	15.0	83.9	65.9	65.9
Actuated g/C Ratio	0.23	0.23	0.13	0.72	0.57	0.57
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)	398	341	229	2560	2889	791
v/s Ratio Prot	c0.12		c0.09	c0.32	0.12	
v/s Ratio Perm		0.03				0.06
v/c Ratio	0.51	0.13	0.70	0.44	0.20	0.11
Uniform Delay, d1	39.4	35.9	48.4	6.5	12.2	11.5
Progression Factor	1.00	1.00	1.08	0.59	1.00	1.00
Incremental Delay, d2	1.1	0.2	6.1	0.4	0.2	0.3
Delay (s)	40.5	36.0	58.3	4.2	12.4	11.8
Level of Service	D	D	E	A	B	B
Approach Delay (s)	38.3			10.9	12.3	
Approach LOS	D			B	B	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	56.1%	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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3427		1770	3438	1583	1681	1770	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3427		1770	3438	1583	1681	1770	1583	3433	1863	1583
Volume (vph)	566	1056	28	97	530	553	62	132	158	597	92	235
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)	596	1112	29	102	558	582	65	139	166	628	97	247
RTOR Reduction (vph)	0	1	0	0	0	393	0	0	138	0	0	0
Lane Group Flow (vph)	596	1140	0	102	558	189	65	139	28	628	97	247
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	22.4	45.2		10.4	33.2	33.2	19.4	19.4	19.4	24.5	24.5	116.0
Effective Green, g (s)	22.4	45.7		10.4	33.7	33.7	19.4	19.4	19.4	24.5	24.5	116.0
Actuated g/C Ratio	0.19	0.39		0.09	0.29	0.29	0.17	0.17	0.17	0.21	0.21	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	663	1350		159	999	460	281	296	265	725	393	1583
v/s Ratio Prot	c0.17	c0.33		0.06	0.16		0.04	c0.08		c0.18	0.05	
v/s Ratio Perm						0.12			0.02			0.16
v/c Ratio	0.90	0.84		0.64	0.56	0.41	0.23	0.47	0.10	0.87	0.25	0.16
Uniform Delay, d1	45.7	31.9		51.0	34.9	33.2	41.8	43.7	40.9	44.2	38.1	0.0
Progression Factor	0.85	0.83		1.40	0.80	1.43	1.00	1.00	1.00	0.82	0.77	1.00
Incremental Delay, d2	13.0	5.6		7.1	1.9	2.2	0.4	1.2	0.2	10.5	0.3	0.2
Delay (s)	51.9	32.0		78.7	29.7	49.7	42.3	44.8	41.1	46.9	29.7	0.2
Level of Service	D	C		E	C	D	D	D	D	D	C	A
Approach Delay (s)		38.8			43.1			42.7			33.3	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	39.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3429		1770	3438	1583		1789	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84	1.00	0.75	0.76	1.00
Satd. Flow (perm)	1770	3429		1770	3438	1583		1573	1583	1321	1347	1583
Volume (vph)	88	1528	32	31	1269	127	13	3	36	109	2	88
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)	93	1608	34	33	1336	134	14	3	38	115	2	93
RTOR Reduction (vph)	0	1	0	0	0	33	0	0	30	0	0	74
Lane Group Flow (vph)	93	1641	0	33	1336	101	0	17	8	58	59	19
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	8.5	76.7		4.7	72.9	72.9		22.6	22.6	22.6	22.6	22.6
Effective Green, g (s)	9.5	77.7		5.7	73.9	73.9		23.6	23.6	23.6	23.6	23.6
Actuated g/C Ratio	0.08	0.67		0.05	0.64	0.64		0.20	0.20	0.20	0.20	0.20
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	145	2297		87	2190	1008		320	322	269	274	322
v/s Ratio Prot	c0.05	c0.48		0.02	0.39							
v/s Ratio Perm						0.06		0.01	0.00	c0.04	0.04	0.01
v/c Ratio	0.64	0.71		0.38	0.61	0.10		0.05	0.02	0.22	0.22	0.06
Uniform Delay, d1	51.6	12.1		53.4	12.5	8.2		37.2	37.0	38.5	38.5	37.2
Progression Factor	0.93	0.91		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.4	1.1		2.8	1.3	0.2		0.1	0.0	0.4	0.4	0.1
Delay (s)	53.3	12.1		56.2	13.8	8.4		37.3	37.0	38.9	38.9	37.3
Level of Service	D	B		E	B	A		D	D	D	D	D
Approach Delay (s)		14.3			14.2			37.1			38.2	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1847	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1847	1538
Volume (vph)	0	1551	113	121	1046	0	259	0	177	6	28	179
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	1633	119	127	1101	0	273	0	186	6	29	188
RTOR Reduction (vph)	0	0	21	0	0	0	0	0	162	0	0	21
Lane Group Flow (vph)	0	1633	98	127	1101	0	273	0	24	0	35	167
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		custom
Protected Phases		2		1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		48.0	48.0	8.2	46.0		10.9		10.9		9.1	19.3
Effective Green, g (s)		49.0	49.0	9.2	47.0		11.9		11.9		10.1	21.3
Actuated g/C Ratio		0.53	0.53	0.10	0.51		0.13		0.13		0.11	0.23
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1827	841	177	1804		443		204		202	355
v/s Ratio Prot		c0.47		c0.07	0.31		c0.08				0.02	c0.06
v/s Ratio Perm			0.06						0.02			0.05
v/c Ratio		0.89	0.12	0.72	0.61		0.62		0.12		0.17	0.47
Uniform Delay, d1		19.3	10.8	40.2	16.1		38.0		35.5		37.3	30.6
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		6.1	0.1	13.0	0.6		2.5		0.3		0.4	1.0
Delay (s)		25.3	10.9	53.2	16.7		40.5		35.8		37.7	31.6
Level of Service		C	B	D	B		D		D		D	C
Approach Delay (s)		24.4			20.5			38.6			32.5	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	25.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	83	2	2	3	2	7	9	307	10	47	179	30
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	112	3	3	4	3	9	12	415	14	64	242	41
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											420	
pX, platoon unblocked												
vC, conflicting volume	839	842	262	839	855	422	282			428		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	839	842	262	839	855	422	282			428		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	58	99	100	98	99	99	99			94		
cM capacity (veh/h)	265	281	776	268	276	632	1280			1131		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	118	16	12	428	346
Volume Left	112	4	12	0	64
Volume Right	3	9	0	14	41
cSH	269	407	1280	1700	1131
Volume to Capacity	0.44	0.04	0.01	0.25	0.06
Queue Length 95th (ft)	52	3	1	0	4
Control Delay (s)	28.3	14.2	7.8	0.0	2.0
Lane LOS	D	B	A		A
Approach Delay (s)	28.3	14.2	0.2		2.0
Approach LOS	D	B			

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	52.1%	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)	53	15	5	226	59	20
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	63	18	6	269	70	24
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	363	82	94			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	363	82	94			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	98	100			
cM capacity (veh/h)	634	978	1500			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	63	18	275	94
Volume Left	63	0	6	0
Volume Right	0	18	0	24
cSH	634	978	1500	1700
Volume to Capacity	0.10	0.02	0.00	0.06
Queue Length 95th (ft)	8	1	0	0
Control Delay (s)	11.3	8.8	0.2	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.7		0.2	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	25.9%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	20	0	0	4	26	0	1014	11	0	0	615
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)	0	21	0	0	4	27	0	1067	12	0	0	647
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1089	1079	0	1407	1073	1073	0			1079		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1089	1079	0	1407	1073	1073	0			1079		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	90	100	100	98	90	100			100		
cM capacity (veh/h)	171	218	1085	108	220	268	1623			646		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	32	1079	647
Volume Left	0	0	0	0
Volume Right	0	27	12	647
cSH	218	309	1623	1700
Volume to Capacity	0.10	0.10	0.00	0.38
Queue Length 95th (ft)	8	8	0	0
Control Delay (s)	23.2	20.2	0.0	0.0
Lane LOS	C	C		
Approach Delay (s)	23.2	20.2	0.0	0.0
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	105.4%	ICU Level of Service	G
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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3434		1770	3438	1583		1814	1583		1781	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.90	1.00		0.75	1.00
Satd. Flow (perm)	1770	3434		1770	3438	1583		1671	1583		1388	1583
Volume (vph)	128	1324	14	34	615	115	7	6	16	80	7	75
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	142	1471	16	38	683	128	8	7	18	89	8	83
RTOR Reduction (vph)	0	1	0	0	0	52	0	0	15	0	0	67
Lane Group Flow (vph)	142	1486	0	38	683	76	0	15	3	0	97	16
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	14.2	77.3		5.2	68.3	68.3		21.5	21.5		21.5	21.5
Effective Green, g (s)	15.2	78.3		6.2	69.3	69.3		22.5	22.5		22.5	22.5
Actuated g/C Ratio	0.13	0.67		0.05	0.60	0.60		0.19	0.19		0.19	0.19
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	232	2318		95	2054	946		324	307		269	307
v/s Ratio Prot	c0.08	c0.43		0.02	0.20							
v/s Ratio Perm						0.05		0.01	0.00		c0.07	0.01
v/c Ratio	0.61	0.64		0.40	0.33	0.08		0.05	0.01		0.36	0.05
Uniform Delay, d1	47.6	10.8		53.1	11.7	9.9		38.0	37.8		40.5	38.1
Progression Factor	1.00	1.00		0.86	1.18	3.48		1.00	1.00		1.00	1.00
Incremental Delay, d2	4.7	1.4		2.5	0.4	0.2		0.1	0.0		0.8	0.1
Delay (s)	52.3	12.2		48.3	14.2	34.5		38.1	37.8		41.3	38.1
Level of Service	D	B		D	B	C		D	D		D	D
Approach Delay (s)		15.7			18.8			37.9			39.9	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	114	87	122	732	1067	147
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	127	97	136	813	1186	163
RTOR Reduction (vph)	0	76	0	0	0	38
Lane Group Flow (vph)	127	21	136	813	1186	125
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	23.9	23.9	13.8	84.1	66.3	66.3
Effective Green, g (s)	24.9	24.9	14.8	85.1	67.3	67.3
Actuated g/C Ratio	0.21	0.21	0.13	0.73	0.58	0.58
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)	380	340	226	2596	2950	918
v/s Ratio Prot	c0.07		c0.08	0.23	c0.23	
v/s Ratio Perm		0.01				0.08
v/c Ratio	0.33	0.06	0.60	0.31	0.40	0.14
Uniform Delay, d1	38.5	36.2	47.8	5.3	13.3	11.1
Progression Factor	1.00	1.00	0.74	0.57	1.00	1.00
Incremental Delay, d2	0.5	0.1	2.9	0.2	0.4	0.3
Delay (s)	39.1	36.3	38.3	3.2	13.7	11.4
Level of Service	D	D	D	A	B	B
Approach Delay (s)	37.9			8.3	13.5	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3401		1770	3438	1583	1681	1748	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3401		1770	3438	1583	1681	1748	1583	3433	1863	1583
Volume (vph)	456	811	79	225	1277	396	132	82	126	485	92	517
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)	480	854	83	237	1344	417	139	86	133	511	97	544
RTOR Reduction (vph)	0	6	0	0	0	114	0	0	111	0	0	0
Lane Group Flow (vph)	480	931	0	237	1344	303	110	115	22	511	97	544
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	17.9	40.4		17.4	39.9	39.9	19.1	19.1	19.1	22.6	22.6	116.0
Effective Green, g (s)	17.9	40.9		17.4	40.4	40.4	19.1	19.1	19.1	22.6	22.6	116.0
Actuated g/C Ratio	0.15	0.35		0.15	0.35	0.35	0.16	0.16	0.16	0.19	0.19	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	530	1199		266	1197	551	277	288	261	669	363	1583
v/s Ratio Prot	c0.14	0.27		0.13	c0.39		0.07	0.07		c0.15	0.05	
v/s Ratio Perm						0.19			0.01			c0.34
v/c Ratio	0.91	0.78		0.89	1.12	0.55	0.40	0.40	0.08	0.76	0.27	0.34
Uniform Delay, d1	48.2	33.5		48.4	37.8	30.5	43.3	43.3	41.0	44.2	39.7	0.0
Progression Factor	0.88	0.97		0.67	1.17	1.31	1.00	1.00	1.00	0.66	0.57	1.00
Incremental Delay, d2	18.2	4.7		20.2	62.8	2.5	0.9	0.9	0.1	4.9	0.4	0.6
Delay (s)	60.7	37.3		52.7	107.1	42.3	44.2	44.2	41.2	34.1	23.0	0.6
Level of Service	E	D		D	F	D	D	D	D	C	C	A
Approach Delay (s)		45.2			87.1			43.1			17.3	
Approach LOS		D			F			D			B	

Intersection Summary			
HCM Average Control Delay	55.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3433		1770	3438	1583		1806	1583	1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.92	1.00	0.75	0.75	1.00
Satd. Flow (perm)	1770	3433		1770	3438	1583		1705	1583	1332	1332	1583
Volume (vph)	154	1229	16	8	1623	100	5	3	20	88	0	112
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)	162	1294	17	8	1708	105	5	3	21	93	0	118
RTOR Reduction (vph)	0	1	0	0	0	20	0	0	16	0	0	92
Lane Group Flow (vph)	162	1310	0	8	1708	85	0	8	5	47	46	26
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	14.6	78.2		1.4	65.0	65.0		24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	15.6	79.2		2.4	66.0	66.0		25.4	25.4	25.4	25.4	25.4
Actuated g/C Ratio	0.13	0.68		0.02	0.57	0.57		0.22	0.22	0.22	0.22	0.22
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	238	2344		37	1956	901		373	347	292	292	347
v/s Ratio Prot	c0.09	0.38		0.00	c0.50							
v/s Ratio Perm						0.05		0.00	0.00	c0.04	0.03	0.02
v/c Ratio	0.68	0.56		0.22	0.87	0.09		0.02	0.01	0.16	0.16	0.07
Uniform Delay, d1	47.8	9.4		55.9	21.4	11.4		35.5	35.5	36.7	36.6	36.0
Progression Factor	0.84	0.98		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.2	0.6		2.9	5.8	0.2		0.0	0.0	0.3	0.3	0.1
Delay (s)	45.5	9.9		58.8	27.2	11.6		35.6	35.5	36.9	36.9	36.1
Level of Service	D	A		E	C	B		D	D	D	D	D
Approach Delay (s)		13.8			26.4			35.5			36.4	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	21.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.5%	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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1858	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1858	1538
Volume (vph)	0	1041	264	202	963	0	296	0	262	7	112	500
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	1096	278	213	1014	0	312	0	276	7	118	526
RTOR Reduction (vph)	0	0	85	0	0	0	0	0	238	0	0	11
Lane Group Flow (vph)	0	1096	193	213	1014	0	312	0	38	0	125	515
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		custom
Protected Phases		2		1	6		8		8	4	4	5
Permitted Phases			2									4
Actuated Green, G (s)		37.3	37.3	9.6	29.2		10.7		10.7		11.6	29.3
Effective Green, g (s)		38.3	38.3	10.6	30.2		11.7		11.7		12.6	31.3
Actuated g/C Ratio		0.45	0.45	0.12	0.35		0.14		0.14		0.15	0.37
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1545	712	220	1254		471		217		275	565
v/s Ratio Prot		0.32		c0.12	c0.29		c0.09		0.02		0.07	c0.20
v/s Ratio Perm			0.12									0.13
v/c Ratio		0.71	0.27	0.97	0.81		0.66		0.17		0.45	0.91
Uniform Delay, d1		19.0	14.7	37.1	24.9		34.9		32.5		33.2	25.6
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		1.5	0.2	51.0	3.9		3.5		0.4		1.2	19.1
Delay (s)		20.5	14.9	88.2	28.8		38.4		32.9		34.4	44.7
Level of Service		C	B	F	C		D		C		C	D
Approach Delay (s)		19.3			39.1			35.8			42.7	
Approach LOS		B			D			D			D	

Intersection Summary			
HCM Average Control Delay	32.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	85.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.0%	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												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	42	0	1	0	2	16	1	450	8	24	461	37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	49	0	1	0	2	19	1	529	9	28	542	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)											420	
pX, platoon unblocked	0.96	0.96	0.96	0.96	0.96		0.96					
vC, conflicting volume	1172	1162	564	1158	1179	534	586			539		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1180	1169	545	1165	1187	534	568			539		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	67	100	100	100	99	97	100			97		
cM capacity (veh/h)	150	180	516	160	175	546	962			1030		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	51	21	1	539	614
Volume Left	49	0	1	0	28
Volume Right	1	19	0	9	44
cSH	152	442	962	1700	1030
Volume to Capacity	0.33	0.05	0.00	0.32	0.03
Queue Length 95th (ft)	34	4	0	0	2
Control Delay (s)	40.0	13.6	8.7	0.0	0.7
Lane LOS	E	B	A		A
Approach Delay (s)	40.0	13.6	0.0		0.7
Approach LOS	E	B			

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	62.0%	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)	31	2	6	91	76	42
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	35	2	7	103	86	48
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	227	110	134			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227	110	134			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	757	943	1450			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	35	2	110	134
Volume Left	35	0	7	0
Volume Right	0	2	0	48
cSH	757	943	1450	1700
Volume to Capacity	0.05	0.00	0.00	0.08
Queue Length 95th (ft)	4	0	0	0
Control Delay (s)	10.0	8.8	0.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.9		0.5	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	19.7%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	25	0	0	5	35	0	1061	13	0	0	401
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)	0	27	0	0	5	38	0	1153	14	0	0	436
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											1293	
pX, platoon unblocked												
vC, conflicting volume	1182	1167	0	1392	1160	1160	0			1167		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1182	1167	0	1392	1160	1160	0			1167		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	86	100	100	97	84	100			100		
cM capacity (veh/h)	137	194	1085	107	195	238	1623			598		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	43	1167	436
Volume Left	0	0	0	0
Volume Right	0	38	14	436
cSH	194	272	1623	1700
Volume to Capacity	0.14	0.16	0.00	0.26
Queue Length 95th (ft)	12	14	0	0
Control Delay (s)	26.6	23.1	0.0	0.0
Lane LOS	D	C		
Approach Delay (s)	26.6	23.1	0.0	0.0
Approach LOS	D	C		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3436		1770	3438	1583		1806	1583		1786	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.69	1.00		0.69	1.00
Satd. Flow (perm)	1770	3436		1770	3438	1583		1293	1583		1285	1583
Volume (vph)	139	793	4	125	1415	89	39	23	84	145	24	276
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	154	881	4	139	1572	99	43	26	93	161	27	307
RTOR Reduction (vph)	0	0	0	0	0	18	0	0	73	0	0	166
Lane Group Flow (vph)	154	885	0	139	1572	81	0	69	20	0	188	141
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	13.5	69.1		11.4	67.0	67.0		23.5	23.5		23.5	23.5
Effective Green, g (s)	14.5	70.1		12.4	68.0	68.0		24.5	24.5		24.5	24.5
Actuated g/C Ratio	0.12	0.60		0.11	0.59	0.59		0.21	0.21		0.21	0.21
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	221	2076		189	2015	928		273	334		271	334
v/s Ratio Prot	0.09	0.26		c0.08	c0.46							
v/s Ratio Perm						0.05		0.05	0.01		c0.15	0.09
v/c Ratio	0.70	0.43		0.74	0.78	0.09		0.25	0.06		0.69	0.42
Uniform Delay, d1	48.6	12.2		50.2	18.3	10.5		38.1	36.5		42.3	39.6
Progression Factor	1.00	1.00		1.31	0.85	0.32		1.00	1.00		1.00	1.00
Incremental Delay, d2	9.2	0.6		6.9	1.5	0.1		0.5	0.1		7.5	0.9
Delay (s)	57.8	12.9		72.6	17.0	3.4		38.6	36.6		49.8	40.5
Level of Service	E	B		E	B	A		D	D		D	D
Approach Delay (s)		19.5			20.5			37.5			44.0	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	95	80	123	547	688	82
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	98	82	127	564	709	85
RTOR Reduction (vph)	0	67	0	0	0	32
Lane Group Flow (vph)	98	15	127	564	709	53
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	20.8	20.8	13.4	87.2	69.8	69.8
Effective Green, g (s)	21.8	21.8	14.4	88.2	70.8	70.8
Actuated g/C Ratio	0.19	0.19	0.12	0.76	0.61	0.61
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)	333	297	220	2691	3104	966
v/s Ratio Prot	c0.06		c0.07	0.16	c0.14	
v/s Ratio Perm		0.01				0.03
v/c Ratio	0.29	0.05	0.58	0.21	0.23	0.05
Uniform Delay, d1	40.5	38.6	47.9	4.0	10.2	9.1
Progression Factor	1.00	1.00	1.05	1.02	1.00	1.00
Incremental Delay, d2	0.5	0.1	2.8	0.1	0.2	0.1
Delay (s)	41.0	38.7	53.3	4.2	10.4	9.2
Level of Service	D	D	D	A	B	A
Approach Delay (s)	39.9			13.2	10.3	
Approach LOS	D			B	B	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3405		1770	3438	1583	1681	1745	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3405		1770	3438	1583	1681	1745	1583	3433	1863	1583
Volume (vph)	409	961	84	128	999	312	111	64	116	475	55	243
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)	431	1012	88	135	1052	328	117	67	122	500	58	256
RTOR Reduction (vph)	0	5	0	0	0	120	0	0	105	0	0	0
Lane Group Flow (vph)	431	1095	0	135	1052	208	90	94	17	500	58	256
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	17.9	50.5		11.4	44.0	44.0	16.6	16.6	16.6	21.0	21.0	116.0
Effective Green, g (s)	17.9	51.0		11.4	44.5	44.5	16.6	16.6	16.6	21.0	21.0	116.0
Actuated g/C Ratio	0.15	0.44		0.10	0.38	0.38	0.14	0.14	0.14	0.18	0.18	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	530	1497		174	1319	607	241	250	227	621	337	1583
v/s Ratio Prot	c0.13	0.32		0.08	c0.31		0.05	c0.05		c0.15	0.03	
v/s Ratio Perm						0.13			0.01			0.16
v/c Ratio	0.81	0.73		0.78	0.80	0.34	0.37	0.38	0.08	0.81	0.17	0.16
Uniform Delay, d1	47.4	26.8		51.1	31.7	25.4	45.0	45.0	43.1	45.5	40.2	0.0
Progression Factor	1.18	0.88		0.68	1.37	2.20	1.00	1.00	1.00	1.33	1.47	1.00
Incremental Delay, d2	8.8	3.0		16.9	4.4	1.3	1.0	1.0	0.1	7.4	0.2	0.2
Delay (s)	64.8	26.7		51.7	47.8	57.3	46.0	46.0	43.2	68.1	59.1	0.2
Level of Service	E	C		D	D	E	D	D	D	E	E	A
Approach Delay (s)		37.5			50.2			44.9			46.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	44.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	116.0	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3434		1770	3438	1583		1782	1583	1681	1689	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86	1.00	0.75	0.82	1.00
Satd. Flow (perm)	1770	3434		1770	3438	1583		1609	1583	1328	1457	1583
Volume (vph)	76	1322	12	9	1294	42	10	1	8	43	1	91
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	78	1349	12	9	1320	43	10	1	8	44	1	93
RTOR Reduction (vph)	0	0	0	0	0	9	0	0	6	0	0	74
Lane Group Flow (vph)	78	1361	0	9	1320	34	0	11	2	22	23	19
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	8.7	80.1		1.5	72.9	72.9		22.4	22.4	22.4	22.4	22.4
Effective Green, g (s)	9.7	81.1		2.5	73.9	73.9		23.4	23.4	23.4	23.4	23.4
Actuated g/C Ratio	0.08	0.70		0.02	0.64	0.64		0.20	0.20	0.20	0.20	0.20
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	148	2401		38	2190	1008		325	319	268	294	319
v/s Ratio Prot	c0.04	0.40		0.01	c0.38							
v/s Ratio Perm						0.02		0.01	0.00	c0.02	0.02	0.01
v/c Ratio	0.53	0.57		0.24	0.60	0.03		0.03	0.01	0.08	0.08	0.06
Uniform Delay, d1	51.0	8.7		55.8	12.4	7.8		37.2	37.0	37.6	37.6	37.4
Progression Factor	1.14	0.42		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.7		3.2	1.2	0.1		0.0	0.0	0.1	0.1	0.1
Delay (s)	60.4	4.3		59.0	13.6	7.9		37.3	37.0	37.7	37.7	37.5
Level of Service	E	A		E	B	A		D	D	D	D	D
Approach Delay (s)		7.3			13.8			37.2			37.5	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1855	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1855	1538
Volume (vph)	0	985	377	205	665	0	356	0	325	10	120	349
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	1037	397	216	700	0	375	0	342	11	126	367
RTOR Reduction (vph)	0	0	152	0	0	0	0	0	296	0	0	90
Lane Group Flow (vph)	0	1037	245	216	700	0	375	0	46	0	137	277
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		Perm
Protected Phases		2		1	6		8			4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		30.2	30.2	7.2	41.4		10.3		10.3		19.8	19.8
Effective Green, g (s)		31.2	31.2	8.2	42.4		11.3		11.3		20.8	20.8
Actuated g/C Ratio		0.37	0.37	0.10	0.51		0.14		0.14		0.25	0.25
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1285	591	174	1797		465		214		462	383
v/s Ratio Prot		c0.30		c0.12	0.20		c0.11				0.07	
v/s Ratio Perm			0.16						0.03			c0.18
v/c Ratio		0.81	0.42	1.24	0.39		0.81		0.22		0.30	0.72
Uniform Delay, d1		23.5	19.4	37.6	12.6		35.0		32.2		25.4	28.7
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		3.8	0.5	147.7	0.1		9.9		0.5		0.4	6.6
Delay (s)		27.3	19.9	185.4	12.7		44.9		32.7		25.8	35.3
Level of Service		C	B	F	B		D		C		C	D
Approach Delay (s)		25.2			53.5			39.1			32.7	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	83.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	59	3	3	2	0	11	3	591	4	43	598	26
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)	64	3	3	2	0	12	3	642	4	47	650	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											420	
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	1418	1411	664	1414	1423	645	678			647		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1433	1426	652	1428	1438	645	667			647		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	36	97	99	98	100	97	100			95		
cM capacity (veh/h)	101	124	452	101	122	472	891			939		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	71	14	3	647	725
Volume Left	64	2	3	0	47
Volume Right	3	12	0	4	28
cSH	105	302	891	1700	939
Volume to Capacity	0.67	0.05	0.00	0.38	0.05
Queue Length 95th (ft)	85	4	0	0	4
Control Delay (s)	90.5	17.5	9.1	0.0	1.3
Lane LOS	F	C	A		A
Approach Delay (s)	90.5	17.5	0.0		1.3
Approach LOS	F	C			

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
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)	37	0	3	79	53	32
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	45	0	4	95	64	39
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	186	83	102			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	186	83	102			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	100	100			
cM capacity (veh/h)	802	976	1490			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	45	0	99	102
Volume Left	45	0	4	0
Volume Right	0	0	0	39
cSH	802	1700	1490	1700
Volume to Capacity	0.06	0.00	0.00	0.06
Queue Length 95th (ft)	4	0	0	0
Control Delay (s)	9.8	0.0	0.3	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.8		0.3	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	16.6%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	49	0	0	9	29	0	883	35	0	0	409
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	54	0	0	10	32	0	981	39	0	0	454
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1022	1020	0	1255	1001	1001	0			1020		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1022	1020	0	1255	1001	1001	0			1020		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	77	100	100	96	89	100			100		
cM capacity (veh/h)	185	237	1085	122	243	295	1623			680		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	54	42	1020	454
Volume Left	0	0	0	0
Volume Right	0	32	39	454
cSH	237	386	1623	1700
Volume to Capacity	0.23	0.11	0.00	0.27
Queue Length 95th (ft)	22	9	0	0
Control Delay (s)	24.7	19.1	0.0	0.0
Lane LOS	C	C		
Approach Delay (s)	24.7	19.1	0.0	0.0
Approach LOS	C	C		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	87.3%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3422		1770	3438	1583		1802	1583		1792	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.77	1.00		0.73	1.00
Satd. Flow (perm)	1770	3422		1770	3438	1583		1443	1583		1366	1583
Volume (vph)	179	947	37	152	1044	94	43	21	86	96	26	236
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)	188	997	39	160	1099	99	45	22	91	101	27	248
RTOR Reduction (vph)	0	2	0	0	0	24	0	0	73	0	0	199
Lane Group Flow (vph)	188	1034	0	160	1099	75	0	67	18	0	128	49
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	17.2	66.8		15.3	64.9	64.9		21.9	21.9		21.9	21.9
Effective Green, g (s)	18.2	67.8		16.3	65.9	65.9		22.9	22.9		22.9	22.9
Actuated g/C Ratio	0.16	0.58		0.14	0.57	0.57		0.20	0.20		0.20	0.20
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	278	2000		249	1953	899		285	313		270	313
v/s Ratio Prot	c0.11	0.30		0.09	c0.32							
v/s Ratio Perm						0.05		0.05	0.01		c0.09	0.03
v/c Ratio	0.68	0.52		0.64	0.56	0.08		0.24	0.06		0.47	0.16
Uniform Delay, d1	46.1	14.4		47.1	15.9	11.4		39.2	37.8		41.2	38.6
Progression Factor	1.00	1.00		0.99	0.97	1.25		1.00	1.00		1.00	1.00
Incremental Delay, d2	6.4	1.0		4.3	0.9	0.1		0.4	0.1		1.3	0.2
Delay (s)	52.5	15.3		50.8	16.3	14.4		39.6	37.9		42.5	38.8
Level of Service	D	B		D	B	B		D	D		D	D
Approach Delay (s)		21.0			20.2			38.6			40.1	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	23.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	9.0
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3427		3433	3438	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3427		3433	3438	1583	1770	1863	1583	3433	1863	1583
Volume (vph)	566	1056	28	97	530	553	62	132	158	597	92	235
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)	596	1112	29	102	558	582	65	139	166	628	97	247
RTOR Reduction (vph)	0	1	0	0	0	205	0	0	8	0	0	0
Lane Group Flow (vph)	596	1140	0	102	558	377	65	139	158	628	97	247
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	19.0	48.5		7.0	36.5	56.5	7.0	24.0	31.0	20.0	37.0	116.0
Effective Green, g (s)	19.0	49.0		7.0	37.0	57.0	7.0	24.0	31.0	20.0	37.0	116.0
Actuated g/C Ratio	0.16	0.42		0.06	0.32	0.49	0.06	0.21	0.27	0.17	0.32	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	562	1448		207	1097	832	107	385	478	592	594	1583
v/s Ratio Prot	c0.17	c0.33		0.03	0.16	0.08	0.04	c0.07	0.02	c0.18	0.05	
v/s Ratio Perm						0.16			0.08			0.16
v/c Ratio	1.06	0.79		0.49	0.51	0.45	0.61	0.36	0.33	1.06	0.16	0.16
Uniform Delay, d1	48.5	29.0		52.8	32.1	19.3	53.2	39.4	34.2	48.0	28.4	0.0
Progression Factor	0.86	0.82		1.34	0.74	0.43	1.00	1.00	1.00	0.83	0.73	1.00
Incremental Delay, d2	52.0	3.7		1.5	1.4	0.3	9.4	0.6	0.4	54.0	0.1	0.2
Delay (s)	93.8	27.5		72.1	25.2	8.7	62.6	40.0	34.6	93.7	20.8	0.2
Level of Service	F	C		E	C	A	E	D	C	F	C	A
Approach Delay (s)		50.2			21.3			41.5			62.7	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM Average Control Delay	44.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1847	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1847	1538
Volume (vph)	0	1551	113	121	1046	0	259	0	177	6	28	179
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	1633	119	127	1101	0	273	0	186	6	29	188
RTOR Reduction (vph)	0	0	18	0	0	0	0	0	162	0	0	21
Lane Group Flow (vph)	0	1633	101	127	1101	0	273	0	24	0	35	167
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			pm+ov	Prot			Prot		custom	Split		custom
Protected Phases		2	8	1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		48.0	58.9	8.2	46.0		10.9		10.9		9.1	19.3
Effective Green, g (s)		49.0	60.9	9.2	47.0		11.9		11.9		10.1	21.3
Actuated g/C Ratio		0.53	0.66	0.10	0.51		0.13		0.13		0.11	0.23
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1827	1046	177	1804		443		204		202	355
v/s Ratio Prot		c0.47	0.01	c0.07	0.31		c0.08				0.02	c0.06
v/s Ratio Perm			0.05						0.02			0.05
v/c Ratio		0.89	0.10	0.72	0.61		0.62		0.12		0.17	0.47
Uniform Delay, d1		19.3	5.7	40.2	16.1		38.0		35.5		37.3	30.6
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		6.1	0.0	13.0	0.6		2.5		0.3		0.4	1.0
Delay (s)		25.3	5.7	53.2	16.7		40.5		35.8		37.7	31.6
Level of Service		C	A	D	B		D		D		D	C
Approach Delay (s)		24.0			20.5			38.6			32.5	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	25.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3401		3433	3438	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3401		3433	3438	1583	1770	1863	1583	3433	1863	1583
Volume (vph)	456	811	79	225	1277	396	132	82	126	485	92	517
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)	480	854	83	237	1344	417	139	86	133	511	97	544
RTOR Reduction (vph)	0	5	0	0	0	113	0	0	14	0	0	0
Lane Group Flow (vph)	480	932	0	237	1344	304	139	86	119	511	97	544
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	17.0	46.7		12.0	41.7	60.7	16.2	21.8	33.8	19.0	24.6	116.0
Effective Green, g (s)	17.0	47.2		12.0	42.2	61.2	16.2	21.8	33.8	19.0	24.6	116.0
Actuated g/C Ratio	0.15	0.41		0.10	0.36	0.53	0.14	0.19	0.29	0.16	0.21	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	503	1384		355	1251	890	247	350	516	562	395	1583
v/s Ratio Prot	c0.14	0.27		0.07	c0.39	0.06	0.08	0.05	0.02	c0.15	0.05	
v/s Ratio Perm						0.14			0.05			c0.34
v/c Ratio	0.95	0.67		0.67	1.07	0.34	0.56	0.25	0.23	0.91	0.25	0.34
Uniform Delay, d1	49.1	28.1		50.1	36.9	15.8	46.6	40.1	31.2	47.7	38.0	0.0
Progression Factor	0.88	0.95		0.75	1.13	2.46	1.00	1.00	1.00	0.70	0.73	1.00
Incremental Delay, d2	27.8	2.5		3.0	43.4	0.1	2.9	0.4	0.2	17.7	0.3	0.6
Delay (s)	70.8	29.2		40.5	85.0	39.0	49.5	40.5	31.4	50.8	28.0	0.6
Level of Service	E	C		D	F	D	D	D	C	D	C	A
Approach Delay (s)		43.3			70.1			40.6			25.1	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM Average Control Delay	49.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1858	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1858	1538
Volume (vph)	0	1041	264	202	963	0	296	0	262	7	112	500
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	1096	278	213	1014	0	312	0	276	7	118	526
RTOR Reduction (vph)	0	0	77	0	0	0	0	0	238	0	0	11
Lane Group Flow (vph)	0	1096	201	213	1014	0	312	0	38	0	125	515
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			pm+ov	Prot			Prot		custom	Split		custom
Protected Phases		2	8	1	6		8		8	4	4	5
Permitted Phases			2									4
Actuated Green, G (s)		37.2	47.9	9.6	29.2		10.7		10.7		11.6	29.2
Effective Green, g (s)		38.2	49.9	10.6	30.2		11.7		11.7		12.6	31.2
Actuated g/C Ratio		0.45	0.59	0.12	0.35		0.14		0.14		0.15	0.37
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1543	928	220	1256		472		218		275	564
v/s Ratio Prot		0.32	0.03	c0.12	c0.29		c0.09		0.02		0.07	c0.20
v/s Ratio Perm			0.10									0.14
v/c Ratio		0.71	0.22	0.97	0.81		0.66		0.17		0.45	0.91
Uniform Delay, d1		19.0	8.3	37.1	24.8		34.8		32.4		33.1	25.7
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		1.6	0.1	51.0	3.9		3.5		0.4		1.2	19.3
Delay (s)		20.5	8.5	88.1	28.7		38.3		32.8		34.3	45.0
Level of Service		C	A	F	C		D		C		C	D
Approach Delay (s)		18.1			39.0			35.7			42.9	
Approach LOS		B			D			D			D	

Intersection Summary			
HCM Average Control Delay	31.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	85.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.0%	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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3405		3433	3438	1583	1681	1745	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.94	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3405		3433	3438	1583	1681	1661	1583	3433	1863	1583
Volume (vph)	409	961	84	128	999	312	111	64	116	475	55	243
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)	431	1012	88	135	1052	328	117	67	122	500	58	256
RTOR Reduction (vph)	0	5	0	0	0	123	0	0	13	0	0	0
Lane Group Flow (vph)	431	1095	0	135	1052	205	90	94	109	500	58	256
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	16.7	46.5		8.6	38.4	56.4	10.0	36.4	35.0	18.0	34.4	116.0
Effective Green, g (s)	16.7	47.0		8.6	38.9	56.9	10.0	36.4	35.0	18.0	34.4	116.0
Actuated g/C Ratio	0.14	0.41		0.07	0.34	0.49	0.09	0.31	0.30	0.16	0.30	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	494	1380		255	1153	831	145	528	532	533	552	1583
v/s Ratio Prot	c0.13	0.32		0.04	c0.31	0.04	0.05	0.02	c0.02	c0.15	0.03	
v/s Ratio Perm						0.09		0.04	0.05			0.16
v/c Ratio	0.87	0.79		0.53	0.91	0.25	0.62	0.18	0.21	0.94	0.11	0.16
Uniform Delay, d1	48.6	30.2		51.7	36.9	17.1	51.2	28.9	30.2	48.4	29.6	0.0
Progression Factor	0.86	0.86		1.24	0.80	0.18	1.00	1.00	1.00	0.80	0.68	1.00
Incremental Delay, d2	14.8	4.5		1.7	10.9	0.1	8.0	0.2	0.2	24.1	0.1	0.2
Delay (s)	56.6	30.6		66.1	40.5	3.3	59.2	29.1	30.3	62.8	20.1	0.2
Level of Service	E	C		E	D	A	E	C	C	E	C	A
Approach Delay (s)		37.9			34.7			38.4			40.1	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	37.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	116.0	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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1855	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1855	1538
Volume (vph)	0	985	377	205	665	0	356	0	325	10	120	349
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	1037	397	216	700	0	375	0	342	11	126	367
RTOR Reduction (vph)	0	0	141	0	0	0	0	0	295	0	0	86
Lane Group Flow (vph)	0	1037	256	216	700	0	375	0	47	0	137	281
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			pm+ov	Prot			Prot		custom	Split		Perm
Protected Phases		2	8	1	6		8			4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		28.3	39.4	12.1	44.4		11.1		11.1		20.4	20.4
Effective Green, g (s)		29.3	41.4	13.1	45.4		12.1		12.1		21.4	21.4
Actuated g/C Ratio		0.33	0.47	0.15	0.52		0.14		0.14		0.24	0.24
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1146	746	264	1828		473		218		452	374
v/s Ratio Prot		c0.30	0.05	c0.12	0.20		c0.11				0.07	
v/s Ratio Perm			0.11						0.03			c0.18
v/c Ratio		0.90	0.34	0.82	0.38		0.79		0.22		0.30	0.75
Uniform Delay, d1		28.0	14.7	36.2	12.8		36.7		33.7		27.2	30.8
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		10.1	0.3	17.6	0.1		8.9		0.5		0.4	8.2
Delay (s)		38.1	15.0	53.8	12.9		45.5		34.2		27.5	39.0
Level of Service		D	B	D	B		D		C		C	D
Approach Delay (s)		31.7			22.6			40.1			35.9	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	31.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	87.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	212	185	150	1190	645	143
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	223	195	158	1253	679	151
RTOR Reduction (vph)	0	162	0	0	0	57
Lane Group Flow (vph)	223	33	158	1253	679	94
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	22.4	22.4	17.2	90.4	69.2	69.2
Effective Green, g (s)	23.4	23.4	18.2	91.4	70.2	70.2
Actuated g/C Ratio	0.17	0.17	0.13	0.65	0.50	0.50
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)	296	265	230	2310	2550	794
v/s Ratio Prot	c0.13		c0.09	c0.35	0.13	
v/s Ratio Perm		0.02				0.06
v/c Ratio	0.75	0.12	0.69	0.54	0.27	0.12
Uniform Delay, d1	55.6	49.6	58.2	13.1	20.1	18.5
Progression Factor	1.00	1.00	1.32	0.39	1.00	1.00
Incremental Delay, d2	10.4	0.2	2.8	0.3	0.3	0.3
Delay (s)	65.9	49.8	79.6	5.4	20.3	18.8
Level of Service	E	D	E	A	C	B
Approach Delay (s)	58.4			13.7	20.1	
Approach LOS	E			B	C	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.2
Intersection Capacity Utilization	51.3%	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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3425		1770	3438	1583	1681	1770	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3425		1770	3438	1583	1681	1770	1583	3433	1863	1583
Volume (vph)	674	1207	39	99	646	605	74	146	163	650	102	312
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	688	1232	40	101	659	617	76	149	166	663	104	318
RTOR Reduction (vph)	0	2	0	0	0	287	0	0	95	0	0	0
Lane Group Flow (vph)	688	1270	0	101	659	330	76	149	71	663	104	318
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	23.0	60.5		8.0	45.5	45.5	24.7	24.7	24.7	30.3	30.3	140.0
Effective Green, g (s)	23.0	61.0		8.0	46.0	46.0	24.7	24.7	24.7	30.3	30.3	140.0
Actuated g/C Ratio	0.16	0.44		0.06	0.33	0.33	0.18	0.18	0.18	0.22	0.22	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	564	1492		101	1130	520	297	312	279	743	403	1583
v/s Ratio Prot	c0.20	c0.37		0.06	0.19		0.05	c0.08		c0.19	0.06	
v/s Ratio Perm						0.21			0.05			0.20
v/c Ratio	1.22	0.85		1.00	0.58	0.64	0.26	0.48	0.26	0.89	0.26	0.20
Uniform Delay, d1	58.5	35.4		66.0	39.0	39.9	49.7	51.8	49.7	53.3	45.5	0.0
Progression Factor	0.87	0.94		1.38	0.66	0.91	1.00	1.00	1.00	0.90	0.83	1.00
Incremental Delay, d2	111.8	5.3		79.2	1.7	4.6	0.5	1.2	0.5	12.8	0.3	0.3
Delay (s)	162.5	38.5		170.4	27.5	40.9	50.2	53.0	50.2	60.9	38.1	0.3
Level of Service	F	D		F	C	D	D	D	D	E	D	A
Approach Delay (s)		82.0			44.0			51.3			40.9	
Approach LOS		F			D			D			D	

Intersection Summary			
HCM Average Control Delay	59.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3430		1770	3438	1583		1790	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84	1.00	0.75	0.75	1.00
Satd. Flow (perm)	1770	3430		1770	3438	1583		1562	1583	1322	1323	1583
Volume (vph)	119	1705	32	31	1441	153	13	3	36	119	2	105
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	121	1740	33	32	1470	156	13	3	37	121	2	107
RTOR Reduction (vph)	0	1	0	0	0	24	0	0	31	0	0	89
Lane Group Flow (vph)	121	1772	0	32	1470	132	0	16	6	61	62	18
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	14.4	99.9		5.5	91.0	91.0		22.6	22.6	22.6	22.6	22.6
Effective Green, g (s)	15.4	100.9		6.5	92.0	92.0		23.6	23.6	23.6	23.6	23.6
Actuated g/C Ratio	0.11	0.72		0.05	0.66	0.66		0.17	0.17	0.17	0.17	0.17
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	195	2472		82	2259	1040		263	267	223	223	267
v/s Ratio Prot	c0.07	c0.52		0.02	0.43							
v/s Ratio Perm						0.08		0.01	0.00	0.05	c0.05	0.01
v/c Ratio	0.62	0.72		0.39	0.65	0.13		0.06	0.02	0.27	0.28	0.07
Uniform Delay, d1	59.5	11.3		64.8	14.4	9.0		48.9	48.6	50.7	50.8	48.9
Progression Factor	0.80	1.03		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	1.0		3.1	1.5	0.3		0.1	0.0	0.7	0.7	0.1
Delay (s)	51.1	12.6		67.9	15.8	9.2		49.0	48.6	51.4	51.5	49.1
Level of Service	D	B		E	B	A		D	D	D	D	D
Approach Delay (s)		15.0			16.2			48.7			50.3	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1841	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1841	1538
Volume (vph)	0	1784	61	99	1199	0	252	0	172	6	20	226
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1820	62	101	1223	0	257	0	176	6	20	231
RTOR Reduction (vph)	0	0	9	0	0	0	0	0	154	0	0	24
Lane Group Flow (vph)	0	1820	53	101	1223	0	257	0	22	0	26	207
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		custom
Protected Phases		2		1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		59.2	59.2	8.7	58.1		12.0		12.0		9.2	19.0
Effective Green, g (s)		60.2	60.2	9.7	59.1		13.0		13.0		10.2	21.0
Actuated g/C Ratio		0.57	0.57	0.09	0.56		0.12		0.12		0.10	0.20
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1969	907	163	1990		425		196		179	307
v/s Ratio Prot		c0.53		0.06	0.35		c0.07				0.01	c0.07
v/s Ratio Perm			0.03						0.01			0.07
v/c Ratio		0.92	0.06	0.62	0.61		0.60		0.11		0.15	0.67
Uniform Delay, d1		20.4	9.9	45.9	15.4		43.6		40.9		43.5	38.9
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		7.9	0.0	6.8	0.6		2.4		0.3		0.4	5.7
Delay (s)		28.3	10.0	52.8	16.0		46.0		41.2		43.8	44.6
Level of Service		C	A	D	B		D		D		D	D
Approach Delay (s)		27.7			18.8			44.1			44.6	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	105.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	79.0%	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												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	83	2	2	3	2	7	9	282	10	47	91	30
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	112	3	3	4	3	9	12	381	14	64	123	41
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											420	
pX, platoon unblocked												
vC, conflicting volume	686	689	143	686	703	388	164			395		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	686	689	143	686	703	388	164			395		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	67	99	100	99	99	99	99			95		
cM capacity (veh/h)	337	346	904	341	339	660	1415			1164		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	118	16	12	395	227
Volume Left	112	4	12	0	64
Volume Right	3	9	0	14	41
cSH	342	474	1415	1700	1164
Volume to Capacity	0.34	0.03	0.01	0.23	0.05
Queue Length 95th (ft)	37	3	1	0	4
Control Delay (s)	20.9	12.9	7.6	0.0	2.7
Lane LOS	C	B	A		A
Approach Delay (s)	20.9	12.9	0.2		2.7
Approach LOS	C	B			

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	46.2%	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)	53	15	5	238	62	20
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	63	18	6	283	74	24
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	381	86	98			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	381	86	98			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	98	100			
cM capacity (veh/h)	619	973	1496			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	63	18	289	98
Volume Left	63	0	6	0
Volume Right	0	18	0	24
cSH	619	973	1496	1700
Volume to Capacity	0.10	0.02	0.00	0.06
Queue Length 95th (ft)	8	1	0	0
Control Delay (s)	11.5	8.8	0.2	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.9		0.2	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	26.5%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	20	0	0	4	26	0	1129	11	0	0	693
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)	0	21	0	0	4	27	0	1188	12	0	0	729
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1210	1200	0	1569	1194	1194	0			1200		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1210	1200	0	1569	1194	1194	0			1200		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	89	100	100	98	88	100			100		
cM capacity (veh/h)	138	185	1085	82	187	227	1623			582		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	32	1200	729
Volume Left	0	0	0	0
Volume Right	0	27	12	729
cSH	185	262	1623	1700
Volume to Capacity	0.11	0.12	0.00	0.43
Queue Length 95th (ft)	9	10	0	0
Control Delay (s)	26.9	23.2	0.0	0.0
Lane LOS	D	C		
Approach Delay (s)	26.9	23.2	0.0	0.0
Approach LOS	D	C		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	116.3%	ICU Level of Service	H
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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.95	1.00
Satd. Flow (prot)	1770	3434		1770	3438	1583		1814	1583		1778	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.88	1.00		0.73	1.00
Satd. Flow (perm)	1770	3434		1770	3438	1583		1639	1583		1352	1583
Volume (vph)	140	1507	14	34	752	174	7	6	16	153	7	85
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)	147	1586	15	36	792	183	7	6	17	161	7	89
RTOR Reduction (vph)	0	0	0	0	0	37	0	0	14	0	0	73
Lane Group Flow (vph)	147	1601	0	36	792	146	0	13	3	0	168	16
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	16.3	99.7		4.9	88.3	88.3		23.4	23.4		23.4	23.4
Effective Green, g (s)	17.3	100.7		5.9	89.3	89.3		24.4	24.4		24.4	24.4
Actuated g/C Ratio	0.12	0.72		0.04	0.64	0.64		0.17	0.17		0.17	0.17
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	219	2470		75	2193	1010		286	276		236	276
v/s Ratio Prot	c0.08	c0.47		0.02	0.23							
v/s Ratio Perm						0.09		0.01	0.00		c0.12	0.01
v/c Ratio	0.67	0.65		0.48	0.36	0.14		0.05	0.01		0.71	0.06
Uniform Delay, d1	58.6	10.3		65.6	11.9	10.1		48.1	47.8		54.5	48.2
Progression Factor	1.00	1.00		0.67	2.04	3.07		1.00	1.00		1.00	1.00
Incremental Delay, d2	7.8	1.3		4.4	0.4	0.3		0.1	0.0		9.7	0.1
Delay (s)	66.5	11.7		48.5	24.8	31.3		48.2	47.8		64.2	48.3
Level of Service	E	B		D	C	C		D	D		E	D
Approach Delay (s)		16.3			26.8			48.0			58.7	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	156	93	132	899	1265	194
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	164	98	139	946	1332	204
RTOR Reduction (vph)	0	82	0	0	0	32
Lane Group Flow (vph)	164	16	139	946	1332	172
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	21.9	21.9	15.2	110.1	90.9	90.9
Effective Green, g (s)	22.9	22.9	16.2	111.1	91.9	91.9
Actuated g/C Ratio	0.16	0.16	0.12	0.79	0.66	0.66
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)	290	259	205	2808	3338	1039
v/s Ratio Prot	c0.09		c0.08	0.27	c0.26	
v/s Ratio Perm		0.01				0.11
v/c Ratio	0.57	0.06	0.68	0.34	0.40	0.17
Uniform Delay, d1	54.0	49.5	59.4	4.1	11.2	9.3
Progression Factor	1.00	1.00	0.59	1.96	1.00	1.00
Incremental Delay, d2	2.5	0.1	0.8	0.0	0.4	0.3
Delay (s)	56.5	49.6	36.1	8.0	11.6	9.6
Level of Service	E	D	D	A	B	A
Approach Delay (s)	53.9			11.6	11.3	
Approach LOS	D			B	B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3398		1770	3438	1583	1681	1747	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3398		1770	3438	1583	1681	1747	1583	3433	1863	1583
Volume (vph)	621	1026	109	225	1520	398	159	96	123	486	110	690
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	634	1047	111	230	1551	406	162	98	126	496	112	704
RTOR Reduction (vph)	0	5	0	0	0	76	0	0	104	0	0	0
Lane Group Flow (vph)	634	1153	0	230	1551	330	127	133	22	496	112	704
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	16.0	59.4		13.0	56.4	56.4	24.4	24.4	24.4	26.7	26.7	140.0
Effective Green, g (s)	16.0	59.9		13.0	56.9	56.9	24.4	24.4	24.4	26.7	26.7	140.0
Actuated g/C Ratio	0.11	0.43		0.09	0.41	0.41	0.17	0.17	0.17	0.19	0.19	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	392	1454		164	1397	643	293	304	276	655	355	1583
v/s Ratio Prot	c0.18	0.34		0.13	c0.45		0.08	0.08		c0.14	0.06	
v/s Ratio Perm						0.21			0.01			c0.44
v/c Ratio	1.62	0.79		1.40	1.11	0.51	0.43	0.44	0.08	0.76	0.32	0.44
Uniform Delay, d1	62.0	34.7		63.5	41.5	31.2	51.6	51.7	48.4	53.6	48.8	0.0
Progression Factor	0.96	1.27		1.27	0.64	0.43	1.00	1.00	1.00	0.78	0.73	1.00
Incremental Delay, d2	287.8	3.9		201.8	56.5	1.8	1.0	1.0	0.1	4.7	0.5	0.9
Delay (s)	347.5	48.1		282.5	83.0	15.0	52.7	52.7	48.5	46.3	36.0	0.9
Level of Service	F	D		F	F	B	D	D	D	D	D	A
Approach Delay (s)		154.0			91.3			51.3			21.0	
Approach LOS		F			F			D			C	

Intersection Summary			
HCM Average Control Delay	92.1	HCM Level of Service	F
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3434		1770	3438	1583		1806	1583	1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.91	1.00	0.75	0.75	1.00
Satd. Flow (perm)	1770	3434		1770	3438	1583		1690	1583	1332	1332	1583
Volume (vph)	187	1411	16	8	1832	113	5	3	20	111	0	153
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	191	1440	16	8	1869	115	5	3	20	113	0	156
RTOR Reduction (vph)	0	0	0	0	0	17	0	0	16	0	0	128
Lane Group Flow (vph)	191	1456	0	8	1869	98	0	8	4	57	56	28
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	18.0	102.1		1.5	85.6	85.6		24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	19.0	103.1		2.5	86.6	86.6		25.4	25.4	25.4	25.4	25.4
Actuated g/C Ratio	0.14	0.74		0.02	0.62	0.62		0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	240	2529		32	2127	979		307	287	242	242	287
v/s Ratio Prot	c0.11	0.42		0.00	c0.54							
v/s Ratio Perm						0.06		0.00	0.00	c0.04	0.04	0.02
v/c Ratio	0.80	0.58		0.25	0.88	0.10		0.03	0.01	0.24	0.23	0.10
Uniform Delay, d1	58.6	8.4		67.8	22.3	10.9		47.1	47.0	49.0	49.0	47.8
Progression Factor	0.78	1.74		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.2	0.6		4.1	5.6	0.2		0.0	0.0	0.5	0.5	0.2
Delay (s)	56.7	15.3		71.9	27.9	11.1		47.2	47.0	49.5	49.5	47.9
Level of Service	E	B		E	C	B		D	D	D	D	D
Approach Delay (s)		20.1			27.1			47.1			48.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	25.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.7%	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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1851	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1851	1538
Volume (vph)	0	1369	109	97	1206	0	146	0	101	8	52	608
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1397	111	99	1231	0	149	0	103	8	53	620
RTOR Reduction (vph)	0	0	18	0	0	0	0	0	91	0	0	49
Lane Group Flow (vph)	0	1397	93	99	1231	0	149	0	12	0	61	571
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		custom
Protected Phases		2		1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		58.4	58.4	9.0	44.2		11.4		11.4		15.0	38.2
Effective Green, g (s)		59.4	59.4	10.0	45.2		12.4		12.4		16.0	40.2
Actuated g/C Ratio		0.54	0.54	0.09	0.41		0.11		0.11		0.15	0.37
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1860	856	161	1457		388		179		270	563
v/s Ratio Prot		0.41		0.06	c0.35		c0.04				0.03	c0.22
v/s Ratio Perm			0.06						0.01			0.15
v/c Ratio		0.75	0.11	0.61	0.84		0.38		0.06		0.23	1.01
Uniform Delay, d1		19.5	12.3	48.0	29.1		45.2		43.5		41.4	34.8
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		1.8	0.1	6.8	4.7		0.6		0.2		0.4	41.6
Delay (s)		21.2	12.3	54.8	33.8		45.8		43.7		41.9	76.4
Level of Service		C	B	D	C		D		D		D	E
Approach Delay (s)		20.6			35.4			44.9			73.3	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM Average Control Delay	37.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	109.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	42	0	1	0	2	16	1	130	8	24	131	37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	49	0	1	0	2	19	1	153	9	28	154	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)											420	
pX, platoon unblocked												
vC, conflicting volume	408	397	176	394	414	158	198			162		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	408	397	176	394	414	158	198			162		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	100	100	100	100	98	100			98		
cM capacity (veh/h)	532	529	867	556	518	888	1375			1416		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	51	21	1	162	226
Volume Left	49	0	1	0	28
Volume Right	1	19	0	9	44
cSH	537	822	1375	1700	1416
Volume to Capacity	0.09	0.03	0.00	0.10	0.02
Queue Length 95th (ft)	8	2	0	0	2
Control Delay (s)	12.4	9.5	7.6	0.0	1.1
Lane LOS	B	A	A		A
Approach Delay (s)	12.4	9.5	0.1		1.1
Approach LOS	B	A			

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	36.9%	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)	31	2	6	91	67	42
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	35	2	7	103	76	48
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	217	100	124			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	217	100	124			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	768	956	1463			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	35	2	110	124
Volume Left	35	0	7	0
Volume Right	0	2	0	48
cSH	768	956	1463	1700
Volume to Capacity	0.05	0.00	0.00	0.07
Queue Length 95th (ft)	4	0	0	0
Control Delay (s)	9.9	8.8	0.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.8		0.5	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	19.7%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	25	0	0	5	35	0	1186	13	0	0	442
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)	0	27	0	0	5	38	0	1289	14	0	0	480
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1318	1303	0	1550	1296	1296	0			1303		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1318	1303	0	1550	1296	1296	0			1303		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	83	100	100	97	81	100			100		
cM capacity (veh/h)	106	160	1085	81	162	198	1623			531		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	43	1303	480
Volume Left	0	0	0	0
Volume Right	0	38	14	480
cSH	160	226	1623	1700
Volume to Capacity	0.17	0.19	0.00	0.28
Queue Length 95th (ft)	15	17	0	0
Control Delay (s)	32.0	27.5	0.0	0.0
Lane LOS	D	D		
Approach Delay (s)	32.0	27.5	0.0	0.0
Approach LOS	D	D		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3437		1770	3438	1583		1806	1583		1780	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.56	1.00		0.68	1.00
Satd. Flow (perm)	1770	3437		1770	3438	1583		1048	1583		1273	1583
Volume (vph)	167	1024	4	125	1678	248	39	23	84	295	24	315
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)	176	1078	4	132	1766	261	41	24	88	311	25	332
RTOR Reduction (vph)	0	0	0	0	0	33	0	0	62	0	0	234
Lane Group Flow (vph)	176	1082	0	132	1766	228	0	65	26	0	336	98
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	18.6	72.3		15.4	69.1	69.1		40.3	40.3		40.3	40.3
Effective Green, g (s)	19.6	73.3		16.4	70.1	70.1		41.3	41.3		41.3	41.3
Actuated g/C Ratio	0.14	0.52		0.12	0.50	0.50		0.29	0.29		0.29	0.29
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	248	1800		207	1721	793		309	467		376	467
v/s Ratio Prot	c0.10	0.31		0.07	c0.51							
v/s Ratio Perm						0.14		0.06	0.02		c0.26	0.06
v/c Ratio	0.71	0.60		0.64	1.03	0.29		0.21	0.06		0.89	0.21
Uniform Delay, d1	57.5	23.2		59.0	35.0	20.4		37.1	35.4		47.2	37.1
Progression Factor	1.00	1.00		1.33	0.50	0.35		1.00	1.00		1.00	1.00
Incremental Delay, d2	9.0	1.5		3.0	22.0	0.4		0.3	0.0		22.5	0.2
Delay (s)	66.4	24.7		81.2	39.3	7.6		37.4	35.4		69.8	37.3
Level of Service	E	C		F	D	A		D	D		E	D
Approach Delay (s)		30.5			38.0			36.3			53.6	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	38.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	148	87	130	706	888	146
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	156	92	137	743	935	154
RTOR Reduction (vph)	0	77	0	0	0	32
Lane Group Flow (vph)	156	15	137	743	935	122
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	21.7	21.7	16.5	110.3	89.8	89.8
Effective Green, g (s)	22.7	22.7	17.5	111.3	90.8	90.8
Actuated g/C Ratio	0.16	0.16	0.12	0.79	0.65	0.65
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)	287	257	221	2814	3298	1027
v/s Ratio Prot	c0.09		c0.08	0.21	c0.18	
v/s Ratio Perm		0.01				0.08
v/c Ratio	0.54	0.06	0.62	0.26	0.28	0.12
Uniform Delay, d1	53.9	49.6	58.1	3.7	10.6	9.4
Progression Factor	1.00	1.00	0.56	1.39	1.00	1.00
Incremental Delay, d2	2.1	0.1	3.1	0.1	0.2	0.2
Delay (s)	56.0	49.7	35.9	5.3	10.8	9.6
Level of Service	E	D	D	A	B	A
Approach Delay (s)	53.7			10.1	10.6	
Approach LOS	D			B	B	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3400		1770	3438	1583	1681	1740	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3400		1770	3438	1583	1681	1740	1583	3433	1863	1583
Volume (vph)	601	1203	120	121	1342	280	159	80	109	446	15	465
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	613	1228	122	123	1369	286	162	82	111	455	15	474
RTOR Reduction (vph)	0	5	0	0	0	62	0	0	92	0	0	0
Lane Group Flow (vph)	613	1345	0	123	1369	224	119	125	19	455	15	474
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	26.0	60.4		12.8	47.2	47.2	24.3	24.3	24.3	26.0	26.0	140.0
Effective Green, g (s)	26.0	60.9		12.8	47.7	47.7	24.3	24.3	24.3	26.0	26.0	140.0
Actuated g/C Ratio	0.19	0.43		0.09	0.34	0.34	0.17	0.17	0.17	0.19	0.19	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	638	1479		162	1171	539	292	302	275	638	346	1583
v/s Ratio Prot	c0.18	0.40		0.07	c0.40		0.07	c0.07		c0.13	0.01	
v/s Ratio Perm						0.14			0.01			0.30
v/c Ratio	0.96	0.91		0.76	1.17	0.42	0.41	0.41	0.07	0.71	0.04	0.30
Uniform Delay, d1	56.5	37.0		62.1	46.1	35.4	51.4	51.5	48.4	53.5	46.8	0.0
Progression Factor	0.83	1.04		1.38	0.75	0.59	1.00	1.00	1.00	0.79	0.68	1.00
Incremental Delay, d2	22.4	8.0		14.4	83.5	1.8	0.9	0.9	0.1	3.7	0.1	0.5
Delay (s)	69.3	46.6		100.1	117.9	22.8	52.4	52.4	48.5	46.1	32.0	0.5
Level of Service	E	D		F	F	C	D	D	D	D	C	A
Approach Delay (s)		53.7			101.4			51.2			22.9	
Approach LOS		D			F			D			C	

Intersection Summary			
HCM Average Control Delay	64.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3435		1770	3438	1583		1782	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86	1.00	0.75	0.80	1.00
Satd. Flow (perm)	1770	3435		1770	3438	1583		1593	1583	1328	1407	1583
Volume (vph)	120	1477	12	9	1550	62	10	1	8	60	1	139
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	122	1507	12	9	1582	63	10	1	8	61	1	142
RTOR Reduction (vph)	0	0	0	0	0	11	0	0	7	0	0	102
Lane Group Flow (vph)	122	1519	0	9	1582	52	0	11	1	31	31	40
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	10.9	102.1		1.5	92.7	92.7		24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	11.9	103.1		2.5	93.7	93.7		25.4	25.4	25.4	25.4	25.4
Actuated g/C Ratio	0.09	0.74		0.02	0.67	0.67		0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	150	2530		32	2301	1059		289	287	241	255	287
v/s Ratio Prot	c0.07	0.44		0.01	c0.46							
v/s Ratio Perm						0.03		0.01	0.00	0.02	0.02	c0.03
v/c Ratio	0.81	0.60		0.28	0.69	0.05		0.04	0.01	0.13	0.12	0.14
Uniform Delay, d1	63.0	8.7		67.9	14.2	7.9		47.2	46.9	48.0	48.0	48.1
Progression Factor	0.94	0.86		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.4	0.6		4.8	1.7	0.1		0.1	0.0	0.2	0.2	0.2
Delay (s)	75.7	8.1		72.6	15.9	8.0		47.3	47.0	48.3	48.2	48.4
Level of Service	E	A		E	B	A		D	D	D	D	D
Approach Delay (s)		13.1			15.9			47.1			48.3	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1836	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1836	1538
Volume (vph)	0	1354	141	44	989	0	139	0	84	11	26	471
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1382	144	45	1009	0	142	0	86	11	27	481
RTOR Reduction (vph)	0	0	27	0	0	0	0	0	77	0	0	100
Lane Group Flow (vph)	0	1382	117	45	1009	0	142	0	9	0	38	381
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		Perm
Protected Phases		2		1	6		8			4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		53.4	53.4	7.2	64.6		11.2		11.2		32.9	32.9
Effective Green, g (s)		54.4	54.4	8.2	65.6		12.2		12.2		33.9	33.9
Actuated g/C Ratio		0.45	0.45	0.07	0.54		0.10		0.10		0.28	0.28
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1550	713	120	1923		347		160		516	432
v/s Ratio Prot		c0.40		0.03	c0.29		c0.04				0.02	
v/s Ratio Perm			0.07						0.01			c0.25
v/c Ratio		0.89	0.16	0.38	0.52		0.41		0.05		0.07	0.88
Uniform Delay, d1		30.4	19.7	53.8	17.6		50.9		49.0		31.9	41.5
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		6.9	0.1	2.0	0.3		0.8		0.1		0.1	18.6
Delay (s)		37.3	19.8	55.8	17.9		51.7		49.2		31.9	60.1
Level of Service		D	B	E	B		D		D		C	E
Approach Delay (s)		35.7			19.5			50.7			58.1	
Approach LOS		D			B			D			E	

Intersection Summary			
HCM Average Control Delay	35.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.5%	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												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	59	3	3	2	0	11	3	128	4	43	100	26
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)	64	3	3	2	0	12	3	139	4	47	109	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											420	
pX, platoon unblocked												
vC, conflicting volume	374	366	123	369	378	141	137			143		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	374	366	123	369	378	141	137			143		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	99	100	100	100	99	100			97		
cM capacity (veh/h)	560	543	928	567	534	907	1447			1439		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	71	14	3	143	184
Volume Left	64	2	3	0	47
Volume Right	3	12	0	4	28
cSH	570	830	1447	1700	1439
Volume to Capacity	0.12	0.02	0.00	0.08	0.03
Queue Length 95th (ft)	11	1	0	0	3
Control Delay (s)	12.2	9.4	7.5	0.0	2.1
Lane LOS	B	A	A		A
Approach Delay (s)	12.2	9.4	0.2		2.1
Approach LOS	B	A			

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	36.5%	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)	37	0	3	75	35	32
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	45	0	4	90	42	39
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	159	61	81			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	159	61	81			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	830	1004	1517			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	45	0	94	81
Volume Left	45	0	4	0
Volume Right	0	0	0	39
cSH	830	1700	1517	1700
Volume to Capacity	0.05	0.00	0.00	0.05
Queue Length 95th (ft)	4	0	0	0
Control Delay (s)	9.6	0.0	0.3	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.6		0.3	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	16.4%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	49	0	0	9	29	0	1046	35	0	0	431
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	54	0	0	10	32	0	1162	39	0	0	479
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1203	1201	0	1448	1182	1182	0			1201		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1203	1201	0	1448	1182	1182	0			1201		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	71	100	100	95	86	100			100		
cM capacity (veh/h)	133	185	1085	84	190	231	1623			581		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	54	42	1201	479
Volume Left	0	0	0	0
Volume Right	0	32	39	479
cSH	185	303	1623	1700
Volume to Capacity	0.29	0.14	0.00	0.28
Queue Length 95th (ft)	29	12	0	0
Control Delay (s)	32.4	23.5	0.0	0.0
Lane LOS	D	C		
Approach Delay (s)	32.4	23.5	0.0	0.0
Approach LOS	D	C		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3425		1770	3438	1583		1802	1583		1780	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.51	1.00		0.68	1.00
Satd. Flow (perm)	1770	3425		1770	3438	1583		954	1583		1269	1583
Volume (vph)	256	1160	37	152	1369	362	43	21	86	320	26	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)	269	1221	39	160	1441	381	45	22	91	337	27	320
RTOR Reduction (vph)	0	1	0	0	0	75	0	0	63	0	0	215
Lane Group Flow (vph)	269	1259	0	160	1441	306	0	67	28	0	364	105
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	23.9	70.1		16.1	62.3	62.3		41.8	41.8		41.8	41.8
Effective Green, g (s)	24.9	71.1		17.1	63.3	63.3		42.8	42.8		42.8	42.8
Actuated g/C Ratio	0.18	0.51		0.12	0.45	0.45		0.31	0.31		0.31	0.31
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	315	1739		216	1554	716		292	484		388	484
v/s Ratio Prot	c0.15	0.37		0.09	c0.42							
v/s Ratio Perm						0.19		0.07	0.02		c0.29	0.07
v/c Ratio	0.85	0.72		0.74	0.93	0.43		0.23	0.06		0.94	0.22
Uniform Delay, d1	55.8	26.8		59.3	36.2	26.0		36.3	34.3		47.3	36.1
Progression Factor	1.00	1.00		1.27	0.88	0.70		1.00	1.00		1.00	1.00
Incremental Delay, d2	19.6	2.7		5.6	5.3	0.8		0.4	0.0		30.0	0.2
Delay (s)	75.4	29.5		80.8	36.9	19.0		36.7	34.4		77.4	36.4
Level of Service	E	C		F	D	B		D	C		E	D
Approach Delay (s)		37.5			37.0			35.4			58.2	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	40.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	212	186	151	1202	670	143
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	223	196	159	1265	705	151
RTOR Reduction (vph)	0	163	0	0	0	55
Lane Group Flow (vph)	223	33	159	1265	705	96
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	22.4	22.4	17.3	90.4	69.1	69.1
Effective Green, g (s)	23.4	23.4	18.3	91.4	70.1	70.1
Actuated g/C Ratio	0.17	0.17	0.13	0.65	0.50	0.50
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)	296	265	231	2310	2546	793
v/s Ratio Prot	c0.13		c0.09	c0.36	0.14	
v/s Ratio Perm		0.02				0.06
v/c Ratio	0.75	0.12	0.69	0.55	0.28	0.12
Uniform Delay, d1	55.6	49.6	58.1	13.1	20.3	18.6
Progression Factor	1.00	1.00	1.32	0.39	1.00	1.00
Incremental Delay, d2	10.4	0.2	2.6	0.3	0.3	0.3
Delay (s)	65.9	49.8	79.1	5.4	20.5	18.9
Level of Service	E	D	E	A	C	B
Approach Delay (s)	58.4			13.7	20.2	
Approach LOS	E			B	C	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.2
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	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3425		1770	3438	1583	1681	1770	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3425		1770	3438	1583	1681	1770	1583	3433	1863	1583
Volume (vph)	674	1237	39	100	660	617	74	146	166	676	102	312
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	688	1262	40	102	673	630	76	149	169	690	104	318
RTOR Reduction (vph)	0	1	0	0	0	288	0	0	93	0	0	0
Lane Group Flow (vph)	688	1301	0	102	673	342	76	149	76	690	104	318
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	23.0	60.0		8.0	45.0	45.0	24.7	24.7	24.7	30.8	30.8	140.0
Effective Green, g (s)	23.0	60.5		8.0	45.5	45.5	24.7	24.7	24.7	30.8	30.8	140.0
Actuated g/C Ratio	0.16	0.43		0.06	0.32	0.32	0.18	0.18	0.18	0.22	0.22	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	564	1480		101	1117	514	297	312	279	755	410	1583
v/s Ratio Prot	c0.20	c0.38		0.06	0.20		0.05	c0.08		c0.20	0.06	
v/s Ratio Perm						0.22			0.05			0.20
v/c Ratio	1.22	0.88		1.01	0.60	0.66	0.26	0.48	0.27	0.91	0.25	0.20
Uniform Delay, d1	58.5	36.4		66.0	39.7	40.7	49.7	51.8	49.9	53.3	45.1	0.0
Progression Factor	0.87	0.93		1.37	0.67	0.91	1.00	1.00	1.00	0.90	0.82	1.00
Incremental Delay, d2	111.7	6.4		81.3	1.9	5.2	0.5	1.2	0.5	15.2	0.3	0.3
Delay (s)	162.5	40.4		171.7	28.4	42.3	50.2	53.0	50.4	63.5	37.5	0.3
Level of Service	F	D		F	C	D	D	D	D	E	D	A
Approach Delay (s)		82.6			45.1			51.3			43.0	
Approach LOS		F			D			D			D	

Intersection Summary			
HCM Average Control Delay	60.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3431		1770	3438	1583		1790	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84	1.00	0.75	0.75	1.00
Satd. Flow (perm)	1770	3431		1770	3438	1583		1561	1583	1322	1321	1583
Volume (vph)	119	1764	32	31	1469	154	13	3	36	121	2	105
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	121	1800	33	32	1499	157	13	3	37	123	2	107
RTOR Reduction (vph)	0	1	0	0	0	24	0	0	31	0	0	89
Lane Group Flow (vph)	121	1832	0	32	1499	133	0	16	6	62	63	18
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	14.4	99.9		5.5	91.0	91.0		22.6	22.6	22.6	22.6	22.6
Effective Green, g (s)	15.4	100.9		6.5	92.0	92.0		23.6	23.6	23.6	23.6	23.6
Actuated g/C Ratio	0.11	0.72		0.05	0.66	0.66		0.17	0.17	0.17	0.17	0.17
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	195	2473		82	2259	1040		263	267	223	223	267
v/s Ratio Prot	c0.07	c0.53		0.02	0.44							
v/s Ratio Perm						0.08		0.01	0.00	0.05	c0.05	0.01
v/c Ratio	0.62	0.74		0.39	0.66	0.13		0.06	0.02	0.28	0.28	0.07
Uniform Delay, d1	59.5	11.7		64.8	14.6	9.0		48.9	48.6	50.8	50.8	48.9
Progression Factor	0.80	1.02		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	1.0		3.1	1.6	0.3		0.1	0.0	0.7	0.7	0.1
Delay (s)	50.8	13.0		67.9	16.1	9.2		49.0	48.6	51.5	51.5	49.1
Level of Service	D	B		E	B	A		D	D	D	D	D
Approach Delay (s)		15.3			16.5			48.7			50.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1848	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1848	1538
Volume (vph)	0	1784	121	130	1199	0	280	0	192	6	31	226
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1820	123	133	1223	0	286	0	196	6	32	231
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	172	0	0	22
Lane Group Flow (vph)	0	1820	106	133	1223	0	286	0	24	0	38	209
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		custom
Protected Phases		2		1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		59.1	59.1	9.2	58.4		12.2		12.2		9.3	19.2
Effective Green, g (s)		60.1	60.1	10.2	59.4		13.2		13.2		10.3	21.2
Actuated g/C Ratio		0.57	0.57	0.10	0.56		0.12		0.12		0.10	0.20
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1953	899	171	1987		428		198		180	308
v/s Ratio Prot		c0.53		c0.08	0.35		c0.08				0.02	c0.07
v/s Ratio Perm			0.07						0.02			0.07
v/c Ratio		0.93	0.12	0.78	0.62		0.67		0.12		0.21	0.68
Uniform Delay, d1		21.0	10.6	46.7	15.5		44.2		41.2		44.0	39.2
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		8.7	0.1	19.6	0.6		3.9		0.3		0.6	5.9
Delay (s)		29.7	10.6	66.3	16.1		48.1		41.4		44.6	45.0
Level of Service		C	B	E	B		D		D		D	D
Approach Delay (s)		28.5			21.0			45.4			45.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	29.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	105.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	83	2	2	3	2	7	9	330	10	47	192	30
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	112	3	3	4	3	9	12	446	14	64	259	41
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											420	
pX, platoon unblocked												
vC, conflicting volume	888	891	280	888	904	453	300			459		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	888	891	280	888	904	453	300			459		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	54	99	100	98	99	98	99			94		
cM capacity (veh/h)	245	263	759	248	258	607	1261			1102		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	118	16	12	459	364
Volume Left	112	4	12	0	64
Volume Right	3	9	0	14	41
cSH	249	383	1261	1700	1102
Volume to Capacity	0.47	0.04	0.01	0.27	0.06
Queue Length 95th (ft)	59	3	1	0	5
Control Delay (s)	31.7	14.8	7.9	0.0	2.0
Lane LOS	D	B	A		A
Approach Delay (s)	31.7	14.8	0.2		2.0
Approach LOS	D	B			

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	54.0%	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)	53	15	5	240	63	20
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	63	18	6	286	75	24
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	385	87	99			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	385	87	99			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	98	100			
cM capacity (veh/h)	616	972	1494			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	63	18	292	99
Volume Left	63	0	6	0
Volume Right	0	18	0	24
cSH	616	972	1494	1700
Volume to Capacity	0.10	0.02	0.00	0.06
Queue Length 95th (ft)	9	1	0	0
Control Delay (s)	11.5	8.8	0.2	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.9		0.2	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	26.6%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	20	0	0	4	26	0	1160	11	0	0	698
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)	0	21	0	0	4	27	0	1221	12	0	0	735
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1243	1233	0	1605	1227	1227	0			1233		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1243	1233	0	1605	1227	1227	0			1233		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	88	100	100	98	87	100			100		
cM capacity (veh/h)	130	177	1085	77	178	218	1623			565		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	32	1233	735
Volume Left	0	0	0	0
Volume Right	0	27	12	735
cSH	177	251	1623	1700
Volume to Capacity	0.12	0.13	0.00	0.43
Queue Length 95th (ft)	10	11	0	0
Control Delay (s)	28.1	24.2	0.0	0.0
Lane LOS	D	C		
Approach Delay (s)	28.1	24.2	0.0	0.0
Approach LOS	D	C		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	118.3%	ICU Level of Service	H
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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.95	1.00
Satd. Flow (prot)	1770	3434		1770	3438	1583		1814	1583		1778	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.88	1.00		0.73	1.00
Satd. Flow (perm)	1770	3434		1770	3438	1583		1639	1583		1352	1583
Volume (vph)	140	1537	14	34	767	174	7	6	16	153	7	85
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)	147	1618	15	36	807	183	7	6	17	161	7	89
RTOR Reduction (vph)	0	0	0	0	0	37	0	0	14	0	0	73
Lane Group Flow (vph)	147	1633	0	36	807	146	0	13	3	0	168	16
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	16.3	99.8		4.8	88.3	88.3		23.4	23.4		23.4	23.4
Effective Green, g (s)	17.3	100.8		5.8	89.3	89.3		24.4	24.4		24.4	24.4
Actuated g/C Ratio	0.12	0.72		0.04	0.64	0.64		0.17	0.17		0.17	0.17
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	219	2472		73	2193	1010		286	276		236	276
v/s Ratio Prot	c0.08	c0.48		0.02	0.23							
v/s Ratio Perm						0.09		0.01	0.00		c0.12	0.01
v/c Ratio	0.67	0.66		0.49	0.37	0.14		0.05	0.01		0.71	0.06
Uniform Delay, d1	58.6	10.5		65.7	12.0	10.1		48.1	47.8		54.5	48.2
Progression Factor	1.00	1.00		0.69	2.06	3.03		1.00	1.00		1.00	1.00
Incremental Delay, d2	7.8	1.4		4.7	0.4	0.3		0.1	0.0		9.7	0.1
Delay (s)	66.5	11.9		50.2	25.1	30.9		48.2	47.8		64.2	48.3
Level of Service	E	B		D	C	C		D	D		E	D
Approach Delay (s)		16.4			27.0			48.0			58.7	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	156	96	135	964	1329	194
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	164	101	142	1015	1399	204
RTOR Reduction (vph)	0	84	0	0	0	31
Lane Group Flow (vph)	164	17	142	1015	1399	173
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	21.9	21.9	15.2	110.1	90.9	90.9
Effective Green, g (s)	22.9	22.9	16.2	111.1	91.9	91.9
Actuated g/C Ratio	0.16	0.16	0.12	0.79	0.66	0.66
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)	290	259	205	2808	3338	1039
v/s Ratio Prot	c0.09		c0.08	0.29	c0.28	
v/s Ratio Perm		0.01				0.11
v/c Ratio	0.57	0.06	0.69	0.36	0.42	0.17
Uniform Delay, d1	54.0	49.5	59.5	4.2	11.4	9.3
Progression Factor	1.00	1.00	0.65	1.86	1.00	1.00
Incremental Delay, d2	2.5	0.1	0.9	0.0	0.4	0.3
Delay (s)	56.5	49.6	39.5	7.8	11.8	9.6
Level of Service	E	D	D	A	B	A
Approach Delay (s)	53.9			11.7	11.5	
Approach LOS	D			B	B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3401		1770	3438	1583	1681	1747	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3401		1770	3438	1583	1681	1747	1583	3433	1863	1583
Volume (vph)	621	1104	109	233	1597	465	159	96	131	553	110	690
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	634	1127	111	238	1630	474	162	98	134	564	112	704
RTOR Reduction (vph)	0	5	0	0	0	85	0	0	111	0	0	0
Lane Group Flow (vph)	634	1233	0	238	1630	389	127	133	23	564	112	704
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	16.0	58.3		13.0	55.3	55.3	24.4	24.4	24.4	27.8	27.8	140.0
Effective Green, g (s)	16.0	58.8		13.0	55.8	55.8	24.4	24.4	24.4	27.8	27.8	140.0
Actuated g/C Ratio	0.11	0.42		0.09	0.40	0.40	0.17	0.17	0.17	0.20	0.20	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	392	1428		164	1370	631	293	304	276	682	370	1583
v/s Ratio Prot	c0.18	0.36		0.13	c0.47		0.08	0.08		c0.16	0.06	
v/s Ratio Perm						0.25			0.01			c0.44
v/c Ratio	1.62	0.86		1.45	1.19	0.62	0.43	0.44	0.08	0.83	0.30	0.44
Uniform Delay, d1	62.0	37.0		63.5	42.1	33.6	51.6	51.7	48.4	53.8	47.8	0.0
Progression Factor	0.96	1.28		1.27	0.64	0.43	1.00	1.00	1.00	0.77	0.72	1.00
Incremental Delay, d2	287.6	6.1		219.3	89.3	2.2	1.0	1.0	0.1	7.6	0.4	0.8
Delay (s)	347.0	53.5		299.7	116.2	16.8	52.7	52.7	48.6	49.3	34.8	0.8
Level of Service	F	D		F	F	B	D	D	D	D	C	A
Approach Delay (s)		152.9			114.7			51.3			23.4	
Approach LOS		F			F			D			C	

Intersection Summary			
HCM Average Control Delay	101.4	HCM Level of Service	F
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.3%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3434		1770	3438	1583		1806	1583	1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.91	1.00	0.75	0.75	1.00
Satd. Flow (perm)	1770	3434		1770	3438	1583		1689	1583	1332	1332	1583
Volume (vph)	187	1564	16	8	1985	116	5	3	20	114	0	153
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	191	1596	16	8	2026	118	5	3	20	116	0	156
RTOR Reduction (vph)	0	0	0	0	0	16	0	0	16	0	0	128
Lane Group Flow (vph)	191	1612	0	8	2026	102	0	8	4	58	58	28
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	18.1	102.1		1.5	85.5	85.5		24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	19.1	103.1		2.5	86.5	86.5		25.4	25.4	25.4	25.4	25.4
Actuated g/C Ratio	0.14	0.74		0.02	0.62	0.62		0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	241	2529		32	2124	978		306	287	242	242	287
v/s Ratio Prot	c0.11	0.47		0.00	c0.59							
v/s Ratio Perm						0.06		0.00	0.00	c0.04	0.04	0.02
v/c Ratio	0.79	0.64		0.25	0.95	0.10		0.03	0.01	0.24	0.24	0.10
Uniform Delay, d1	58.5	9.2		67.8	24.9	10.9		47.1	47.0	49.0	49.0	47.8
Progression Factor	0.77	1.70		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.5	0.7		4.1	11.3	0.2		0.0	0.0	0.5	0.5	0.2
Delay (s)	54.8	16.3		71.9	36.2	11.1		47.2	47.0	49.6	49.6	47.9
Level of Service	D	B		E	D	B		D	D	D	D	D
Approach Delay (s)		20.4			35.0			47.1			48.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	29.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1857	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1857	1538
Volume (vph)	0	1354	280	213	1192	0	314	0	276	8	118	608
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1382	286	217	1216	0	320	0	282	8	120	620
RTOR Reduction (vph)	0	0	55	0	0	0	0	0	244	0	0	13
Lane Group Flow (vph)	0	1382	231	217	1216	0	320	0	38	0	128	607
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		custom
Protected Phases		2		1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		54.3	54.3	16.3	48.2		15.2		15.2		19.1	41.5
Effective Green, g (s)		55.3	55.3	17.3	49.2		16.2		16.2		20.1	43.5
Actuated g/C Ratio		0.46	0.46	0.14	0.41		0.13		0.13		0.17	0.36
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1573	724	253	1440		460		212		309	553
v/s Ratio Prot		c0.40		0.12	0.34		c0.09				0.07	c0.21
v/s Ratio Perm			0.15						0.02			0.18
v/c Ratio		0.88	0.32	0.86	0.84		0.70		0.18		0.41	1.10
Uniform Delay, d1		29.8	20.8	50.6	32.4		50.0		46.4		45.1	38.7
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		5.9	0.3	23.8	4.7		4.5		0.4		0.9	67.8
Delay (s)		35.7	21.1	74.4	37.1		54.5		46.8		46.0	106.5
Level of Service		D	C	E	D		D		D		D	F
Approach Delay (s)		33.2			42.8			50.9			96.2	
Approach LOS		C			D			D			F	

Intersection Summary			
HCM Average Control Delay	49.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	42	0	1	0	2	16	1	474	8	24	484	37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	49	0	1	0	2	19	1	558	9	28	569	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)											420	
pX, platoon unblocked	0.95	0.95	0.95	0.95	0.95		0.95					
vC, conflicting volume	1228	1217	591	1214	1234	562	613			567		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1240	1229	569	1225	1247	562	592			567		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	63	100	100	100	99	96	100			97		
cM capacity (veh/h)	134	164	495	144	160	526	933			1005		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	51	21	1	567	641
Volume Left	49	0	1	0	28
Volume Right	1	19	0	9	44
cSH	137	419	933	1700	1005
Volume to Capacity	0.37	0.05	0.00	0.33	0.03
Queue Length 95th (ft)	39	4	0	0	2
Control Delay (s)	46.0	14.0	8.9	0.0	0.7
Lane LOS	E	B	A		A
Approach Delay (s)	46.0	14.0	0.0		0.7
Approach LOS	E	B			

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	63.1%	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)	31	2	6	96	80	42
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	35	2	7	109	91	48
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	238	115	139			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	238	115	139			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	747	938	1445			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	35	2	116	139
Volume Left	35	0	7	0
Volume Right	0	2	0	48
cSH	747	938	1445	1700
Volume to Capacity	0.05	0.00	0.00	0.08
Queue Length 95th (ft)	4	0	0	0
Control Delay (s)	10.1	8.8	0.5	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.0		0.5	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	20.0%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	25	0	0	5	35	0	1289	13	0	0	495
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)	0	27	0	0	5	38	0	1401	14	0	0	538
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1430	1415	0	1691	1408	1408	0			1415		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1430	1415	0	1691	1408	1408	0			1415		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	80	100	100	96	78	100			100		
cM capacity (veh/h)	85	137	1085	63	139	170	1623			482		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	43	1415	538
Volume Left	0	0	0	0
Volume Right	0	38	14	538
cSH	137	194	1623	1700
Volume to Capacity	0.20	0.22	0.00	0.32
Queue Length 95th (ft)	18	21	0	0
Control Delay (s)	37.6	32.1	0.0	0.0
Lane LOS	E	D		
Approach Delay (s)	37.6	32.1	0.0	0.0
Approach LOS	E	D		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	112.6%	ICU Level of Service	H
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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3437		1770	3438	1583		1806	1583		1780	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.56	1.00		0.68	1.00
Satd. Flow (perm)	1770	3437		1770	3438	1583		1048	1583		1273	1583
Volume (vph)	167	1102	4	125	1755	248	39	23	84	295	24	315
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)	176	1160	4	132	1847	261	41	24	88	311	25	332
RTOR Reduction (vph)	0	0	0	0	0	31	0	0	62	0	0	234
Lane Group Flow (vph)	176	1164	0	132	1847	230	0	65	26	0	336	98
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	18.6	72.2		15.5	69.1	69.1		40.3	40.3		40.3	40.3
Effective Green, g (s)	19.6	73.2		16.5	70.1	70.1		41.3	41.3		41.3	41.3
Actuated g/C Ratio	0.14	0.52		0.12	0.50	0.50		0.29	0.29		0.29	0.29
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	248	1797		209	1721	793		309	467		376	467
v/s Ratio Prot	c0.10	0.34		0.07	c0.54							
v/s Ratio Perm						0.14		0.06	0.02		c0.26	0.06
v/c Ratio	0.71	0.65		0.63	1.07	0.29		0.21	0.06		0.89	0.21
Uniform Delay, d1	57.5	24.1		58.9	35.0	20.4		37.1	35.4		47.2	37.1
Progression Factor	1.00	1.00		1.33	0.47	0.34		1.00	1.00		1.00	1.00
Incremental Delay, d2	9.0	1.8		2.3	37.8	0.3		0.3	0.0		22.5	0.2
Delay (s)	66.4	25.9		80.4	54.2	7.2		37.4	35.4		69.8	37.3
Level of Service	E	C		F	D	A		D	D		E	D
Approach Delay (s)		31.2			50.3			36.3			53.6	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	44.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	148	91	134	799	985	146
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	156	96	141	841	1037	154
RTOR Reduction (vph)	0	80	0	0	0	28
Lane Group Flow (vph)	156	16	141	841	1037	126
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	21.7	21.7	15.8	110.3	90.5	90.5
Effective Green, g (s)	22.7	22.7	16.8	111.3	91.5	91.5
Actuated g/C Ratio	0.16	0.16	0.12	0.79	0.65	0.65
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)	287	257	212	2814	3323	1035
v/s Ratio Prot	c0.09		c0.08	0.24	c0.20	
v/s Ratio Perm		0.01				0.08
v/c Ratio	0.54	0.06	0.67	0.30	0.31	0.12
Uniform Delay, d1	53.9	49.6	58.9	3.9	10.6	9.1
Progression Factor	1.00	1.00	0.66	1.34	1.00	1.00
Incremental Delay, d2	2.1	0.1	4.4	0.2	0.2	0.2
Delay (s)	56.0	49.7	43.5	5.3	10.8	9.4
Level of Service	E	D	D	A	B	A
Approach Delay (s)	53.6			10.8	10.6	
Approach LOS	D			B	B	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	44.8%	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	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3403		1770	3438	1583	1681	1740	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3403		1770	3438	1583	1681	1740	1583	3433	1863	1583
Volume (vph)	601	1320	120	133	1454	377	159	80	121	547	15	465
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	613	1347	122	136	1484	385	162	82	123	558	15	474
RTOR Reduction (vph)	0	4	0	0	0	78	0	0	102	0	0	0
Lane Group Flow (vph)	613	1465	0	136	1484	307	119	125	21	558	15	474
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	26.0	58.4		13.3	45.7	45.7	24.3	24.3	24.3	27.5	27.5	140.0
Effective Green, g (s)	26.0	58.9		13.3	46.2	46.2	24.3	24.3	24.3	27.5	27.5	140.0
Actuated g/C Ratio	0.19	0.42		0.10	0.33	0.33	0.17	0.17	0.17	0.20	0.20	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	638	1432		168	1135	522	292	302	275	674	366	1583
v/s Ratio Prot	c0.18	0.43		0.08	c0.43		0.07	c0.07		c0.16	0.01	
v/s Ratio Perm						0.19			0.01			0.30
v/c Ratio	0.96	1.02		0.81	1.31	0.59	0.41	0.41	0.08	0.83	0.04	0.30
Uniform Delay, d1	56.5	40.5		62.1	46.9	39.0	51.4	51.5	48.5	54.0	45.6	0.0
Progression Factor	0.80	1.05		1.38	0.83	0.74	1.00	1.00	1.00	0.80	0.69	1.00
Incremental Delay, d2	21.4	26.4		17.1	142.7	3.2	0.9	0.9	0.1	8.0	0.0	0.5
Delay (s)	66.6	68.9		102.7	181.5	32.2	52.4	52.4	48.6	51.1	31.6	0.5
Level of Service	E	E		F	F	C	D	D	D	D	C	A
Approach Delay (s)		68.2			147.5			51.1			27.9	
Approach LOS		E			F			D			C	

Intersection Summary			
HCM Average Control Delay	88.3	HCM Level of Service	F
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3435		1770	3438	1583		1782	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.85	1.00	0.75	0.79	1.00
Satd. Flow (perm)	1770	3435		1770	3438	1583		1591	1583	1328	1400	1583
Volume (vph)	120	1707	12	9	1771	66	10	1	8	64	1	139
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	122	1742	12	9	1807	67	10	1	8	65	1	142
RTOR Reduction (vph)	0	0	0	0	0	10	0	0	7	0	0	92
Lane Group Flow (vph)	122	1754	0	9	1807	57	0	11	1	33	33	50
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	10.8	102.1		1.5	92.8	92.8		24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	11.8	103.1		2.5	93.8	93.8		25.4	25.4	25.4	25.4	25.4
Actuated g/C Ratio	0.08	0.74		0.02	0.67	0.67		0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	149	2530		32	2303	1061		289	287	241	254	287
v/s Ratio Prot	c0.07	0.51		0.01	c0.53							
v/s Ratio Perm						0.04		0.01	0.00	0.02	0.02	c0.03
v/c Ratio	0.82	0.69		0.28	0.78	0.05		0.04	0.01	0.14	0.13	0.17
Uniform Delay, d1	63.0	9.9		67.9	16.1	7.9		47.2	46.9	48.1	48.0	48.4
Progression Factor	0.88	1.14		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.1	0.6		4.8	2.8	0.1		0.1	0.0	0.3	0.2	0.3
Delay (s)	67.8	11.9		72.6	18.8	8.0		47.3	47.0	48.4	48.3	48.7
Level of Service	E	B		E	B	A		D	D	D	D	D
Approach Delay (s)		15.5			18.7			47.1			48.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1856	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1856	1538
Volume (vph)	0	1330	399	216	974	0	378	0	343	11	127	471
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1357	407	220	994	0	386	0	350	11	130	481
RTOR Reduction (vph)	0	0	87	0	0	0	0	0	300	0	0	57
Lane Group Flow (vph)	0	1357	320	220	994	0	386	0	50	0	141	424
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		Perm
Protected Phases		2		1	6		8			4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		53.0	53.0	16.0	73.0		19.0		19.0		35.0	35.0
Effective Green, g (s)		54.0	54.0	17.0	74.0		20.0		20.0		36.0	36.0
Actuated g/C Ratio		0.39	0.39	0.12	0.53		0.14		0.14		0.26	0.26
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1336	615	216	1884		494		228		481	398
v/s Ratio Prot		c0.39		c0.12	0.28		c0.11				0.08	
v/s Ratio Perm			0.20						0.03			c0.28
v/c Ratio		1.02	0.52	1.02	0.53		0.78		0.22		0.29	1.07
Uniform Delay, d1		42.5	32.6	61.0	21.1		57.4		52.6		41.3	51.5
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		28.6	0.7	66.1	0.3		7.9		0.5		0.3	63.5
Delay (s)		71.1	33.3	127.1	21.4		65.3		53.1		41.6	115.0
Level of Service		E	C	F	C		E		D		D	F
Approach Delay (s)		62.4			40.6			59.5			98.4	
Approach LOS		E			D			E			F	

Intersection Summary			
HCM Average Control Delay	60.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	139.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	59	3	3	2	0	11	3	625	4	43	631	26
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)	64	3	3	2	0	12	3	679	4	47	686	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											420	
pX, platoon unblocked	0.95	0.95	0.95	0.95	0.95		0.95					
vC, conflicting volume	1491	1484	700	1486	1496	682	714			684		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1518	1510	684	1513	1523	682	699			684		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	26	97	99	97	100	97	100			95		
cM capacity (veh/h)	86	108	426	87	106	450	851			909		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	71	14	3	684	761
Volume Left	64	2	3	0	47
Volume Right	3	12	0	4	28
cSH	90	273	851	1700	909
Volume to Capacity	0.78	0.05	0.00	0.40	0.05
Queue Length 95th (ft)	102	4	0	0	4
Control Delay (s)	123.9	18.9	9.2	0.0	1.3
Lane LOS	F	C	A		A
Approach Delay (s)	123.9	18.9	0.0		1.3
Approach LOS	F	C			

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
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)	37	0	3	83	55	32
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	45	0	4	100	66	39
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	193	86	105			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	193	86	105			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	100	100			
cM capacity (veh/h)	794	973	1487			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	45	0	104	105
Volume Left	45	0	4	0
Volume Right	0	0	0	39
cSH	794	1700	1487	1700
Volume to Capacity	0.06	0.00	0.00	0.06
Queue Length 95th (ft)	4	0	0	0
Control Delay (s)	9.8	0.0	0.3	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.8		0.3	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	16.8%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	49	0	0	9	29	0	1204	35	0	0	512
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	54	0	0	10	32	0	1338	39	0	0	569
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1378	1377	0	1669	1357	1357	0			1377		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1378	1377	0	1669	1357	1357	0			1377		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	62	100	100	93	82	100			100		
cM capacity (veh/h)	95	145	1085	54	149	182	1623			498		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	54	42	1377	569
Volume Left	0	0	0	0
Volume Right	0	32	39	569
cSH	145	239	1623	1700
Volume to Capacity	0.38	0.18	0.00	0.33
Queue Length 95th (ft)	40	16	0	0
Control Delay (s)	44.1	29.4	0.0	0.0
Lane LOS	E	D		
Approach Delay (s)	44.1	29.4	0.0	0.0
Approach LOS	E	D		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	110.5%	ICU Level of Service	H
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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3426		1770	3438	1583		1802	1583		1780	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.51	1.00		0.68	1.00
Satd. Flow (perm)	1770	3426		1770	3438	1583		954	1583		1269	1583
Volume (vph)	256	1277	37	152	1481	362	43	21	86	320	26	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)	269	1344	39	160	1559	381	45	22	91	337	27	320
RTOR Reduction (vph)	0	1	0	0	0	69	0	0	63	0	0	214
Lane Group Flow (vph)	269	1382	0	160	1559	312	0	67	28	0	364	106
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	23.9	70.0		16.2	62.3	62.3		41.8	41.8		41.8	41.8
Effective Green, g (s)	24.9	71.0		17.2	63.3	63.3		42.8	42.8		42.8	42.8
Actuated g/C Ratio	0.18	0.51		0.12	0.45	0.45		0.31	0.31		0.31	0.31
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	315	1737		217	1554	716		292	484		388	484
v/s Ratio Prot	c0.15	0.40		0.09	c0.45							
v/s Ratio Perm						0.20		0.07	0.02		c0.29	0.07
v/c Ratio	0.85	0.80		0.74	1.00	0.44		0.23	0.06		0.94	0.22
Uniform Delay, d1	55.8	28.5		59.2	38.4	26.2		36.3	34.3		47.3	36.2
Progression Factor	1.00	1.00		1.31	0.86	0.66		1.00	1.00		1.00	1.00
Incremental Delay, d2	19.6	3.9		1.2	7.6	0.2		0.4	0.0		30.0	0.2
Delay (s)	75.4	32.4		78.6	40.5	17.5		36.7	34.4		77.4	36.4
Level of Service	E	C		E	D	B		D	C		E	D
Approach Delay (s)		39.4			39.2			35.4			58.2	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	42.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3425		3433	3438	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3425		3433	3438	1583	1770	1863	1583	3433	1863	1583
Volume (vph)	674	1237	39	100	660	617	74	146	166	676	102	312
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	688	1262	40	102	673	630	76	149	169	690	104	318
RTOR Reduction (vph)	0	2	0	0	0	138	0	0	8	0	0	0
Lane Group Flow (vph)	688	1300	0	102	673	492	76	149	161	690	104	318
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	30.5	59.2		9.0	37.7	67.7	9.7	25.3	34.3	30.0	45.6	140.0
Effective Green, g (s)	30.5	59.7		9.0	38.2	68.2	9.7	25.3	34.3	30.0	45.6	140.0
Actuated g/C Ratio	0.22	0.43		0.06	0.27	0.49	0.07	0.18	0.24	0.21	0.33	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	748	1461		221	938	816	123	337	433	736	607	1583
v/s Ratio Prot	c0.20	c0.38		0.03	0.20	0.13	0.04	c0.08	0.02	c0.20	0.06	
v/s Ratio Perm						0.18			0.08			0.20
v/c Ratio	0.92	0.89		0.46	0.72	0.60	0.62	0.44	0.37	0.94	0.17	0.20
Uniform Delay, d1	53.6	37.1		63.2	46.0	26.1	63.3	51.1	43.9	54.1	33.7	0.0
Progression Factor	0.87	1.02		0.92	1.18	0.49	1.00	1.00	1.00	0.74	0.93	1.00
Incremental Delay, d2	13.9	7.1		1.2	3.6	1.0	8.9	0.9	0.5	19.1	0.1	0.3
Delay (s)	60.4	45.1		59.6	57.9	13.6	72.3	52.0	44.4	58.8	31.5	0.3
Level of Service	E	D		E	E	B	E	D	D	E	C	A
Approach Delay (s)		50.4			38.2			52.7			39.5	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	44.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	0.88
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1848	2707
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1848	2707
Volume (vph)	0	1784	121	130	1199	0	280	0	192	6	31	226
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1820	123	133	1223	0	286	0	196	6	32	231
RTOR Reduction (vph)	0	0	15	0	0	0	0	0	172	0	0	58
Lane Group Flow (vph)	0	1820	108	133	1223	0	286	0	24	0	38	173
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			pm+ov	Prot			Prot		custom	Split		custom
Protected Phases		2	8	1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		61.1	73.3	8.1	65.1		12.2		12.2		9.3	13.4
Effective Green, g (s)		62.1	75.3	9.1	66.1		13.2		13.2		10.3	15.4
Actuated g/C Ratio		0.58	0.71	0.09	0.62		0.12		0.12		0.10	0.14
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		2001	1117	151	2192		425		196		178	391
v/s Ratio Prot		c0.53	0.01	c0.08	0.35		c0.08				0.02	c0.02
v/s Ratio Perm			0.06						0.02			0.04
v/c Ratio		0.91	0.10	0.88	0.56		0.67		0.12		0.21	0.44
Uniform Delay, d1		19.8	5.0	48.3	11.8		44.7		41.6		44.5	41.7
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		6.5	0.0	40.5	0.3		4.2		0.3		0.6	0.8
Delay (s)		26.4	5.0	88.8	12.1		48.9		41.9		45.1	42.5
Level of Service		C	A	F	B		D		D		D	D
Approach Delay (s)		25.0			19.6			46.0			42.9	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	106.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3434		1770	3438	1583		1814	1583	1770	1604	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.90	1.00	0.75	1.00	
Satd. Flow (perm)	1770	3434		1770	3438	1583		1671	1583	1395	1604	
Volume (vph)	140	1537	14	34	767	174	7	6	16	153	7	85
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)	147	1618	15	36	807	183	7	6	17	161	7	89
RTOR Reduction (vph)	0	0	0	0	0	36	0	0	14	0	74	0
Lane Group Flow (vph)	147	1633	0	36	807	147	0	13	3	161	22	0
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		
Actuated Green, G (s)	16.3	100.1		4.8	88.6	88.6		23.1	23.1	23.1	23.1	
Effective Green, g (s)	17.3	101.1		5.8	89.6	89.6		24.1	24.1	24.1	24.1	
Actuated g/C Ratio	0.12	0.72		0.04	0.64	0.64		0.17	0.17	0.17	0.17	
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		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	219	2480		73	2200	1013		288	273	240	276	
v/s Ratio Prot	c0.08	c0.48		0.02	0.23						0.01	
v/s Ratio Perm						0.09		0.01	0.00	c0.12		
v/c Ratio	0.67	0.66		0.49	0.37	0.14		0.05	0.01	0.67	0.08	
Uniform Delay, d1	58.6	10.3		65.7	11.9	10.0		48.4	48.1	54.2	48.7	
Progression Factor	1.00	1.00		1.53	1.14	1.03		1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.8	1.4		4.4	0.4	0.3		0.1	0.0	7.2	0.1	
Delay (s)	66.5	11.7		105.0	14.0	10.5		48.4	48.1	61.4	48.8	
Level of Service	E	B		F	B	B		D	D	E	D	
Approach Delay (s)		16.2			16.5			48.2			56.7	
Approach LOS		B			B			D			E	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3401		3433	3438	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3401		3433	3438	1583	1770	1863	1583	3433	1863	1583
Volume (vph)	621	1104	109	233	1597	465	159	96	131	553	110	690
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	634	1127	111	238	1630	474	162	98	134	564	112	704
RTOR Reduction (vph)	0	4	0	0	0	92	0	0	12	0	0	0
Lane Group Flow (vph)	634	1234	0	238	1630	382	162	98	122	564	112	704
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	24.0	61.9		13.7	51.6	75.6	17.7	23.9	37.6	24.0	30.2	140.0
Effective Green, g (s)	24.0	62.4		13.7	52.1	76.1	17.7	23.9	37.6	24.0	30.2	140.0
Actuated g/C Ratio	0.17	0.45		0.10	0.37	0.54	0.13	0.17	0.27	0.17	0.22	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	589	1516		336	1279	906	224	318	470	589	402	1583
v/s Ratio Prot	c0.18	0.36		0.07	c0.47	0.07	0.09	0.05	0.03	c0.16	0.06	
v/s Ratio Perm						0.17			0.05			c0.44
v/c Ratio	1.08	0.81		0.71	1.27	0.42	0.72	0.31	0.26	0.96	0.28	0.44
Uniform Delay, d1	58.0	33.7		61.2	44.0	18.9	58.8	50.8	40.3	57.5	45.8	0.0
Progression Factor	0.96	1.42		1.30	0.64	0.52	1.00	1.00	1.00	0.79	0.76	1.00
Incremental Delay, d2	56.7	4.2		3.4	126.7	0.2	11.0	0.6	0.3	25.3	0.4	0.8
Delay (s)	112.2	52.3		83.2	154.7	10.0	69.8	51.4	40.6	70.6	35.4	0.8
Level of Service	F	D		F	F	A	E	D	D	E	D	A
Approach Delay (s)		72.6			118.1			55.3			32.1	
Approach LOS		E			F			E			C	

Intersection Summary			
HCM Average Control Delay	79.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.3%	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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	0.88
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1857	2707
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1857	2707
Volume (vph)	0	1354	280	213	1192	0	314	0	276	8	118	608
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1382	286	217	1216	0	320	0	282	8	120	620
RTOR Reduction (vph)	0	0	54	0	0	0	0	0	244	0	0	37
Lane Group Flow (vph)	0	1382	232	217	1216	0	320	0	38	0	128	583
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			pm+ov	Prot			Prot		custom	Split		custom
Protected Phases		2	8	1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		53.8	69.0	17.1	58.9		15.2		15.2		19.2	31.2
Effective Green, g (s)		54.8	71.0	18.1	59.9		16.2		16.2		20.2	33.2
Actuated g/C Ratio		0.45	0.59	0.15	0.49		0.13		0.13		0.17	0.27
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1553	927	264	1748		458		211		309	741
v/s Ratio Prot		c0.40	0.03	c0.12	0.34		c0.09				0.07	c0.08
v/s Ratio Perm			0.11						0.02			0.13
v/c Ratio		0.89	0.25	0.82	0.70		0.70		0.18		0.41	0.79
Uniform Delay, d1		30.5	12.2	50.0	23.7		50.2		46.6		45.3	40.8
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		6.7	0.1	18.3	1.2		4.6		0.4		0.9	5.5
Delay (s)		37.2	12.4	68.3	24.9		54.8		47.1		46.2	46.3
Level of Service		D	B	E	C		D		D		D	D
Approach Delay (s)		32.9			31.5			51.2			46.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	37.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	121.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3437		1770	3438	1583		1806	1583	1770	1603	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.46	1.00	0.70	1.00	
Satd. Flow (perm)	1770	3437		1770	3438	1583		851	1583	1299	1603	
Volume (vph)	167	1102	4	125	1755	248	39	23	84	295	24	315
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)	176	1160	4	132	1847	261	41	24	88	311	25	332
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	65	0	161	0
Lane Group Flow (vph)	176	1164	0	132	1847	221	0	65	23	311	196	0
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		
Actuated Green, G (s)	17.1	78.0		14.6	75.5	75.5		35.4	35.4	35.4	35.4	
Effective Green, g (s)	18.1	79.0		15.6	76.5	76.5		36.4	36.4	36.4	36.4	
Actuated g/C Ratio	0.13	0.56		0.11	0.55	0.55		0.26	0.26	0.26	0.26	
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		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	229	1939		197	1879	865		221	412	338	417	
v/s Ratio Prot	c0.10	0.34		0.07	c0.54						0.12	
v/s Ratio Perm						0.14		0.08	0.01	c0.24		
v/c Ratio	0.77	0.60		0.67	0.98	0.26		0.29	0.06	0.92	0.47	
Uniform Delay, d1	58.9	20.1		59.7	31.1	16.7		41.5	38.9	50.4	43.7	
Progression Factor	1.00	1.00		1.42	0.34	0.07		1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.3	1.4		0.8	3.4	0.1		0.7	0.1	29.4	0.8	
Delay (s)	73.2	21.5		85.8	14.0	1.2		42.3	39.0	79.8	44.5	
Level of Service	E	C		F	B	A		D	D	E	D	
Approach Delay (s)		28.3			16.7			40.4			60.9	
Approach LOS		C			B			D			E	

Intersection Summary			
HCM Average Control Delay	27.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3403		3433	3438	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3403		3433	3438	1583	1770	1863	1583	3433	1863	1583
Volume (vph)	601	1320	120	133	1454	377	159	80	121	547	15	465
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	613	1347	122	136	1484	385	162	82	123	558	15	474
RTOR Reduction (vph)	0	4	0	0	0	84	0	0	9	0	0	0
Lane Group Flow (vph)	613	1465	0	136	1484	301	162	82	114	558	15	474
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	22.0	67.8		10.3	56.1	76.1	24.4	25.4	35.7	20.0	21.0	140.0
Effective Green, g (s)	22.0	68.3		10.3	56.6	76.6	24.4	25.4	35.7	20.0	21.0	140.0
Actuated g/C Ratio	0.16	0.49		0.07	0.40	0.55	0.17	0.18	0.26	0.14	0.15	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	539	1660		253	1390	911	308	338	449	490	279	1583
v/s Ratio Prot	c0.18	0.43		0.04	c0.43	0.05	c0.09	0.04	0.02	c0.16	0.01	
v/s Ratio Perm						0.14			0.05			c0.30
v/c Ratio	1.14	0.88		0.54	1.07	0.33	0.53	0.24	0.25	1.14	0.05	0.30
Uniform Delay, d1	59.0	32.2		62.6	41.7	17.5	52.5	49.1	41.5	60.0	51.0	0.0
Progression Factor	1.03	0.97		1.20	0.65	0.83	1.00	1.00	1.00	0.82	1.08	1.00
Incremental Delay, d2	78.2	5.6		1.5	40.6	0.1	1.6	0.4	0.3	84.1	0.1	0.5
Delay (s)	138.9	36.7		76.2	67.6	14.7	54.2	49.4	41.8	133.5	55.3	0.5
Level of Service	F	D		E	E	B	D	D	D	F	E	A
Approach Delay (s)		66.8			58.0			49.0			72.2	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM Average Control Delay	63.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	0.88
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1856	2707
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1856	2707
Volume (vph)	0	1330	399	216	974	0	378	0	343	11	127	471
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1357	407	220	994	0	386	0	350	11	130	481
RTOR Reduction (vph)	0	0	77	0	0	0	0	0	296	0	0	68
Lane Group Flow (vph)	0	1357	330	220	994	0	386	0	54	0	141	413
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			pm+ov	Prot			Prot		custom	Split		custom
Protected Phases		2	8	1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		53.6	72.0	17.5	62.1		18.4		18.4		19.7	27.7
Effective Green, g (s)		54.6	74.0	18.5	63.1		19.4		19.4		20.7	30.7
Actuated g/C Ratio		0.44	0.59	0.15	0.50		0.15		0.15		0.17	0.25
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0		4.0		4.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Grp Cap (vph)		1499	936	262	1784		532		245		307	664
v/s Ratio Prot		c0.39	0.05	c0.12	0.28		c0.11				0.08	c0.05
v/s Ratio Perm			0.15						0.03			0.10
v/c Ratio		0.91	0.35	0.84	0.56		0.73		0.22		0.46	0.62
Uniform Delay, d1		32.9	13.2	51.9	21.4		50.4		46.3		47.2	42.1
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		8.1	0.2	20.4	0.4		4.9		0.5		1.1	1.8
Delay (s)		41.0	13.5	72.3	21.8		55.3		46.7		48.3	43.9
Level of Service		D	B	E	C		E		D		D	D
Approach Delay (s)		34.6			31.0			51.2			44.9	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	125.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3426		1770	3438	1583		1802	1583	1770	1605	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.49	1.00	0.70	1.00	
Satd. Flow (perm)	1770	3426		1770	3438	1583		910	1583	1298	1605	
Volume (vph)	256	1277	37	152	1481	362	43	21	86	320	26	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)	269	1344	39	160	1559	381	45	22	91	337	27	320
RTOR Reduction (vph)	0	1	0	0	0	69	0	0	66	0	222	0
Lane Group Flow (vph)	269	1382	0	160	1559	312	0	67	25	337	125	0
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		
Actuated Green, G (s)	24.4	72.9		17.0	65.5	65.5		38.1	38.1	38.1	38.1	
Effective Green, g (s)	25.4	73.9		18.0	66.5	66.5		39.1	39.1	39.1	39.1	
Actuated g/C Ratio	0.18	0.53		0.13	0.48	0.48		0.28	0.28	0.28	0.28	
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		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	321	1808		228	1633	752		254	442	363	448	
v/s Ratio Prot	c0.15	0.40		0.09	c0.45						0.08	
v/s Ratio Perm						0.20		0.07	0.02	c0.26		
v/c Ratio	0.84	0.76		0.70	0.95	0.42		0.26	0.06	0.93	0.28	
Uniform Delay, d1	55.3	26.2		58.4	35.3	24.0		39.3	37.0	49.1	39.4	
Progression Factor	1.00	1.00		1.07	0.80	0.84		1.00	1.00	1.00	1.00	
Incremental Delay, d2	17.1	3.1		5.1	8.6	0.9		0.6	0.1	29.3	0.3	
Delay (s)	72.4	29.3		67.3	36.8	21.0		39.8	37.0	78.4	39.8	
Level of Service	E	C		E	D	C		D	D	E	D	
Approach Delay (s)		36.3			36.2			38.2			58.8	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	39.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	249	152	77	780	309	217
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	262	160	81	821	325	228
RTOR Reduction (vph)	0	130	0	0	0	105
Lane Group Flow (vph)	262	30	81	821	325	123
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	24.9	24.9	9.6	87.9	74.3	74.3
Effective Green, g (s)	25.9	25.9	10.6	88.9	75.3	75.3
Actuated g/C Ratio	0.18	0.18	0.08	0.64	0.54	0.54
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)	327	293	134	2247	2735	851
v/s Ratio Prot	c0.15		c0.05	c0.23	0.06	
v/s Ratio Perm		0.02				0.08
v/c Ratio	0.80	0.10	0.60	0.37	0.12	0.14
Uniform Delay, d1	54.6	47.4	62.7	12.1	16.0	16.2
Progression Factor	1.00	1.00	1.44	0.27	1.00	1.00
Incremental Delay, d2	13.2	0.2	0.7	0.0	0.1	0.4
Delay (s)	67.7	47.5	91.2	3.3	16.1	16.6
Level of Service	E	D	F	A	B	B
Approach Delay (s)	60.1			11.2	16.3	
Approach LOS	E			B	B	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.2
Intersection Capacity Utilization	42.0%	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	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3425		1770	3438	1583	1681	1770	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3425		1770	3438	1583	1681	1770	1583	3433	1863	1583
Volume (vph)	693	1205	39	99	646	57	74	146	163	198	102	331
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	707	1230	40	101	659	58	76	149	166	202	104	338
RTOR Reduction (vph)	0	2	0	0	0	25	0	0	137	0	0	0
Lane Group Flow (vph)	707	1268	0	101	659	33	76	149	29	202	104	338
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	23.0	67.9		8.0	52.9	52.9	24.7	24.7	24.7	22.9	22.9	140.0
Effective Green, g (s)	23.0	68.4		8.0	53.4	53.4	24.7	24.7	24.7	22.9	22.9	140.0
Actuated g/C Ratio	0.16	0.49		0.06	0.38	0.38	0.18	0.18	0.18	0.16	0.16	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	564	1673		101	1311	604	297	312	279	562	305	1583
v/s Ratio Prot	c0.21	c0.37		0.06	0.19		0.05	c0.08		c0.06	0.06	
v/s Ratio Perm						0.02			0.02			0.21
v/c Ratio	1.25	0.76		1.00	0.50	0.06	0.26	0.48	0.10	0.36	0.34	0.21
Uniform Delay, d1	58.5	29.1		66.0	33.1	27.4	49.7	51.8	48.4	52.0	51.9	0.0
Progression Factor	0.86	0.91		1.40	0.70	0.40	1.00	1.00	1.00	0.91	0.91	1.00
Incremental Delay, d2	125.9	2.7		86.7	1.3	0.2	0.5	1.2	0.2	0.4	0.7	0.3
Delay (s)	176.3	29.3		179.3	24.6	11.0	50.2	53.0	48.5	47.9	47.7	0.3
Level of Service	F	C		F	C	B	D	D	D	D	D	A
Approach Delay (s)		81.8			42.8			50.6			22.9	
Approach LOS		F			D			D			C	

Intersection Summary			
HCM Average Control Delay	60.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.4%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3428		1770	3438	1583		1790	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84	1.00	0.75	0.75	1.00
Satd. Flow (perm)	1770	3428		1770	3438	1583		1562	1583	1322	1323	1583
Volume (vph)	121	1249	32	31	890	153	13	3	36	119	2	107
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	123	1274	33	32	908	156	13	3	37	121	2	109
RTOR Reduction (vph)	0	1	0	0	0	39	0	0	31	0	0	91
Lane Group Flow (vph)	123	1306	0	32	908	117	0	16	6	61	62	18
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	15.1	99.9		5.5	90.3	90.3		22.6	22.6	22.6	22.6	22.6
Effective Green, g (s)	16.1	100.9		6.5	91.3	91.3		23.6	23.6	23.6	23.6	23.6
Actuated g/C Ratio	0.12	0.72		0.05	0.65	0.65		0.17	0.17	0.17	0.17	0.17
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	204	2471		82	2242	1032		263	267	223	223	267
v/s Ratio Prot	c0.07	c0.38		0.02	0.26							
v/s Ratio Perm						0.07		0.01	0.00	0.05	c0.05	0.01
v/c Ratio	0.60	0.53		0.39	0.40	0.11		0.06	0.02	0.27	0.28	0.07
Uniform Delay, d1	58.9	8.8		64.8	11.5	9.1		48.9	48.6	50.7	50.8	49.0
Progression Factor	0.99	0.85		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.7	0.6		3.1	0.5	0.2		0.1	0.0	0.7	0.7	0.1
Delay (s)	61.8	8.1		67.9	12.1	9.4		49.0	48.6	51.4	51.5	49.1
Level of Service	E	A		E	B	A		D	D	D	D	D
Approach Delay (s)		12.7			13.3			48.7			50.3	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1841	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1841	1538
Volume (vph)	0	1328	61	99	729	0	252	0	172	6	20	145
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1355	62	101	744	0	257	0	176	6	20	148
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	148	0	0	88
Lane Group Flow (vph)	0	1355	49	101	744	0	257	0	28	0	26	60
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		custom
Protected Phases		2		1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		43.5	43.5	6.8	45.4		12.6		12.6		8.0	12.9
Effective Green, g (s)		44.5	44.5	7.8	46.4		13.6		13.6		9.0	14.9
Actuated g/C Ratio		0.51	0.51	0.09	0.53		0.16		0.16		0.10	0.17
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1761	811	159	1890		537		248		191	264
v/s Ratio Prot		c0.39		c0.06	0.21		c0.07				0.01	c0.02
v/s Ratio Perm			0.03						0.02			0.02
v/c Ratio		0.77	0.06	0.64	0.39		0.48		0.11		0.14	0.23
Uniform Delay, d1		17.1	10.7	38.2	11.9		33.4		31.5		35.4	31.0
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		2.1	0.0	8.0	0.1		0.7		0.2		0.3	0.4
Delay (s)		19.2	10.7	46.2	12.1		34.1		31.7		35.7	31.5
Level of Service		B	B	D	B		C		C		D	C
Approach Delay (s)		18.8			16.2			33.1			32.1	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	86.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	83	2	2	3	2	7	9	282	10	47	91	30
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	112	3	3	4	3	9	12	381	14	64	123	41
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											420	
pX, platoon unblocked												
vC, conflicting volume	686	689	143	686	703	388	164			395		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	686	689	143	686	703	388	164			395		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	67	99	100	99	99	99	99			95		
cM capacity (veh/h)	337	346	904	341	339	660	1415			1164		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	118	16	12	395	227
Volume Left	112	4	12	0	64
Volume Right	3	9	0	14	41
cSH	342	474	1415	1700	1164
Volume to Capacity	0.34	0.03	0.01	0.23	0.05
Queue Length 95th (ft)	37	3	1	0	4
Control Delay (s)	20.9	12.9	7.6	0.0	2.7
Lane LOS	C	B	A		A
Approach Delay (s)	20.9	12.9	0.2		2.7
Approach LOS	C	B			

Intersection Summary				
Average Delay	4.4			
Intersection Capacity Utilization	46.2%	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)	53	15	5	238	62	20
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	63	18	6	283	74	24
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	381	86	98			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	381	86	98			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	98	100			
cM capacity (veh/h)	619	973	1496			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	63	18	289	98
Volume Left	63	0	6	0
Volume Right	0	18	0	24
cSH	619	973	1496	1700
Volume to Capacity	0.10	0.02	0.00	0.06
Queue Length 95th (ft)	8	1	0	0
Control Delay (s)	11.5	8.8	0.2	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.9		0.2	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	26.5%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	20	0	0	4	26	0	893	11	0	0	465
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)	0	21	0	0	4	27	0	940	12	0	0	489
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	962	952	0	1201	946	946	0			952		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	962	952	0	1201	946	946	0			952		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	92	100	100	98	91	100			100		
cM capacity (veh/h)	213	260	1085	152	262	317	1623			722		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	32	952	489
Volume Left	0	0	0	0
Volume Right	0	27	12	489
cSH	260	366	1623	1700
Volume to Capacity	0.08	0.09	0.00	0.29
Queue Length 95th (ft)	7	7	0	0
Control Delay (s)	20.1	17.6	0.0	0.0
Lane LOS	C	C		
Approach Delay (s)	20.1	17.6	0.0	0.0
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	89.8%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.95	1.00
Satd. Flow (prot)	1770	3434		1770	3438	1583		1814	1583		1778	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.88	1.00		0.73	1.00
Satd. Flow (perm)	1770	3434		1770	3438	1583		1639	1583		1352	1583
Volume (vph)	140	1507	14	34	752	174	7	6	16	153	7	85
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)	147	1586	15	36	792	183	7	6	17	161	7	89
RTOR Reduction (vph)	0	0	0	0	0	37	0	0	14	0	0	73
Lane Group Flow (vph)	147	1601	0	36	792	146	0	13	3	0	168	16
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	16.3	99.6		5.0	88.3	88.3		23.4	23.4		23.4	23.4
Effective Green, g (s)	17.3	100.6		6.0	89.3	89.3		24.4	24.4		24.4	24.4
Actuated g/C Ratio	0.12	0.72		0.04	0.64	0.64		0.17	0.17		0.17	0.17
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	219	2468		76	2193	1010		286	276		236	276
v/s Ratio Prot	c0.08	c0.47		0.02	0.23							
v/s Ratio Perm						0.09		0.01	0.00		c0.12	0.01
v/c Ratio	0.67	0.65		0.47	0.36	0.14		0.05	0.01		0.71	0.06
Uniform Delay, d1	58.6	10.4		65.5	11.9	10.1		48.1	47.8		54.5	48.2
Progression Factor	1.00	1.00		0.63	1.75	2.62		1.00	1.00		1.00	1.00
Incremental Delay, d2	7.8	1.3		4.3	0.4	0.3		0.1	0.0		9.7	0.1
Delay (s)	66.5	11.7		45.7	21.3	26.7		48.2	47.8		64.2	48.3
Level of Service	E	B		D	C	C		D	D		E	D
Approach Delay (s)		16.3			23.1			48.0			58.7	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	158	91	122	743	1037	209
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	166	96	128	782	1092	220
RTOR Reduction (vph)	0	80	0	0	0	42
Lane Group Flow (vph)	166	16	128	782	1092	178
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	22.0	22.0	15.4	110.0	90.6	90.6
Effective Green, g (s)	23.0	23.0	16.4	111.0	91.6	91.6
Actuated g/C Ratio	0.16	0.16	0.12	0.79	0.65	0.65
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)	291	260	207	2806	3327	1036
v/s Ratio Prot	c0.09		c0.07	0.22	c0.21	
v/s Ratio Perm		0.01				0.11
v/c Ratio	0.57	0.06	0.62	0.28	0.33	0.17
Uniform Delay, d1	53.9	49.4	58.8	3.9	10.7	9.4
Progression Factor	1.00	1.00	0.37	2.25	1.00	1.00
Incremental Delay, d2	2.7	0.1	0.5	0.0	0.3	0.4
Delay (s)	56.6	49.5	22.5	8.7	10.9	9.8
Level of Service	E	D	C	A	B	A
Approach Delay (s)	54.0			10.6	10.7	
Approach LOS	D			B	B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.5%	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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3398		1770	3438	1583	1681	1747	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3398		1770	3438	1583	1681	1747	1583	3433	1863	1583
Volume (vph)	672	1027	109	225	1519	149	159	96	123	182	110	737
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	686	1048	111	230	1550	152	162	98	126	186	112	752
RTOR Reduction (vph)	0	4	0	0	0	27	0	0	104	0	0	0
Lane Group Flow (vph)	686	1155	0	230	1550	125	127	133	22	186	112	752
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	16.0	63.4		13.0	60.4	60.4	24.4	24.4	24.4	22.7	22.7	140.0
Effective Green, g (s)	16.0	63.9		13.0	60.9	60.9	24.4	24.4	24.4	22.7	22.7	140.0
Actuated g/C Ratio	0.11	0.46		0.09	0.43	0.43	0.17	0.17	0.17	0.16	0.16	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	392	1551		164	1496	689	293	304	276	557	302	1583
v/s Ratio Prot	c0.20	0.34		0.13	c0.45		0.08	0.08		0.05	0.06	
v/s Ratio Perm						0.08			0.01			c0.47
v/c Ratio	1.75	0.74		1.40	1.04	0.18	0.43	0.44	0.08	0.33	0.37	0.48
Uniform Delay, d1	62.0	31.3		63.5	39.5	24.3	51.6	51.7	48.4	52.0	52.3	0.0
Progression Factor	0.95	1.29		1.29	0.57	0.36	1.00	1.00	1.00	0.77	0.76	1.00
Incremental Delay, d2	346.6	2.9		205.9	30.0	0.4	1.0	1.0	0.1	0.3	0.7	1.0
Delay (s)	405.7	43.1		287.9	52.6	9.2	52.7	52.7	48.5	40.4	40.7	1.0
Level of Service	F	D		F	D	A	D	D	D	D	D	A
Approach Delay (s)		178.0			77.2			51.3			12.2	
Approach LOS		F			E			D			B	

Intersection Summary			
HCM Average Control Delay	97.9	HCM Level of Service	F
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3432		1770	3438	1583		1806	1583	1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.91	1.00	0.75	0.75	1.00
Satd. Flow (perm)	1770	3432		1770	3438	1583		1690	1583	1332	1332	1583
Volume (vph)	191	1103	16	8	1578	113	5	3	20	111	0	157
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	195	1126	16	8	1610	115	5	3	20	113	0	160
RTOR Reduction (vph)	0	1	0	0	0	20	0	0	16	0	0	131
Lane Group Flow (vph)	195	1141	0	8	1610	95	0	8	4	57	56	29
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	18.6	102.1		1.5	85.0	85.0		24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	19.6	103.1		2.5	86.0	86.0		25.4	25.4	25.4	25.4	25.4
Actuated g/C Ratio	0.14	0.74		0.02	0.61	0.61		0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	248	2527		32	2112	972		307	287	242	242	287
v/s Ratio Prot	c0.11	0.33		0.00	c0.47							
v/s Ratio Perm						0.06		0.00	0.00	c0.04	0.04	0.02
v/c Ratio	0.79	0.45		0.25	0.76	0.10		0.03	0.01	0.24	0.23	0.10
Uniform Delay, d1	58.2	7.3		67.8	19.6	11.1		47.1	47.0	49.0	49.0	47.8
Progression Factor	0.85	1.75		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.7	0.4		4.1	2.7	0.2		0.0	0.0	0.5	0.5	0.2
Delay (s)	61.4	13.2		71.9	22.3	11.3		47.2	47.0	49.5	49.5	47.9
Level of Service	E	B		E	C	B		D	D	D	D	D
Approach Delay (s)		20.2			21.8			47.1			48.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1851	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1851	1538
Volume (vph)	0	1060	109	97	1036	0	146	0	101	8	52	525
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1082	111	99	1057	0	149	0	103	8	53	536
RTOR Reduction (vph)	0	0	23	0	0	0	0	0	92	0	0	55
Lane Group Flow (vph)	0	1082	88	99	1057	0	149	0	11	0	61	481
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		custom
Protected Phases		2		1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		46.7	46.7	7.9	33.5		8.0		8.0		7.6	28.7
Effective Green, g (s)		47.7	47.7	8.9	34.5		9.0		9.0		8.6	30.7
Actuated g/C Ratio		0.55	0.55	0.10	0.40		0.10		0.10		0.10	0.36
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1902	876	183	1416		358		165		185	548
v/s Ratio Prot		0.31		0.06	c0.30		c0.04				0.03	c0.23
v/s Ratio Perm			0.06						0.01			0.09
v/c Ratio		0.57	0.10	0.54	0.75		0.42		0.07		0.33	0.88
Uniform Delay, d1		12.5	9.1	36.7	22.1		36.1		34.8		36.1	26.0
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	3.2	2.2		0.8		0.2		1.0	14.8
Delay (s)		12.9	9.2	40.0	24.3		36.9		35.0		37.2	40.8
Level of Service		B	A	D	C		D		C		D	D
Approach Delay (s)		12.6			25.6			36.1			40.4	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	86.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.3%	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												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	42	0	1	0	2	16	1	130	8	24	131	37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	49	0	1	0	2	19	1	153	9	28	154	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)											420	
pX, platoon unblocked												
vC, conflicting volume	408	397	176	394	414	158	198			162		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	408	397	176	394	414	158	198			162		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	100	100	100	100	98	100			98		
cM capacity (veh/h)	532	529	867	556	518	888	1375			1416		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	51	21	1	162	226
Volume Left	49	0	1	0	28
Volume Right	1	19	0	9	44
cSH	537	822	1375	1700	1416
Volume to Capacity	0.09	0.03	0.00	0.10	0.02
Queue Length 95th (ft)	8	2	0	0	2
Control Delay (s)	12.4	9.5	7.6	0.0	1.1
Lane LOS	B	A	A		A
Approach Delay (s)	12.4	9.5	0.1		1.1
Approach LOS	B	A			

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	36.9%	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)	31	2	6	91	67	42
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	35	2	7	103	76	48
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	217	100	124			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	217	100	124			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	768	956	1463			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	35	2	110	124
Volume Left	35	0	7	0
Volume Right	0	2	0	48
cSH	768	956	1463	1700
Volume to Capacity	0.05	0.00	0.00	0.07
Queue Length 95th (ft)	4	0	0	0
Control Delay (s)	9.9	8.8	0.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.8		0.5	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	19.7%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	25	0	0	5	35	0	1098	13	0	0	286
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)	0	27	0	0	5	38	0	1193	14	0	0	311
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1222	1208	0	1370	1201	1201	0			1208		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1222	1208	0	1370	1201	1201	0			1208		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	85	100	100	97	83	100			100		
cM capacity (veh/h)	127	183	1085	110	185	225	1623			578		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	43	1208	311
Volume Left	0	0	0	0
Volume Right	0	38	14	311
cSH	183	258	1623	1700
Volume to Capacity	0.15	0.17	0.00	0.18
Queue Length 95th (ft)	13	15	0	0
Control Delay (s)	28.1	24.3	0.0	0.0
Lane LOS	D	C		
Approach Delay (s)	28.1	24.3	0.0	0.0
Approach LOS	D	C		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	89.6%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3437		1770	3438	1583		1806	1583		1780	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.56	1.00		0.68	1.00
Satd. Flow (perm)	1770	3437		1770	3438	1583		1048	1583		1273	1583
Volume (vph)	167	1024	4	125	1678	248	39	23	84	295	24	315
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)	176	1078	4	132	1766	261	41	24	88	311	25	332
RTOR Reduction (vph)	0	0	0	0	0	33	0	0	62	0	0	234
Lane Group Flow (vph)	176	1082	0	132	1766	228	0	65	26	0	336	98
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	18.6	72.6		15.1	69.1	69.1		40.3	40.3		40.3	40.3
Effective Green, g (s)	19.6	73.6		16.1	70.1	70.1		41.3	41.3		41.3	41.3
Actuated g/C Ratio	0.14	0.53		0.12	0.50	0.50		0.29	0.29		0.29	0.29
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	248	1807		204	1721	793		309	467		376	467
v/s Ratio Prot	c0.10	0.31		0.07	c0.51							
v/s Ratio Perm						0.14		0.06	0.02		c0.26	0.06
v/c Ratio	0.71	0.60		0.65	1.03	0.29		0.21	0.06		0.89	0.21
Uniform Delay, d1	57.5	23.0		59.2	35.0	20.4		37.1	35.4		47.2	37.1
Progression Factor	1.00	1.00		1.30	0.56	0.41		1.00	1.00		1.00	1.00
Incremental Delay, d2	9.0	1.5		3.8	23.0	0.5		0.3	0.0		22.5	0.2
Delay (s)	66.4	24.5		80.5	42.6	8.8		37.4	35.4		69.8	37.3
Level of Service	E	C		F	D	A		D	D		E	D
Approach Delay (s)		30.3			40.8			36.3			53.6	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	140	109	127	611	779	125
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	115	134	643	820	132
RTOR Reduction (vph)	0	97	0	0	0	32
Lane Group Flow (vph)	147	18	134	643	820	100
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	21.5	21.5	17.3	110.5	89.2	89.2
Effective Green, g (s)	22.5	22.5	18.3	111.5	90.2	90.2
Actuated g/C Ratio	0.16	0.16	0.13	0.80	0.64	0.64
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)	284	254	231	2819	3276	1020
v/s Ratio Prot	c0.08		c0.08	0.18	c0.16	
v/s Ratio Perm		0.01				0.06
v/c Ratio	0.52	0.07	0.58	0.23	0.25	0.10
Uniform Delay, d1	53.8	49.9	57.2	3.5	10.6	9.5
Progression Factor	1.00	1.00	0.39	1.32	1.00	1.00
Incremental Delay, d2	1.6	0.1	1.6	0.1	0.2	0.2
Delay (s)	55.4	50.0	23.8	4.8	10.7	9.6
Level of Service	E	D	C	A	B	A
Approach Delay (s)	53.0			8.1	10.6	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3400		1770	3438	1583	1681	1740	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3400		1770	3438	1583	1681	1740	1583	3433	1863	1583
Volume (vph)	664	1203	120	121	1344	114	159	80	109	173	15	550
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	678	1228	122	123	1371	116	162	82	111	177	15	561
RTOR Reduction (vph)	0	4	0	0	0	24	0	0	92	0	0	0
Lane Group Flow (vph)	678	1346	0	123	1371	92	119	125	19	177	15	561
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	26.0	63.8		12.8	50.6	50.6	24.3	24.3	24.3	22.6	22.6	140.0
Effective Green, g (s)	26.0	64.3		12.8	51.1	51.1	24.3	24.3	24.3	22.6	22.6	140.0
Actuated g/C Ratio	0.19	0.46		0.09	0.37	0.37	0.17	0.17	0.17	0.16	0.16	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	638	1562		162	1255	578	292	302	275	554	301	1583
v/s Ratio Prot	c0.20	0.40		0.07	c0.40		0.07	c0.07		0.05	0.01	
v/s Ratio Perm						0.06			0.01			c0.35
v/c Ratio	1.06	0.86		0.76	1.09	0.16	0.41	0.41	0.07	0.32	0.05	0.35
Uniform Delay, d1	57.0	33.9		62.1	44.5	30.0	51.4	51.5	48.4	51.9	49.6	0.0
Progression Factor	0.83	1.03		1.37	0.72	0.55	1.00	1.00	1.00	0.78	0.70	1.00
Incremental Delay, d2	49.9	5.3		15.7	52.8	0.5	0.9	0.9	0.1	0.3	0.1	0.6
Delay (s)	97.1	40.1		100.8	84.9	16.8	52.4	52.4	48.5	40.7	34.8	0.6
Level of Service	F	D		F	F	B	D	D	D	D	C	A
Approach Delay (s)		59.1			81.2			51.2			10.7	
Approach LOS		E			F			D			B	

Intersection Summary			
HCM Average Control Delay	58.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.3%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3434		1770	3438	1583		1782	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86	1.00	0.75	0.80	1.00
Satd. Flow (perm)	1770	3434		1770	3438	1583		1593	1583	1328	1407	1583
Volume (vph)	125	1162	12	9	1360	62	10	1	8	60	1	147
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	128	1186	12	9	1388	63	10	1	8	61	1	150
RTOR Reduction (vph)	0	0	0	0	0	13	0	0	7	0	0	115
Lane Group Flow (vph)	128	1198	0	9	1388	50	0	11	1	31	31	35
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	11.0	102.1		1.5	92.6	92.6		24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	12.0	103.1		2.5	93.6	93.6		25.4	25.4	25.4	25.4	25.4
Actuated g/C Ratio	0.09	0.74		0.02	0.67	0.67		0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	152	2529		32	2299	1058		289	287	241	255	287
v/s Ratio Prot	c0.07	0.35		0.01	c0.40							
v/s Ratio Perm						0.03		0.01	0.00	c0.02	0.02	0.02
v/c Ratio	0.84	0.47		0.28	0.60	0.05		0.04	0.01	0.13	0.12	0.12
Uniform Delay, d1	63.1	7.5		67.9	12.9	7.9		47.2	46.9	48.0	48.0	48.0
Progression Factor	1.02	0.52		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.5	0.4		4.8	1.2	0.1		0.1	0.0	0.2	0.2	0.2
Delay (s)	86.9	4.3		72.6	14.1	8.0		47.3	47.0	48.3	48.2	48.2
Level of Service	F	A		E	B	A		D	D	D	D	D
Approach Delay (s)		12.3			14.2			47.1			48.2	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.0%	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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1836	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1836	1538
Volume (vph)	0	1056	141	44	868	0	139	0	84	11	26	410
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1078	144	45	886	0	142	0	86	11	27	418
RTOR Reduction (vph)	0	0	38	0	0	0	0	0	77	0	0	118
Lane Group Flow (vph)	0	1078	106	45	886	0	142	0	9	0	38	300
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		Perm
Protected Phases		2		1	6		8			4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		33.7	33.7	4.4	42.1		8.3		8.3		23.2	23.2
Effective Green, g (s)		34.7	34.7	5.4	43.1		9.3		9.3		24.2	24.2
Actuated g/C Ratio		0.41	0.41	0.06	0.50		0.11		0.11		0.28	0.28
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1394	642	112	1782		373		172		519	435
v/s Ratio Prot		c0.31		0.03	c0.25		c0.04				0.02	
v/s Ratio Perm			0.07						0.01			c0.20
v/c Ratio		0.77	0.17	0.40	0.50		0.38		0.05		0.07	0.69
Uniform Delay, d1		22.0	16.2	38.5	14.1		35.5		34.2		22.5	27.4
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		2.7	0.1	2.4	0.2		0.7		0.1		0.1	4.7
Delay (s)		24.8	16.3	40.9	14.3		36.1		34.3		22.5	32.0
Level of Service		C	B	D	B		D		C		C	C
Approach Delay (s)		23.8			15.6			35.5			31.3	
Approach LOS		C			B			D			C	

Intersection Summary			
HCM Average Control Delay	23.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	85.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.3%	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												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	59	3	3	2	0	11	3	128	4	43	100	26
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)	64	3	3	2	0	12	3	139	4	47	109	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											420	
pX, platoon unblocked												
vC, conflicting volume	374	366	123	369	378	141	137			143		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	374	366	123	369	378	141	137			143		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	99	100	100	100	99	100			97		
cM capacity (veh/h)	560	543	928	567	534	907	1447			1439		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	71	14	3	143	184
Volume Left	64	2	3	0	47
Volume Right	3	12	0	4	28
cSH	570	830	1447	1700	1439
Volume to Capacity	0.12	0.02	0.00	0.08	0.03
Queue Length 95th (ft)	11	1	0	0	3
Control Delay (s)	12.2	9.4	7.5	0.0	2.1
Lane LOS	B	A	A		A
Approach Delay (s)	12.2	9.4	0.2		2.1
Approach LOS	B	A			

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	36.5%	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)	37	0	3	75	35	32
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	45	0	4	90	42	39
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	159	61	81			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	159	61	81			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	830	1004	1517			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	45	0	94	81
Volume Left	45	0	4	0
Volume Right	0	0	0	39
cSH	830	1700	1517	1700
Volume to Capacity	0.05	0.00	0.00	0.05
Queue Length 95th (ft)	4	0	0	0
Control Delay (s)	9.6	0.0	0.3	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.6		0.3	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	16.4%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	49	0	0	9	29	0	978	35	0	0	282
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	54	0	0	10	32	0	1087	39	0	0	313
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1127	1126	0	1290	1106	1106	0			1126		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1127	1126	0	1290	1106	1106	0			1126		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	73	100	100	95	87	100			100		
cM capacity (veh/h)	153	205	1085	112	210	256	1623			621		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	54	42	1126	313
Volume Left	0	0	0	0
Volume Right	0	32	39	313
cSH	205	335	1623	1700
Volume to Capacity	0.27	0.13	0.00	0.18
Queue Length 95th (ft)	26	11	0	0
Control Delay (s)	28.8	21.5	0.0	0.0
Lane LOS	D	C		
Approach Delay (s)	28.8	21.5	0.0	0.0
Approach LOS	D	C		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	84.4%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3425		1770	3438	1583		1802	1583		1780	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.51	1.00		0.68	1.00
Satd. Flow (perm)	1770	3425		1770	3438	1583		954	1583		1269	1583
Volume (vph)	256	1160	37	152	1369	362	43	21	86	320	26	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)	269	1221	39	160	1441	381	45	22	91	337	27	320
RTOR Reduction (vph)	0	1	0	0	0	75	0	0	63	0	0	215
Lane Group Flow (vph)	269	1259	0	160	1441	306	0	67	28	0	364	105
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	23.9	69.8		16.4	62.3	62.3		41.8	41.8		41.8	41.8
Effective Green, g (s)	24.9	70.8		17.4	63.3	63.3		42.8	42.8		42.8	42.8
Actuated g/C Ratio	0.18	0.51		0.12	0.45	0.45		0.31	0.31		0.31	0.31
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	315	1732		220	1554	716		292	484		388	484
v/s Ratio Prot	c0.15	0.37		0.09	c0.42							
v/s Ratio Perm						0.19		0.07	0.02		c0.29	0.07
v/c Ratio	0.85	0.73		0.73	0.93	0.43		0.23	0.06		0.94	0.22
Uniform Delay, d1	55.8	27.0		59.0	36.2	26.0		36.3	34.3		47.3	36.1
Progression Factor	1.00	1.00		1.23	0.91	0.71		1.00	1.00		1.00	1.00
Incremental Delay, d2	19.6	2.7		6.0	6.3	1.0		0.4	0.0		30.0	0.2
Delay (s)	75.4	29.7		78.8	39.2	19.5		36.7	34.4		77.4	36.4
Level of Service	E	C		E	D	B		D	C		E	D
Approach Delay (s)		37.8			38.6			35.4			58.2	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	41.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	249	153	77	792	334	217
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	262	161	81	834	352	228
RTOR Reduction (vph)	0	131	0	0	0	105
Lane Group Flow (vph)	262	30	81	834	352	123
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	24.9	24.9	9.6	87.9	74.3	74.3
Effective Green, g (s)	25.9	25.9	10.6	88.9	75.3	75.3
Actuated g/C Ratio	0.18	0.18	0.08	0.64	0.54	0.54
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)	327	293	134	2247	2735	851
v/s Ratio Prot	c0.15		c0.05	c0.24	0.07	
v/s Ratio Perm		0.02				0.08
v/c Ratio	0.80	0.10	0.60	0.37	0.13	0.14
Uniform Delay, d1	54.6	47.4	62.7	12.2	16.1	16.2
Progression Factor	1.00	1.00	1.44	0.27	1.00	1.00
Incremental Delay, d2	13.2	0.2	0.7	0.0	0.1	0.4
Delay (s)	67.7	47.5	91.1	3.4	16.2	16.6
Level of Service	E	D	F	A	B	B
Approach Delay (s)	60.1			11.1	16.3	
Approach LOS	E			B	B	

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.2
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3425		1770	3438	1583	1681	1770	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3425		1770	3438	1583	1681	1770	1583	3433	1863	1583
Volume (vph)	693	1234	39	100	660	69	74	146	166	224	102	331
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	707	1259	40	102	673	70	76	149	169	229	104	338
RTOR Reduction (vph)	0	1	0	0	0	29	0	0	139	0	0	0
Lane Group Flow (vph)	707	1298	0	102	673	41	76	149	30	229	104	338
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	23.0	67.7		8.0	52.7	52.7	24.7	24.7	24.7	23.1	23.1	140.0
Effective Green, g (s)	23.0	68.2		8.0	53.2	53.2	24.7	24.7	24.7	23.1	23.1	140.0
Actuated g/C Ratio	0.16	0.49		0.06	0.38	0.38	0.18	0.18	0.18	0.17	0.17	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	564	1668		101	1306	602	297	312	279	566	307	1583
v/s Ratio Prot	c0.21	c0.38		0.06	0.20		0.05	c0.08		c0.07	0.06	
v/s Ratio Perm						0.03			0.02			0.21
v/c Ratio	1.25	0.78		1.01	0.52	0.07	0.26	0.48	0.11	0.40	0.34	0.21
Uniform Delay, d1	58.5	29.7		66.0	33.5	27.6	49.7	51.8	48.4	52.3	51.7	0.0
Progression Factor	0.86	0.91		1.41	0.70	0.39	1.00	1.00	1.00	0.91	0.90	1.00
Incremental Delay, d2	125.8	3.0		89.2	1.4	0.2	0.5	1.2	0.2	0.5	0.7	0.3
Delay (s)	176.3	29.9		182.0	24.8	11.0	50.2	53.0	48.6	47.9	47.1	0.3
Level of Service	F	C		F	C	B	D	D	D	D	D	A
Approach Delay (s)		81.5			42.6			50.6			23.8	
Approach LOS		F			D			D			C	

Intersection Summary			
HCM Average Control Delay	60.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.2%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3428		1770	3438	1583		1790	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84	1.00	0.75	0.75	1.00
Satd. Flow (perm)	1770	3428		1770	3438	1583		1561	1583	1322	1321	1583
Volume (vph)	121	1308	32	31	918	154	13	3	36	121	2	107
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	123	1335	33	32	937	157	13	3	37	123	2	109
RTOR Reduction (vph)	0	1	0	0	0	38	0	0	31	0	0	91
Lane Group Flow (vph)	123	1367	0	32	937	119	0	16	6	62	63	18
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	15.1	99.9		5.5	90.3	90.3		22.6	22.6	22.6	22.6	22.6
Effective Green, g (s)	16.1	100.9		6.5	91.3	91.3		23.6	23.6	23.6	23.6	23.6
Actuated g/C Ratio	0.12	0.72		0.05	0.65	0.65		0.17	0.17	0.17	0.17	0.17
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	204	2471		82	2242	1032		263	267	223	223	267
v/s Ratio Prot	c0.07	c0.40		0.02	0.27							
v/s Ratio Perm						0.07		0.01	0.00	0.05	c0.05	0.01
v/c Ratio	0.60	0.55		0.39	0.42	0.12		0.06	0.02	0.28	0.28	0.07
Uniform Delay, d1	58.9	9.1		64.8	11.6	9.2		48.9	48.6	50.8	50.8	49.0
Progression Factor	0.98	0.86		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.6		3.1	0.6	0.2		0.1	0.0	0.7	0.7	0.1
Delay (s)	61.1	8.4		67.9	12.2	9.4		49.0	48.6	51.5	51.5	49.1
Level of Service	E	A		E	B	A		D	D	D	D	D
Approach Delay (s)		12.8			13.4			48.7			50.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	63.8%	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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1848	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1848	1538
Volume (vph)	0	1328	121	130	729	0	280	0	192	6	31	145
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1355	123	133	744	0	286	0	196	6	32	148
RTOR Reduction (vph)	0	0	27	0	0	0	0	0	166	0	0	86
Lane Group Flow (vph)	0	1355	96	133	744	0	286	0	30	0	38	62
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		custom
Protected Phases		2		1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		41.4	41.4	10.1	46.6		12.7		12.7		8.0	12.9
Effective Green, g (s)		42.4	42.4	11.1	47.6		13.7		13.7		9.0	14.9
Actuated g/C Ratio		0.48	0.48	0.13	0.54		0.16		0.16		0.10	0.17
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1653	761	223	1910		533		246		189	260
v/s Ratio Prot		c0.39		c0.08	0.21		c0.08				0.02	c0.02
v/s Ratio Perm			0.06						0.02			0.02
v/c Ratio		0.82	0.13	0.60	0.39		0.54		0.12		0.20	0.24
Uniform Delay, d1		19.6	12.7	36.4	11.8		34.3		32.1		36.3	31.7
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		3.3	0.1	4.2	0.1		1.0		0.2		0.5	0.5
Delay (s)		22.9	12.7	40.7	12.0		35.4		32.3		36.8	32.2
Level of Service		C	B	D	B		D		C		D	C
Approach Delay (s)		22.1			16.3			34.1			33.1	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	88.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	83	2	2	3	2	7	9	330	10	47	192	30
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	112	3	3	4	3	9	12	446	14	64	259	41
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											420	
pX, platoon unblocked												
vC, conflicting volume	888	891	280	888	904	453	300			459		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	888	891	280	888	904	453	300			459		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	54	99	100	98	99	98	99			94		
cM capacity (veh/h)	245	263	759	248	258	607	1261			1102		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	118	16	12	459	364
Volume Left	112	4	12	0	64
Volume Right	3	9	0	14	41
cSH	249	383	1261	1700	1102
Volume to Capacity	0.47	0.04	0.01	0.27	0.06
Queue Length 95th (ft)	59	3	1	0	5
Control Delay (s)	31.7	14.8	7.9	0.0	2.0
Lane LOS	D	B	A		A
Approach Delay (s)	31.7	14.8	0.2		2.0
Approach LOS	D	B			

Intersection Summary				
Average Delay	4.9			
Intersection Capacity Utilization	54.0%	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)	53	15	5	240	63	20
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	63	18	6	286	75	24
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	385	87	99			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	385	87	99			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	98	100			
cM capacity (veh/h)	616	972	1494			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	63	18	292	99
Volume Left	63	0	6	0
Volume Right	0	18	0	24
cSH	616	972	1494	1700
Volume to Capacity	0.10	0.02	0.00	0.06
Queue Length 95th (ft)	9	1	0	0
Control Delay (s)	11.5	8.8	0.2	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.9		0.2	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	26.6%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	20	0	0	4	26	0	924	11	0	0	469
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)	0	21	0	0	4	27	0	973	12	0	0	494
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	994	984	0	1236	978	978	0			984		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	994	984	0	1236	978	978	0			984		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	92	100	100	98	91	100			100		
cM capacity (veh/h)	201	248	1085	143	250	304	1623			702		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	32	984	494
Volume Left	0	0	0	0
Volume Right	0	27	12	494
cSH	248	350	1623	1700
Volume to Capacity	0.08	0.09	0.00	0.29
Queue Length 95th (ft)	7	7	0	0
Control Delay (s)	20.8	18.2	0.0	0.0
Lane LOS	C	C		
Approach Delay (s)	20.8	18.2	0.0	0.0
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.95	1.00
Satd. Flow (prot)	1770	3434		1770	3438	1583		1814	1583		1778	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.88	1.00		0.73	1.00
Satd. Flow (perm)	1770	3434		1770	3438	1583		1639	1583		1352	1583
Volume (vph)	140	1537	14	34	767	174	7	6	16	153	7	85
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)	147	1618	15	36	807	183	7	6	17	161	7	89
RTOR Reduction (vph)	0	0	0	0	0	37	0	0	14	0	0	73
Lane Group Flow (vph)	147	1633	0	36	807	146	0	13	3	0	168	16
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	16.3	99.6		5.0	88.3	88.3		23.4	23.4		23.4	23.4
Effective Green, g (s)	17.3	100.6		6.0	89.3	89.3		24.4	24.4		24.4	24.4
Actuated g/C Ratio	0.12	0.72		0.04	0.64	0.64		0.17	0.17		0.17	0.17
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	219	2468		76	2193	1010		286	276		236	276
v/s Ratio Prot	c0.08	c0.48		0.02	0.23							
v/s Ratio Perm						0.09		0.01	0.00		c0.12	0.01
v/c Ratio	0.67	0.66		0.47	0.37	0.14		0.05	0.01		0.71	0.06
Uniform Delay, d1	58.6	10.6		65.5	12.0	10.1		48.1	47.8		54.5	48.2
Progression Factor	1.00	1.00		0.65	1.75	2.59		1.00	1.00		1.00	1.00
Incremental Delay, d2	7.8	1.4		4.3	0.4	0.3		0.1	0.0		9.7	0.1
Delay (s)	66.5	12.0		46.7	21.5	26.5		48.2	47.8		64.2	48.3
Level of Service	E	B		D	C	C		D	D		E	D
Approach Delay (s)		16.5			23.2			48.0			58.7	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	158	94	125	807	1101	209
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	166	99	132	849	1159	220
RTOR Reduction (vph)	0	83	0	0	0	40
Lane Group Flow (vph)	166	16	132	849	1159	180
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	22.0	22.0	15.6	110.0	90.4	90.4
Effective Green, g (s)	23.0	23.0	16.6	111.0	91.4	91.4
Actuated g/C Ratio	0.16	0.16	0.12	0.79	0.65	0.65
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)	291	260	210	2806	3320	1033
v/s Ratio Prot	c0.09		c0.07	0.24	c0.23	
v/s Ratio Perm		0.01				0.11
v/c Ratio	0.57	0.06	0.63	0.30	0.35	0.17
Uniform Delay, d1	53.9	49.4	58.8	4.0	10.9	9.5
Progression Factor	1.00	1.00	0.45	2.23	1.00	1.00
Incremental Delay, d2	2.7	0.1	0.5	0.0	0.3	0.4
Delay (s)	56.6	49.5	26.8	8.8	11.2	9.9
Level of Service	E	D	C	A	B	A
Approach Delay (s)	54.0			11.3	11.0	
Approach LOS	D			B	B	

Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	47.0%	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	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3401		1770	3438	1583	1681	1747	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3401		1770	3438	1583	1681	1747	1583	3433	1863	1583
Volume (vph)	672	1104	109	233	1596	216	159	96	131	249	110	737
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	686	1127	111	238	1629	220	162	98	134	254	112	752
RTOR Reduction (vph)	0	4	0	0	0	38	0	0	111	0	0	0
Lane Group Flow (vph)	686	1234	0	238	1629	182	127	133	23	254	112	752
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	16.0	62.9		13.0	59.9	59.9	24.4	24.4	24.4	23.2	23.2	140.0
Effective Green, g (s)	16.0	63.4		13.0	60.4	60.4	24.4	24.4	24.4	23.2	23.2	140.0
Actuated g/C Ratio	0.11	0.45		0.09	0.43	0.43	0.17	0.17	0.17	0.17	0.17	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	392	1540		164	1483	683	293	304	276	569	309	1583
v/s Ratio Prot	c0.20	0.36		0.13	c0.47		0.08	0.08		0.07	0.06	
v/s Ratio Perm						0.12			0.01			c0.47
v/c Ratio	1.75	0.80		1.45	1.10	0.27	0.43	0.44	0.08	0.45	0.36	0.48
Uniform Delay, d1	62.0	32.9		63.5	39.8	25.6	51.6	51.7	48.4	52.6	51.8	0.0
Progression Factor	0.94	1.30		1.33	0.60	0.41	1.00	1.00	1.00	0.77	0.75	1.00
Incremental Delay, d2	346.4	3.8		224.1	51.9	0.6	1.0	1.0	0.1	0.5	0.7	1.0
Delay (s)	405.0	46.6		308.3	76.0	11.2	52.7	52.7	48.6	41.2	39.8	1.0
Level of Service	F	D		F	E	B	D	D	D	D	D	A
Approach Delay (s)		174.3			95.6			51.3			14.0	
Approach LOS		F			F			D			B	

Intersection Summary			
HCM Average Control Delay	103.4	HCM Level of Service	F
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3433		1770	3438	1583		1806	1583	1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.91	1.00	0.75	0.75	1.00
Satd. Flow (perm)	1770	3433		1770	3438	1583		1689	1583	1332	1332	1583
Volume (vph)	191	1256	16	8	1731	116	5	3	20	114	0	157
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	195	1282	16	8	1766	118	5	3	20	116	0	160
RTOR Reduction (vph)	0	1	0	0	0	19	0	0	16	0	0	131
Lane Group Flow (vph)	195	1297	0	8	1766	99	0	8	4	58	58	29
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	18.6	102.1		1.5	85.0	85.0		24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	19.6	103.1		2.5	86.0	86.0		25.4	25.4	25.4	25.4	25.4
Actuated g/C Ratio	0.14	0.74		0.02	0.61	0.61		0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	248	2528		32	2112	972		306	287	242	242	287
v/s Ratio Prot	c0.11	0.38		0.00	c0.51							
v/s Ratio Perm						0.06		0.00	0.00	c0.04	0.04	0.02
v/c Ratio	0.79	0.51		0.25	0.84	0.10		0.03	0.01	0.24	0.24	0.10
Uniform Delay, d1	58.2	7.8		67.8	21.4	11.1		47.1	47.0	49.0	49.0	47.8
Progression Factor	0.82	1.72		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.9	0.5		4.1	4.1	0.2		0.0	0.0	0.5	0.5	0.2
Delay (s)	58.5	14.0		71.9	25.5	11.3		47.2	47.0	49.6	49.6	47.9
Level of Service	E	B		E	C	B		D	D	D	D	D
Approach Delay (s)		19.8			24.8			47.1			48.6	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1857	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1857	1538
Volume (vph)	0	1045	280	213	1022	0	314	0	276	8	118	525
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1066	286	217	1043	0	320	0	282	8	120	536
RTOR Reduction (vph)	0	0	82	0	0	0	0	0	238	0	0	18
Lane Group Flow (vph)	0	1066	204	217	1043	0	320	0	44	0	128	518
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		custom
Protected Phases		2		1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		38.4	38.4	17.8	34.9		14.9		14.9		14.9	36.2
Effective Green, g (s)		39.4	39.4	18.8	35.9		15.9		15.9		15.9	38.2
Actuated g/C Ratio		0.39	0.39	0.18	0.35		0.16		0.16		0.16	0.37
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1328	611	326	1246		535		247		289	576
v/s Ratio Prot		c0.31		0.12	0.29		c0.09				0.07	c0.20
v/s Ratio Perm			0.13						0.03			0.14
v/c Ratio		0.80	0.33	0.67	0.84		0.60		0.18		0.44	0.90
Uniform Delay, d1		27.8	22.1	38.7	30.4		40.1		37.4		39.0	30.1
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		3.6	0.3	5.1	5.1		1.8		0.3		1.1	16.8
Delay (s)		31.4	22.4	43.7	35.4		41.9		37.7		40.1	46.8
Level of Service		C	C	D	D		D		D		D	D
Approach Delay (s)		29.5			36.9			39.9			45.5	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	42	0	1	0	2	16	1	474	8	24	484	37
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	49	0	1	0	2	19	1	558	9	28	569	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)											420	
pX, platoon unblocked	0.95	0.95	0.95	0.95	0.95		0.95					
vC, conflicting volume	1228	1217	591	1214	1234	562	613			567		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1239	1228	570	1224	1246	562	593			567		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	63	100	100	100	99	96	100			97		
cM capacity (veh/h)	135	164	495	145	160	526	935			1005		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	51	21	1	567	641
Volume Left	49	0	1	0	28
Volume Right	1	19	0	9	44
cSH	137	420	935	1700	1005
Volume to Capacity	0.37	0.05	0.00	0.33	0.03
Queue Length 95th (ft)	38	4	0	0	2
Control Delay (s)	45.8	14.0	8.9	0.0	0.7
Lane LOS	E	B	A		A
Approach Delay (s)	45.8	14.0	0.0		0.7
Approach LOS	E	B			

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	63.1%	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)	31	2	6	96	80	42
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	35	2	7	109	91	48
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	238	115	139			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	238	115	139			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	747	938	1445			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	35	2	116	139
Volume Left	35	0	7	0
Volume Right	0	2	0	48
cSH	747	938	1445	1700
Volume to Capacity	0.05	0.00	0.00	0.08
Queue Length 95th (ft)	4	0	0	0
Control Delay (s)	10.1	8.8	0.5	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.0		0.5	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	20.0%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	25	0	0	5	35	0	1201	13	0	0	339
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)	0	27	0	0	5	38	0	1305	14	0	0	368
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1334	1320	0	1510	1312	1312	0			1320		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1334	1320	0	1510	1312	1312	0			1320		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	83	100	100	97	80	100			100		
cM capacity (veh/h)	102	157	1085	86	158	194	1623			524		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	43	1320	368
Volume Left	0	0	0	0
Volume Right	0	38	14	368
cSH	157	221	1623	1700
Volume to Capacity	0.17	0.20	0.00	0.22
Queue Length 95th (ft)	15	18	0	0
Control Delay (s)	32.7	28.1	0.0	0.0
Lane LOS	D	D		
Approach Delay (s)	32.7	28.1	0.0	0.0
Approach LOS	D	D		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3437		1770	3438	1583		1806	1583		1780	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.56	1.00		0.68	1.00
Satd. Flow (perm)	1770	3437		1770	3438	1583		1048	1583		1273	1583
Volume (vph)	167	1102	4	125	1755	248	39	23	84	295	24	315
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)	176	1160	4	132	1847	261	41	24	88	311	25	332
RTOR Reduction (vph)	0	0	0	0	0	31	0	0	62	0	0	234
Lane Group Flow (vph)	176	1164	0	132	1847	230	0	65	26	0	336	98
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	18.6	72.6		15.1	69.1	69.1		40.3	40.3		40.3	40.3
Effective Green, g (s)	19.6	73.6		16.1	70.1	70.1		41.3	41.3		41.3	41.3
Actuated g/C Ratio	0.14	0.53		0.12	0.50	0.50		0.29	0.29		0.29	0.29
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	248	1807		204	1721	793		309	467		376	467
v/s Ratio Prot	c0.10	0.34		0.07	c0.54							
v/s Ratio Perm						0.14		0.06	0.02		c0.26	0.06
v/c Ratio	0.71	0.64		0.65	1.07	0.29		0.21	0.06		0.89	0.21
Uniform Delay, d1	57.5	23.8		59.2	35.0	20.4		37.1	35.4		47.2	37.1
Progression Factor	1.00	1.00		1.31	0.55	0.39		1.00	1.00		1.00	1.00
Incremental Delay, d2	9.0	1.8		3.3	38.9	0.4		0.3	0.0		22.5	0.2
Delay (s)	66.4	25.6		80.9	58.1	8.4		37.4	35.4		69.8	37.3
Level of Service	E	C		F	E	A		D	D		E	D
Approach Delay (s)		31.0			53.7			36.3			53.6	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	46.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	5085	1583
Volume (vph)	140	113	131	704	876	125
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	119	138	741	922	132
RTOR Reduction (vph)	0	100	0	0	0	28
Lane Group Flow (vph)	147	19	138	741	922	104
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	21.5	21.5	17.2	110.5	89.3	89.3
Effective Green, g (s)	22.5	22.5	18.2	111.5	90.3	90.3
Actuated g/C Ratio	0.16	0.16	0.13	0.80	0.64	0.64
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)	284	254	230	2819	3280	1021
v/s Ratio Prot	c0.08		c0.08	0.21	c0.18	
v/s Ratio Perm		0.01				0.07
v/c Ratio	0.52	0.08	0.60	0.26	0.28	0.10
Uniform Delay, d1	53.8	49.9	57.5	3.7	10.8	9.4
Progression Factor	1.00	1.00	0.49	1.36	1.00	1.00
Incremental Delay, d2	1.6	0.1	2.1	0.1	0.2	0.2
Delay (s)	55.4	50.0	30.4	5.1	11.0	9.6
Level of Service	E	D	C	A	B	A
Approach Delay (s)	53.0			9.1	10.8	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	42.5%	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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.95	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3403		1770	3438	1583	1681	1740	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3403		1770	3438	1583	1681	1740	1583	3433	1863	1583
Volume (vph)	664	1320	120	133	1456	211	159	80	121	274	15	550
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	678	1347	122	136	1486	215	162	82	123	280	15	561
RTOR Reduction (vph)	0	4	0	0	0	42	0	0	102	0	0	0
Lane Group Flow (vph)	678	1465	0	136	1486	173	119	125	21	280	15	561
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	26.0	62.3		13.3	49.6	49.6	24.3	24.3	24.3	23.6	23.6	140.0
Effective Green, g (s)	26.0	62.8		13.3	50.1	50.1	24.3	24.3	24.3	23.6	23.6	140.0
Actuated g/C Ratio	0.19	0.45		0.10	0.36	0.36	0.17	0.17	0.17	0.17	0.17	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	638	1526		168	1230	566	292	302	275	579	314	1583
v/s Ratio Prot	c0.20	0.43		0.08	c0.43		0.07	c0.07		c0.08	0.01	
v/s Ratio Perm						0.11			0.01			0.35
v/c Ratio	1.06	0.96		0.81	1.21	0.31	0.41	0.41	0.08	0.48	0.05	0.35
Uniform Delay, d1	57.0	37.4		62.1	45.0	32.4	51.4	51.5	48.5	52.7	48.8	0.0
Progression Factor	0.80	1.03		1.40	0.75	0.62	1.00	1.00	1.00	0.78	0.69	1.00
Incremental Delay, d2	49.0	12.6		19.1	99.7	1.1	0.9	0.9	0.1	0.6	0.1	0.6
Delay (s)	94.5	51.2		105.8	133.4	21.2	52.4	52.4	48.6	42.0	33.9	0.6
Level of Service	F	D		F	F	C	D	D	D	D	C	A
Approach Delay (s)		64.9			118.2			51.1			14.7	
Approach LOS		E			F			D			B	

Intersection Summary			
HCM Average Control Delay	74.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.7%	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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3435		1770	3438	1583		1782	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.85	1.00	0.75	0.79	1.00
Satd. Flow (perm)	1770	3435		1770	3438	1583		1591	1583	1328	1400	1583
Volume (vph)	125	1393	12	9	1582	66	10	1	8	64	1	147
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	128	1421	12	9	1614	67	10	1	8	65	1	150
RTOR Reduction (vph)	0	0	0	0	0	12	0	0	7	0	0	100
Lane Group Flow (vph)	128	1433	0	9	1614	55	0	11	1	33	33	50
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	11.0	102.1		1.5	92.6	92.6		24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	12.0	103.1		2.5	93.6	93.6		25.4	25.4	25.4	25.4	25.4
Actuated g/C Ratio	0.09	0.74		0.02	0.67	0.67		0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	152	2530		32	2299	1058		289	287	241	254	287
v/s Ratio Prot	c0.07	0.42		0.01	c0.47							
v/s Ratio Perm						0.03		0.01	0.00	0.02	0.02	c0.03
v/c Ratio	0.84	0.57		0.28	0.70	0.05		0.04	0.01	0.14	0.13	0.17
Uniform Delay, d1	63.1	8.3		67.9	14.5	8.0		47.2	46.9	48.1	48.0	48.4
Progression Factor	0.97	0.84		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.1	0.5		4.8	1.8	0.1		0.1	0.0	0.3	0.2	0.3
Delay (s)	80.2	7.5		72.6	16.3	8.1		47.3	47.0	48.4	48.3	48.7
Level of Service	F	A		E	B	A		D	D	D	D	D
Approach Delay (s)		13.5			16.3			47.1			48.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	71.2%	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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1856	1538
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1856	1538
Volume (vph)	0	1032	399	216	853	0	378	0	343	11	127	410
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1053	407	220	870	0	386	0	350	11	130	418
RTOR Reduction (vph)	0	0	118	0	0	0	0	0	298	0	0	78
Lane Group Flow (vph)	0	1053	289	220	870	0	386	0	52	0	141	340
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			Perm	Prot			Prot		custom	Split		Perm
Protected Phases		2		1	6		8			4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		44.1	44.1	16.6	64.7		17.5		17.5		29.5	29.5
Effective Green, g (s)		45.1	45.1	17.6	65.7		18.5		18.5		30.5	30.5
Actuated g/C Ratio		0.36	0.36	0.14	0.53		0.15		0.15		0.25	0.25
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1253	577	252	1880		513		237		458	379
v/s Ratio Prot		c0.31		c0.12	0.25		c0.11				0.08	
v/s Ratio Perm			0.18						0.03			c0.22
v/c Ratio		0.84	0.50	0.87	0.46		0.75		0.22		0.31	0.90
Uniform Delay, d1		36.0	30.6	52.0	18.0		50.4		46.3		38.0	45.1
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		5.2	0.7	26.6	0.2		6.2		0.5		0.4	22.7
Delay (s)		41.2	31.2	78.5	18.2		56.6		46.7		38.4	67.8
Level of Service		D	C	E	B		E		D		D	E
Approach Delay (s)		38.5			30.4			51.9			60.4	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM Average Control Delay	41.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	123.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	59	3	3	2	0	11	3	625	4	43	631	26
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)	64	3	3	2	0	12	3	679	4	47	686	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											420	
pX, platoon unblocked	0.95	0.95	0.95	0.95	0.95		0.95					
vC, conflicting volume	1491	1484	700	1486	1496	682	714			684		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1518	1510	684	1513	1522	682	699			684		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	26	97	99	97	100	97	100			95		
cM capacity (veh/h)	86	108	426	87	106	450	852			909		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	71	14	3	684	761
Volume Left	64	2	3	0	47
Volume Right	3	12	0	4	28
cSH	91	274	852	1700	909
Volume to Capacity	0.78	0.05	0.00	0.40	0.05
Queue Length 95th (ft)	101	4	0	0	4
Control Delay (s)	123.5	18.9	9.2	0.0	1.3
Lane LOS	F	C	A		A
Approach Delay (s)	123.5	18.9	0.0		1.3
Approach LOS	F	C			

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
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)	37	0	3	83	55	32
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	45	0	4	100	66	39
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	193	86	105			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	193	86	105			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	100	100			
cM capacity (veh/h)	794	973	1487			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	45	0	104	105
Volume Left	45	0	4	0
Volume Right	0	0	0	39
cSH	794	1700	1487	1700
Volume to Capacity	0.06	0.00	0.00	0.06
Queue Length 95th (ft)	4	0	0	0
Control Delay (s)	9.8	0.0	0.3	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.8		0.3	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	16.8%	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			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	49	0	0	9	29	0	1135	35	0	0	364
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	54	0	0	10	32	0	1261	39	0	0	404
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1302	1300	0	1510	1281	1281	0			1300		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1302	1300	0	1510	1281	1281	0			1300		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	66	100	100	94	84	100			100		
cM capacity (veh/h)	111	161	1085	73	166	202	1623			533		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	54	42	1300	404
Volume Left	0	0	0	0
Volume Right	0	32	39	404
cSH	161	265	1623	1700
Volume to Capacity	0.34	0.16	0.00	0.24
Queue Length 95th (ft)	35	14	0	0
Control Delay (s)	38.3	26.6	0.0	0.0
Lane LOS	E	D		
Approach Delay (s)	38.3	26.6	0.0	0.0
Approach LOS	E	D		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	3426		1770	3438	1583		1802	1583		1780	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.51	1.00		0.68	1.00
Satd. Flow (perm)	1770	3426		1770	3438	1583		954	1583		1269	1583
Volume (vph)	256	1277	37	152	1481	362	43	21	86	320	26	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)	269	1344	39	160	1559	381	45	22	91	337	27	320
RTOR Reduction (vph)	0	1	0	0	0	69	0	0	63	0	0	214
Lane Group Flow (vph)	269	1382	0	160	1559	312	0	67	28	0	364	106
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	23.9	70.0		16.2	62.3	62.3		41.8	41.8		41.8	41.8
Effective Green, g (s)	24.9	71.0		17.2	63.3	63.3		42.8	42.8		42.8	42.8
Actuated g/C Ratio	0.18	0.51		0.12	0.45	0.45		0.31	0.31		0.31	0.31
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		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	315	1737		217	1554	716		292	484		388	484
v/s Ratio Prot	c0.15	0.40		0.09	c0.45							
v/s Ratio Perm						0.20		0.07	0.02		c0.29	0.07
v/c Ratio	0.85	0.80		0.74	1.00	0.44		0.23	0.06		0.94	0.22
Uniform Delay, d1	55.8	28.5		59.2	38.4	26.2		36.3	34.3		47.3	36.2
Progression Factor	1.00	1.00		1.25	0.91	0.69		1.00	1.00		1.00	1.00
Incremental Delay, d2	19.6	3.9		4.7	14.4	0.7		0.4	0.0		30.0	0.2
Delay (s)	75.4	32.4		78.7	49.1	18.7		36.7	34.4		77.4	36.4
Level of Service	E	C		E	D	B		D	C		E	D
Approach Delay (s)		39.4			45.8			35.4			58.2	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	45.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3425		3433	3438	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3425		3433	3438	1583	1770	1863	1583	3433	1863	1583
Volume (vph)	693	1234	39	100	660	69	74	146	166	224	102	331
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	707	1259	40	102	673	70	76	149	169	229	104	338
RTOR Reduction (vph)	0	1	0	0	0	32	0	0	26	0	0	0
Lane Group Flow (vph)	707	1298	0	102	673	38	76	149	143	229	104	338
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	32.7	75.6		9.0	51.9	65.5	9.3	25.3	34.3	13.6	29.6	140.0
Effective Green, g (s)	32.7	76.1		9.0	52.4	66.0	9.3	25.3	34.3	13.6	29.6	140.0
Actuated g/C Ratio	0.23	0.54		0.06	0.37	0.47	0.07	0.18	0.24	0.10	0.21	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	802	1862		221	1287	792	118	337	433	333	394	1583
v/s Ratio Prot	c0.21	c0.38		0.03	0.20	0.00	0.04	c0.08	0.02	c0.07	0.06	
v/s Ratio Perm						0.02			0.07			0.21
v/c Ratio	0.88	0.70		0.46	0.52	0.05	0.64	0.44	0.33	0.69	0.26	0.21
Uniform Delay, d1	51.8	23.5		63.2	34.1	20.0	63.7	51.1	43.4	61.1	46.1	0.0
Progression Factor	0.83	0.99		1.01	0.71	0.28	1.00	1.00	1.00	0.87	1.09	1.00
Incremental Delay, d2	9.4	1.8		1.4	1.4	0.0	11.4	0.9	0.4	5.8	0.4	0.3
Delay (s)	52.5	25.0		65.4	25.8	5.6	75.2	52.0	43.9	59.0	50.8	0.3
Level of Service	D	C		E	C	A	E	D	D	E	D	A
Approach Delay (s)		34.7			28.9			53.0			28.2	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	34.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.2%	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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	0.88
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1848	2707
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		0.99	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1848	2707
Volume (vph)	0	1328	121	130	729	0	280	0	192	6	31	145
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1355	123	133	744	0	286	0	196	6	32	148
RTOR Reduction (vph)	0	0	21	0	0	0	0	0	165	0	0	125
Lane Group Flow (vph)	0	1355	102	133	744	0	286	0	31	0	38	23
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			pm+ov	Prot			Prot		custom	Split		custom
Protected Phases		2	8	1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		43.6	56.8	8.9	48.2		13.2		13.2		7.9	12.2
Effective Green, g (s)		44.6	58.8	9.9	49.2		14.2		14.2		8.9	14.2
Actuated g/C Ratio		0.50	0.66	0.11	0.55		0.16		0.16		0.10	0.16
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1711	1039	196	1943		544		251		184	429
v/s Ratio Prot		c0.39	0.02	c0.08	0.21		c0.08				c0.02	0.00
v/s Ratio Perm			0.05						0.02			0.01
v/c Ratio		0.79	0.10	0.68	0.38		0.53		0.12		0.21	0.05
Uniform Delay, d1		18.7	5.7	38.3	11.5		34.6		32.4		37.1	32.0
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		2.6	0.0	9.0	0.1		0.9		0.2		0.6	0.1
Delay (s)		21.2	5.7	47.3	11.7		35.5		32.6		37.7	32.1
Level of Service		C	A	D	B		D		C		D	C
Approach Delay (s)		20.0			17.1			34.3			33.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	89.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3434		1770	3438	1583		1814	1583	1770	1604	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.90	1.00	0.75	1.00	
Satd. Flow (perm)	1770	3434		1770	3438	1583		1671	1583	1395	1604	
Volume (vph)	140	1537	14	34	767	174	7	6	16	153	7	85
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)	147	1618	15	36	807	183	7	6	17	161	7	89
RTOR Reduction (vph)	0	0	0	0	0	46	0	0	14	0	74	0
Lane Group Flow (vph)	147	1633	0	36	807	137	0	13	3	161	22	0
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		
Actuated Green, G (s)	16.5	99.3		5.4	88.2	88.2		23.3	23.3	23.3	23.3	
Effective Green, g (s)	17.5	100.3		6.4	89.2	89.2		24.3	24.3	24.3	24.3	
Actuated g/C Ratio	0.12	0.72		0.05	0.64	0.64		0.17	0.17	0.17	0.17	
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		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	221	2460		81	2190	1009		290	275	242	278	
v/s Ratio Prot	c0.08	c0.48		0.02	0.23						0.01	
v/s Ratio Perm						0.09		0.01	0.00	c0.12		
v/c Ratio	0.67	0.66		0.44	0.37	0.14		0.04	0.01	0.67	0.08	
Uniform Delay, d1	58.5	10.7		65.1	12.0	10.1		48.2	47.9	54.1	48.5	
Progression Factor	1.00	1.00		1.00	1.63	2.48		1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.3	1.4		3.6	0.4	0.3		0.1	0.0	6.7	0.1	
Delay (s)	65.8	12.2		68.4	20.0	25.3		48.2	47.9	60.8	48.6	
Level of Service	E	B		E	C	C		D	D	E	D	
Approach Delay (s)		16.6			22.7			48.1			56.2	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3401		3433	3438	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3401		3433	3438	1583	1770	1863	1583	3433	1863	1583
Volume (vph)	672	1104	109	233	1596	216	159	96	131	249	110	737
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	686	1127	111	238	1629	220	162	98	134	254	112	752
RTOR Reduction (vph)	0	4	0	0	0	44	0	0	27	0	0	0
Lane Group Flow (vph)	686	1234	0	238	1629	176	162	98	107	254	112	752
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	28.0	70.8		13.6	56.4	70.9	16.3	24.6	38.2	14.5	22.8	140.0
Effective Green, g (s)	28.0	71.3		13.6	56.9	71.4	16.3	24.6	38.2	14.5	22.8	140.0
Actuated g/C Ratio	0.20	0.51		0.10	0.41	0.51	0.12	0.18	0.27	0.10	0.16	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	687	1732		333	1397	853	206	327	477	356	303	1583
v/s Ratio Prot	c0.20	0.36		0.07	c0.47	0.02	c0.09	0.05	0.02	0.07	0.06	
v/s Ratio Perm						0.09			0.05			c0.47
v/c Ratio	1.00	0.71		0.71	1.17	0.21	0.79	0.30	0.22	0.71	0.37	0.48
Uniform Delay, d1	56.0	26.5		61.3	41.5	18.8	60.2	50.2	39.4	60.7	52.2	0.0
Progression Factor	0.98	1.29		1.34	0.56	0.35	1.00	1.00	1.00	0.81	0.78	1.00
Incremental Delay, d2	31.4	2.2		4.8	80.3	0.1	17.7	0.5	0.2	6.4	0.7	1.0
Delay (s)	86.1	36.3		87.0	103.5	6.6	77.9	50.7	39.7	55.6	41.2	1.0
Level of Service	F	D		F	F	A	E	D	D	E	D	A
Approach Delay (s)		54.1			91.4			58.1			17.4	
Approach LOS		D			F			E			B	

Intersection Summary			
HCM Average Control Delay	61.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	0.88
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1857	2707
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1857	2707
Volume (vph)	0	1045	280	213	1022	0	314	0	276	8	118	525
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1066	286	217	1043	0	320	0	282	8	120	536
RTOR Reduction (vph)	0	0	77	0	0	0	0	0	234	0	0	37
Lane Group Flow (vph)	0	1066	209	217	1043	0	320	0	48	0	128	499
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			pm+ov	Prot			Prot		custom	Split		custom
Protected Phases		2	8	1	6		8			4	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)		35.7	51.0	17.4	41.2		15.3		15.3		11.9	23.8
Effective Green, g (s)		36.7	53.0	18.4	42.2		16.3		16.3		12.9	25.8
Actuated g/C Ratio		0.38	0.55	0.19	0.44		0.17		0.17		0.13	0.27
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1310	871	338	1551		581		268		249	725
v/s Ratio Prot		c0.31	0.04	c0.12	0.29		c0.09				0.07	c0.09
v/s Ratio Perm			0.09						0.03			0.09
v/c Ratio		0.81	0.24	0.64	0.67		0.55		0.18		0.51	0.69
Uniform Delay, d1		26.7	11.2	35.9	21.5		36.6		34.3		38.8	31.6
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		4.0	0.1	4.1	1.2		1.1		0.3		1.8	2.7
Delay (s)		30.7	11.4	40.0	22.7		37.8		34.6		40.6	34.4
Level of Service		C	B	D	C		D		C		D	C
Approach Delay (s)		26.6			25.7			36.3			35.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	29.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	96.3	Sum of lost time (s)	12.0
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)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3437		1770	3438	1583		1806	1583	1770	1603	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.46	1.00	0.70	1.00	
Satd. Flow (perm)	1770	3437		1770	3438	1583		851	1583	1299	1603	
Volume (vph)	167	1102	4	125	1755	248	39	23	84	295	24	315
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)	176	1160	4	132	1847	261	41	24	88	311	25	332
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	65	0	159	0
Lane Group Flow (vph)	176	1164	0	132	1847	221	0	65	23	311	198	0
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		
Actuated Green, G (s)	16.7	78.0		14.6	75.9	75.9		35.4	35.4	35.4	35.4	
Effective Green, g (s)	17.7	79.0		15.6	76.9	76.9		36.4	36.4	36.4	36.4	
Actuated g/C Ratio	0.13	0.56		0.11	0.55	0.55		0.26	0.26	0.26	0.26	
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		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	224	1939		197	1888	870		221	412	338	417	
v/s Ratio Prot	c0.10	0.34		0.07	c0.54						0.12	
v/s Ratio Perm						0.14		0.08	0.01	c0.24		
v/c Ratio	0.79	0.60		0.67	0.98	0.25		0.29	0.06	0.92	0.47	
Uniform Delay, d1	59.3	20.1		59.7	30.7	16.5		41.5	38.9	50.4	43.7	
Progression Factor	1.00	1.00		1.28	0.39	0.24		1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.4	1.4		3.1	8.2	0.2		0.7	0.1	29.4	0.9	
Delay (s)	75.7	21.5		79.5	20.0	4.2		42.3	39.0	79.8	44.6	
Level of Service	E	C		E	C	A		D	D	E	D	
Approach Delay (s)		28.6			21.7			40.4			61.0	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM Average Control Delay	30.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3403		3433	3438	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3403		3433	3438	1583	1770	1863	1583	3433	1863	1583
Volume (vph)	664	1320	120	133	1456	211	159	80	121	274	15	550
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	678	1347	122	136	1486	215	162	82	123	280	15	561
RTOR Reduction (vph)	0	4	0	0	0	47	0	0	17	0	0	0
Lane Group Flow (vph)	678	1465	0	136	1486	168	162	82	106	280	15	561
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	28.9	73.5		10.1	54.7	69.2	21.3	25.4	35.5	14.5	18.6	140.0
Effective Green, g (s)	28.9	74.0		10.1	55.2	69.7	21.3	25.4	35.5	14.5	18.6	140.0
Actuated g/C Ratio	0.21	0.53		0.07	0.39	0.50	0.15	0.18	0.25	0.10	0.13	1.00
Clearance Time (s)	4.0	4.5		4.0	4.5	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	709	1799		248	1356	833	269	338	447	356	248	1583
v/s Ratio Prot	c0.20	0.43		0.04	c0.43	0.02	c0.09	0.04	0.02	c0.08	0.01	
v/s Ratio Perm						0.09			0.05			c0.35
v/c Ratio	0.96	0.81		0.55	1.10	0.20	0.60	0.24	0.24	0.79	0.06	0.35
Uniform Delay, d1	54.9	27.3		62.7	42.4	19.6	55.4	49.1	41.5	61.2	53.1	0.0
Progression Factor	0.80	1.19		1.28	0.69	0.23	1.00	1.00	1.00	0.83	0.75	1.00
Incremental Delay, d2	19.8	3.3		1.9	52.6	0.1	3.8	0.4	0.3	10.6	0.1	0.6
Delay (s)	63.9	35.8		82.3	82.0	4.7	59.2	49.4	41.8	61.7	39.7	0.6
Level of Service	E	D		F	F	A	E	D	D	E	D	A
Approach Delay (s)		44.7			73.0			51.2			21.3	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM Average Control Delay	51.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.7%	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)		3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00		1.00	0.88
Frt		1.00	0.85	1.00	1.00		1.00		0.85		1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (prot)		3438	1583	1770	3539		3433		1583		1856	2707
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		1.00	1.00
Satd. Flow (perm)		3438	1583	1770	3539		3433		1583		1856	2707
Volume (vph)	0	1032	399	216	853	0	378	0	343	11	127	410
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1053	407	220	870	0	386	0	350	11	130	418
RTOR Reduction (vph)	0	0	107	0	0	0	0	0	290	0	0	151
Lane Group Flow (vph)	0	1053	300	220	870	0	386	0	60	0	141	267
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%
Turn Type			pm+ov	Prot			Prot		custom	Split		Perm
Protected Phases		2	8	1	6		8			4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		37.7	54.8	16.8	58.5		17.1		17.1		17.3	17.3
Effective Green, g (s)		38.7	56.8	17.8	59.5		18.1		18.1		18.3	18.3
Actuated g/C Ratio		0.37	0.54	0.17	0.57		0.17		0.17		0.17	0.17
Clearance Time (s)		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		3.0		3.0	3.0
Lane Grp Cap (vph)		1268	857	300	2007		592		273		324	472
v/s Ratio Prot		c0.31	0.06	c0.12	0.25		c0.11				0.08	
v/s Ratio Perm			0.13						0.04			c0.10
v/c Ratio		0.83	0.35	0.73	0.43		0.65		0.22		0.44	0.57
Uniform Delay, d1		30.1	13.6	41.3	13.0		40.5		37.3		38.7	39.7
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00		1.00	1.00
Incremental Delay, d2		4.8	0.2	8.9	0.2		2.6		0.4		0.9	1.6
Delay (s)		34.9	13.9	50.2	13.2		43.0		37.7		39.6	41.2
Level of Service		C	B	D	B		D		D		D	D
Approach Delay (s)		29.0			20.7			40.5			40.8	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	104.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3426		1770	3438	1583		1802	1583	1770	1605	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.49	1.00	0.70	1.00	
Satd. Flow (perm)	1770	3426		1770	3438	1583		910	1583	1298	1605	
Volume (vph)	256	1277	37	152	1481	362	43	21	86	320	26	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)	269	1344	39	160	1559	381	45	22	91	337	27	320
RTOR Reduction (vph)	0	1	0	0	0	69	0	0	66	0	213	0
Lane Group Flow (vph)	269	1382	0	160	1559	312	0	67	25	337	134	0
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8		8	4		
Actuated Green, G (s)	23.9	73.6		16.3	66.0	66.0		38.1	38.1	38.1	38.1	
Effective Green, g (s)	24.9	74.6		17.3	67.0	67.0		39.1	39.1	39.1	39.1	
Actuated g/C Ratio	0.18	0.53		0.12	0.48	0.48		0.28	0.28	0.28	0.28	
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		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	315	1826		219	1645	758		254	442	363	448	
v/s Ratio Prot	c0.15	0.40		0.09	c0.45						0.08	
v/s Ratio Perm						0.20		0.07	0.02	c0.26		
v/c Ratio	0.85	0.76		0.73	0.95	0.41		0.26	0.06	0.93	0.30	
Uniform Delay, d1	55.8	25.6		59.1	34.8	23.7		39.3	37.0	49.1	39.7	
Progression Factor	1.00	1.00		1.33	0.77	0.54		1.00	1.00	1.00	1.00	
Incremental Delay, d2	19.6	3.0		6.1	7.5	0.8		0.6	0.1	29.3	0.4	
Delay (s)	75.4	28.6		84.5	34.1	13.6		39.8	37.0	78.4	40.1	
Level of Service	E	C		F	C	B		D	D	E	D	
Approach Delay (s)		36.2			34.3			38.2			59.0	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM Average Control Delay	38.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.69	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1838	1092	1681	1698	1583	1770	3539	1531	1770	3521	
Flt Permitted		0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1838	1092	1681	1698	1583	1770	3539	1531	1770	3521	
Volume (vph)	4	10	4	428	39	472	17	474	274	255	669	18
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	11	4	476	43	524	19	527	304	283	743	20
RTOR Reduction (vph)	0	0	4	0	0	333	0	0	199	0	2	0
Lane Group Flow (vph)	0	15	0	253	266	191	19	527	105	283	761	0
Confl. Peds. (#/hr)			25						25			25
Turn Type	Split		Perm	Split		pm+ov	Prot		Perm	Prot		
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases			7			8			2			
Actuated Green, G (s)		1.4	1.4	10.9	10.9	21.9	1.6	20.7	20.7	11.0	30.1	
Effective Green, g (s)		1.4	1.4	10.9	10.9	21.9	1.6	20.7	20.7	11.0	30.1	
Actuated g/C Ratio		0.02	0.02	0.18	0.18	0.36	0.03	0.34	0.34	0.18	0.50	
Clearance Time (s)		4.0	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	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		43	25	305	308	683	47	1221	528	325	1766	
v/s Ratio Prot		c0.01		0.15	c0.16	0.05	0.01	c0.15		c0.16	c0.22	
v/s Ratio Perm			0.00			0.07			0.07			
v/c Ratio		0.35	0.00	0.83	0.86	0.28	0.40	0.43	0.20	0.87	0.43	
Uniform Delay, d1		28.9	28.6	23.7	23.8	13.5	28.7	15.1	13.8	23.8	9.5	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.25	0.79	
Incremental Delay, d2		4.9	0.1	16.8	21.3	0.2	5.6	1.1	0.8	19.3	0.7	
Delay (s)		33.7	28.7	40.4	45.1	13.7	34.3	16.2	14.7	49.0	8.2	
Level of Service		C	C	D	D	B	C	B	B	D	A	
Approach Delay (s)		32.6			28.2			16.1			19.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00	1.00	0.95	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00	0.93	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00	1.00	0.95	0.96		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1854	1583	1681	1664		3433	3539	1480	1770	3489	
Flt Permitted		1.00	1.00	0.95	0.96		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1854	1583	1681	1664		3433	3539	1480	1770	3489	
Volume (vph)	19	189	297	265	17	17	427	296	180	97	313	24
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	210	330	294	19	19	474	329	200	108	348	27
RTOR Reduction (vph)	0	0	271	0	8	0	0	0	146	0	10	0
Lane Group Flow (vph)	0	231	59	168	156	0	474	329	54	108	365	0
Confl. Peds. (#/hr)	25					25			25			25
Turn Type	Split		Perm	Split			Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		10.8	10.8	10.6	10.6		10.8	16.3	16.3	6.3	11.8	
Effective Green, g (s)		10.8	10.8	10.6	10.6		10.8	16.3	16.3	6.3	11.8	
Actuated g/C Ratio		0.18	0.18	0.18	0.18		0.18	0.27	0.27	0.10	0.20	
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	3.0	3.0	3.0	5.0	
Lane Grp Cap (vph)		334	285	297	294		618	961	402	186	686	
v/s Ratio Prot		c0.12		c0.10	0.09		c0.14	0.09		0.06	c0.10	
v/s Ratio Perm			0.04						0.04			
v/c Ratio		0.69	0.21	0.57	0.53		0.77	0.34	0.14	0.58	0.53	
Uniform Delay, d1		23.0	21.0	22.6	22.4		23.4	17.5	16.5	25.6	21.6	
Progression Factor		1.00	1.00	1.00	1.00		0.92	0.88	1.33	1.00	1.00	
Incremental Delay, d2		6.1	0.4	2.5	1.7		5.2	0.9	0.6	4.6	2.9	
Delay (s)		29.1	21.3	25.1	24.2		26.8	16.2	22.6	30.1	24.6	
Level of Service		C	C	C	C		C	B	C	C	C	
Approach Delay (s)		24.5			24.6			22.5			25.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.92		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	1863	1583	1770	1808		1770	1863	1450		1803	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	1863	1583	1770	1808		1770	1863	1450		1803	
Volume (vph)	121	79	351	448	88	22	215	148	167	14	63	17
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	134	88	390	498	98	24	239	164	186	16	70	19
RTOR Reduction (vph)	0	0	217	0	12	0	0	0	151	0	11	0
Lane Group Flow (vph)	134	88	173	498	110	0	239	164	35	0	94	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		Perm	Split		
Protected Phases	5	2	3	1	6		3	3		4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	6.5	7.7	19.8	20.2	21.4		12.1	12.1	12.1		7.5	
Effective Green, g (s)	6.5	7.7	19.8	20.2	21.4		12.1	12.1	12.1		7.5	
Actuated g/C Ratio	0.10	0.12	0.31	0.32	0.34		0.19	0.19	0.19		0.12	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	181	226	593	563	609		337	355	276		213	
v/s Ratio Prot	0.08	c0.05	0.06	c0.28	0.06		c0.14	0.09			c0.05	
v/s Ratio Perm			0.05						0.02			
v/c Ratio	0.74	0.39	0.29	0.88	0.18		0.71	0.46	0.13		0.44	
Uniform Delay, d1	27.7	25.7	16.5	20.5	14.9		24.1	22.8	21.3		26.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	15.0	1.3	0.3	15.3	0.2		6.7	1.0	0.2		1.4	
Delay (s)	42.7	27.0	16.8	35.8	15.0		30.7	23.8	21.5		27.5	
Level of Service	D	C	B	D	B		C	C	C		C	
Approach Delay (s)		23.9			31.7			25.9			27.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	1	23	5	1	3	0
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	1	33	7	1	4	0

Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total (vph)	1	33	9	4	0
Volume Left (vph)	1	0	7	0	0
Volume Right (vph)	0	33	0	0	0
Hadj (s)	0.23	-0.57	0.20	0.03	0.00
Departure Headway (s)	4.2	3.2	4.1	3.9	3.2
Degree Utilization, x	0.00	0.03	0.01	0.00	0.00
Capacity (veh/h)	849	1121	873	906	1121
Control Delay (s)	7.2	6.3	7.1	7.0	6.2
Approach Delay (s)	6.3		7.1	7.0	
Approach LOS	A		A	A	

Intersection Summary			
Delay	6.5		
HCM Level of Service	A		
Intersection Capacity Utilization	14.4%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1821	1430	1681	1687	1583	1770	3539	1525	1770	3528	
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1821	1430	1681	1687	1583	1770	3539	1525	1770	3528	
Volume (vph)	29	33	15	271	4	357	8	545	516	216	440	7
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	32	37	17	301	4	397	9	606	573	240	489	8
RTOR Reduction (vph)	0	0	16	0	0	257	0	0	404	0	1	0
Lane Group Flow (vph)	0	69	1	151	154	140	9	606	169	240	496	0
Confl. Peds. (#/hr)			25						25			25
Turn Type	Split		Perm	Split		pm+ov	Prot		Perm	Prot		
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases			7			8			2			
Actuated Green, G (s)		5.2	5.2	10.5	10.5	21.1	1.6	17.7	17.7	10.6	26.7	
Effective Green, g (s)		5.2	5.2	10.5	10.5	21.1	1.6	17.7	17.7	10.6	26.7	
Actuated g/C Ratio		0.09	0.09	0.18	0.18	0.35	0.03	0.29	0.29	0.18	0.44	
Clearance Time (s)		4.0	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	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		158	124	294	295	662	47	1044	450	313	1570	
v/s Ratio Prot		c0.04		0.09	c0.09	0.04	0.01	c0.17		c0.14	0.14	
v/s Ratio Perm			0.00			0.05			0.11			
v/c Ratio		0.44	0.01	0.51	0.52	0.21	0.19	0.58	0.38	0.77	0.32	
Uniform Delay, d1		26.0	25.1	22.4	22.5	13.6	28.6	18.0	16.8	23.5	10.8	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.12	0.65	
Incremental Delay, d2		1.9	0.0	1.5	1.7	0.2	2.0	2.4	2.4	9.8	0.5	
Delay (s)		27.9	25.1	24.0	24.1	13.8	30.6	20.3	19.2	36.0	7.4	
Level of Service		C	C	C	C	B	C	C	B	D	A	
Approach Delay (s)		27.4			18.2			19.8			16.7	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00	1.00	0.95	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1854	1583	1681	1639		3433	3539	1488	1770	3496	
Flt Permitted		1.00	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1854	1583	1681	1639		3433	3539	1488	1770	3496	
Volume (vph)	10	99	192	256	54	49	337	230	280	60	167	11
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	110	213	284	60	54	374	256	311	67	186	12
RTOR Reduction (vph)	0	0	176	0	22	0	0	0	216	0	8	0
Lane Group Flow (vph)	0	121	37	196	180	0	374	256	95	67	190	0
Confl. Peds. (#/hr)	25					25			25			25
Turn Type	Split		Perm	Split			Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		10.3	10.3	10.7	10.7		11.6	18.3	18.3	4.7	11.4	
Effective Green, g (s)		10.3	10.3	10.7	10.7		11.6	18.3	18.3	4.7	11.4	
Actuated g/C Ratio		0.17	0.17	0.18	0.18		0.19	0.31	0.31	0.08	0.19	
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	3.0	3.0	3.0	5.0	
Lane Grp Cap (vph)		318	272	300	292		664	1079	454	139	664	
v/s Ratio Prot		c0.07		c0.12	0.11		c0.11	0.07		c0.04	c0.05	
v/s Ratio Perm			0.02						0.06			
v/c Ratio		0.38	0.13	0.65	0.62		0.56	0.24	0.21	0.48	0.29	
Uniform Delay, d1		22.0	21.1	22.9	22.8		21.9	15.6	15.5	26.5	20.8	
Progression Factor		1.00	1.00	1.00	1.00		0.76	0.62	1.04	1.00	1.00	
Incremental Delay, d2		0.8	0.2	5.0	3.8		1.0	0.5	0.9	2.6	1.1	
Delay (s)		22.8	21.3	28.0	26.6		17.6	10.1	17.1	29.1	21.9	
Level of Service		C	C	C	C		B	B	B	C	C	
Approach Delay (s)		21.8			27.3			15.4			23.7	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.93		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1823		1770	1863	1473		1819	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1823		1770	1863	1473		1819	
Volume (vph)	21	138	265	203	11	2	342	62	331	10	92	17
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	23	153	294	226	12	2	380	69	368	11	102	19
RTOR Reduction (vph)	0	0	171	0	1	0	0	0	278	0	10	0
Lane Group Flow (vph)	23	153	123	226	13	0	380	69	90	0	122	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		Perm	Split		
Protected Phases	5	2	3	1	6		3	3		4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	1.4	9.8	23.7	9.5	17.9		13.9	13.9	13.9		7.5	
Effective Green, g (s)	1.4	9.8	23.7	9.5	17.9		13.9	13.9	13.9		7.5	
Actuated g/C Ratio	0.02	0.17	0.42	0.17	0.32		0.25	0.25	0.25		0.13	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	44	322	773	297	576		434	457	361		241	
v/s Ratio Prot	0.01	c0.08	0.04	c0.13	0.01		c0.21	0.04			c0.07	
v/s Ratio Perm			0.04						0.06			
v/c Ratio	0.52	0.48	0.16	0.76	0.02		0.88	0.15	0.25		0.50	
Uniform Delay, d1	27.3	21.1	10.3	22.5	13.4		20.6	16.8	17.2		22.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	10.8	1.3	0.1	10.9	0.0		17.6	0.2	0.4		1.7	
Delay (s)	38.1	22.4	10.4	33.4	13.4		38.2	16.9	17.6		24.5	
Level of Service	D	C	B	C	B		D	B	B		C	
Approach Delay (s)		15.7			32.3			27.1			24.5	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	56.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	0	7	13	0	0	0
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	0	12	23	0	0	0

Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total (vph)	0	13	23	0	0
Volume Left (vph)	0	0	23	0	0
Volume Right (vph)	0	13	0	0	0
Hadj (s)	0.00	-0.57	0.23	0.00	0.00
Departure Headway (s)	4.0	3.2	4.1	3.9	3.2
Degree Utilization, x	0.00	0.01	0.03	0.00	0.00
Capacity (veh/h)	900	1121	858	913	1121
Control Delay (s)	7.0	6.2	7.2	6.9	6.2
Approach Delay (s)	6.2		7.2	0.0	
Approach LOS	A		A	A	

Intersection Summary			
Delay	6.9		
HCM Level of Service	A		
Intersection Capacity Utilization	6.7%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.69	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1838	1092	1681	1698	1583	1770	3539	1530	1770	3521	
Flt Permitted		0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1838	1092	1681	1698	1583	1770	3539	1530	1770	3521	
Volume (vph)	4	10	4	451	39	492	17	474	322	270	669	18
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	11	4	501	43	547	19	527	358	300	743	20
RTOR Reduction (vph)	0	0	4	0	0	346	0	0	235	0	2	0
Lane Group Flow (vph)	0	15	0	265	279	201	19	527	123	300	761	0
Confl. Peds. (#/hr)			25						25			25
Turn Type	Split		Perm	Split		pm+ov	Prot		Perm	Prot		
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases			7			8			2			
Actuated Green, G (s)		1.4	1.4	11.0	11.0	22.0	1.6	20.6	20.6	11.0	30.0	
Effective Green, g (s)		1.4	1.4	11.0	11.0	22.0	1.6	20.6	20.6	11.0	30.0	
Actuated g/C Ratio		0.02	0.02	0.18	0.18	0.37	0.03	0.34	0.34	0.18	0.50	
Clearance Time (s)		4.0	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	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		43	25	308	311	686	47	1215	525	325	1761	
v/s Ratio Prot		c0.01		0.16	c0.16	0.05	0.01	c0.15		c0.17	c0.22	
v/s Ratio Perm			0.00			0.07			0.08			
v/c Ratio		0.35	0.00	0.86	0.90	0.29	0.40	0.43	0.23	0.92	0.43	
Uniform Delay, d1		28.9	28.6	23.8	23.9	13.5	28.7	15.2	14.1	24.1	9.6	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.26	0.79	
Incremental Delay, d2		4.9	0.1	21.0	26.5	0.2	5.6	1.1	1.0	27.8	0.7	
Delay (s)		33.7	28.7	44.7	50.4	13.7	34.3	16.3	15.1	58.0	8.2	
Level of Service		C	C	D	D	B	C	B	B	E	A	
Approach Delay (s)		32.6			30.6			16.2			22.3	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00	1.00	0.95	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00	0.93	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00	1.00	0.95	0.96		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1854	1583	1681	1665		3433	3539	1480	1770	3489	
Flt Permitted		1.00	1.00	0.95	0.96		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1854	1583	1681	1665		3433	3539	1480	1770	3489	
Volume (vph)	19	189	297	275	17	17	427	298	198	97	318	24
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	210	330	306	19	19	474	331	220	108	353	27
RTOR Reduction (vph)	0	0	271	0	7	0	0	0	160	0	10	0
Lane Group Flow (vph)	0	231	59	174	163	0	474	331	60	108	370	0
Confl. Peds. (#/hr)	25					25			25			25
Turn Type	Split		Perm	Split			Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		10.8	10.8	10.6	10.6		10.8	16.3	16.3	6.3	11.8	
Effective Green, g (s)		10.8	10.8	10.6	10.6		10.8	16.3	16.3	6.3	11.8	
Actuated g/C Ratio		0.18	0.18	0.18	0.18		0.18	0.27	0.27	0.10	0.20	
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	3.0	3.0	3.0	5.0	
Lane Grp Cap (vph)		334	285	297	294		618	961	402	186	686	
v/s Ratio Prot		c0.12		c0.10	0.10		c0.14	0.09		0.06	c0.11	
v/s Ratio Perm			0.04						0.04			
v/c Ratio		0.69	0.21	0.59	0.55		0.77	0.34	0.15	0.58	0.54	
Uniform Delay, d1		23.0	21.0	22.7	22.5		23.4	17.6	16.6	25.6	21.7	
Progression Factor		1.00	1.00	1.00	1.00		0.93	0.88	1.38	1.00	1.00	
Incremental Delay, d2		6.1	0.4	2.9	2.2		5.1	0.9	0.7	4.6	3.0	
Delay (s)		29.1	21.3	25.6	24.8		26.8	16.3	23.5	30.1	24.7	
Level of Service		C	C	C	C		C	B	C	C	C	
Approach Delay (s)		24.5			25.2			22.7			25.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.2%	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	4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.92		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	1863	1583	1770	1802		1770	1863	1450		1822	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	1863	1583	1770	1802		1770	1863	1450		1822	
Volume (vph)	121	79	351	448	88	24	215	211	167	15	106	17
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	134	88	390	498	98	27	239	234	186	17	118	19
RTOR Reduction (vph)	0	0	159	0	14	0	0	0	151	0	8	0
Lane Group Flow (vph)	134	88	231	498	111	0	239	234	35	0	146	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		Perm	Split		
Protected Phases	5	2	3	1	6		3	3		4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	6.5	7.7	19.8	20.2	21.4		12.1	12.1	12.1		7.7	
Effective Green, g (s)	6.5	7.7	19.8	20.2	21.4		12.1	12.1	12.1		7.7	
Actuated g/C Ratio	0.10	0.12	0.31	0.32	0.34		0.19	0.19	0.19		0.12	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	181	225	591	561	605		336	354	275		220	
v/s Ratio Prot	0.08	0.05	c0.07	c0.28	0.06		c0.14	0.13			c0.08	
v/s Ratio Perm			0.07						0.02			
v/c Ratio	0.74	0.39	0.39	0.89	0.18		0.71	0.66	0.13		0.66	
Uniform Delay, d1	27.8	25.8	17.2	20.7	15.0		24.2	23.9	21.4		26.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	15.0	1.3	0.4	15.6	0.2		6.9	4.6	0.2		7.3	
Delay (s)	42.8	27.2	17.7	36.3	15.1		31.1	28.5	21.6		34.1	
Level of Service	D	C	B	D	B		C	C	C		C	
Approach Delay (s)		24.5			32.1			27.5			34.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	63.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	38	23	5	67	47	5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	42	26	6	74	52	6

Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total (vph)	42	26	80	52	6
Volume Left (vph)	42	0	6	0	0
Volume Right (vph)	0	26	0	0	6
Hadj (s)	0.23	-0.57	0.05	0.03	-0.57
Departure Headway (s)	4.4	3.2	4.1	4.1	3.2
Degree Utilization, x	0.05	0.02	0.09	0.06	0.00
Capacity (veh/h)	783	1121	857	859	1121
Control Delay (s)	7.7	6.3	7.5	7.4	6.2
Approach Delay (s)	7.1		7.5	7.3	
Approach LOS	A		A	A	

Intersection Summary			
Delay	7.3		
HCM Level of Service	A		
Intersection Capacity Utilization	17.6%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1821	1430	1681	1687	1583	1770	3539	1523	1770	3528	
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1821	1430	1681	1687	1583	1770	3539	1523	1770	3528	
Volume (vph)	29	33	15	396	4	510	8	535	651	288	440	7
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	32	37	17	440	4	567	9	594	723	320	489	8
RTOR Reduction (vph)	0	0	16	0	0	325	0	0	429	0	1	0
Lane Group Flow (vph)	0	69	1	220	224	242	9	594	294	320	496	0
Confl. Peds. (#/hr)			25						25			25
Turn Type	Split		Perm	Split		pm+ov	Prot		Perm	Prot		
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases			7			8			2			
Actuated Green, G (s)		5.2	5.2	10.8	10.8	21.8	1.6	17.0	17.0	11.0	26.4	
Effective Green, g (s)		5.2	5.2	10.8	10.8	21.8	1.6	17.0	17.0	11.0	26.4	
Actuated g/C Ratio		0.09	0.09	0.18	0.18	0.36	0.03	0.28	0.28	0.18	0.44	
Clearance Time (s)		4.0	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	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		158	124	303	304	681	47	1003	432	325	1552	
v/s Ratio Prot		c0.04		0.13	c0.13	0.07	0.01	0.17		c0.18	0.14	
v/s Ratio Perm			0.00			0.09			c0.19			
v/c Ratio		0.44	0.01	0.73	0.74	0.36	0.19	0.59	0.68	0.98	0.32	
Uniform Delay, d1		26.0	25.1	23.2	23.3	14.0	28.6	18.5	19.1	24.4	10.9	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.17	0.60	
Incremental Delay, d2		1.9	0.0	8.4	9.0	0.3	2.0	2.6	8.4	42.1	0.5	
Delay (s)		27.9	25.1	31.6	32.2	14.3	30.6	21.1	27.5	70.6	7.0	
Level of Service		C	C	C	C	B	C	C	C	E	A	
Approach Delay (s)		27.4			22.0			24.7			31.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00	1.00	0.95	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1854	1583	1681	1645		3433	3539	1488	1770	3499	
Flt Permitted		1.00	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1854	1583	1681	1645		3433	3539	1488	1770	3499	
Volume (vph)	10	99	192	315	54	49	337	243	410	60	180	11
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	110	213	350	60	54	374	270	456	67	200	12
RTOR Reduction (vph)	0	0	176	0	18	0	0	0	318	0	7	0
Lane Group Flow (vph)	0	121	37	231	215	0	374	270	138	67	205	0
Confl. Peds. (#/hr)	25					25			25			25
Turn Type	Split		Perm	Split			Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		10.3	10.3	10.8	10.8		11.6	18.2	18.2	4.7	11.3	
Effective Green, g (s)		10.3	10.3	10.8	10.8		11.6	18.2	18.2	4.7	11.3	
Actuated g/C Ratio		0.17	0.17	0.18	0.18		0.19	0.30	0.30	0.08	0.19	
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	3.0	3.0	3.0	5.0	
Lane Grp Cap (vph)		318	272	303	296		664	1073	451	139	659	
v/s Ratio Prot		c0.07		c0.14	0.13		c0.11	0.08		c0.04	c0.06	
v/s Ratio Perm			0.02						0.09			
v/c Ratio		0.38	0.13	0.76	0.73		0.56	0.25	0.31	0.48	0.31	
Uniform Delay, d1		22.0	21.1	23.4	23.2		21.9	15.8	16.1	26.5	21.0	
Progression Factor		1.00	1.00	1.00	1.00		0.81	0.70	1.20	1.00	1.00	
Incremental Delay, d2		0.8	0.2	10.8	8.6		0.9	0.5	1.5	2.6	1.2	
Delay (s)		22.8	21.3	34.2	31.8		18.8	11.5	20.8	29.1	22.2	
Level of Service		C	C	C	C		B	B	C	C	C	
Approach Delay (s)		21.8			33.0			17.8			23.9	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	22.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.93		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1717		1770	1863	1466		1848	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1717		1770	1863	1466		1848	
Volume (vph)	21	138	265	198	11	12	337	279	326	20	375	17
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	23	153	294	220	12	13	374	310	362	22	417	19
RTOR Reduction (vph)	0	0	49	0	9	0	0	0	280	0	2	0
Lane Group Flow (vph)	23	153	245	220	16	0	374	310	82	0	456	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		Perm	Split		
Protected Phases	5	2	3	1	6		3	3		4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	1.5	10.4	24.0	8.6	17.5		13.6	13.6	13.6		11.2	
Effective Green, g (s)	1.5	10.4	24.0	8.6	17.5		13.6	13.6	13.6		11.2	
Actuated g/C Ratio	0.03	0.17	0.40	0.14	0.29		0.23	0.23	0.23		0.19	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	44	324	741	255	502		403	424	333		346	
v/s Ratio Prot	0.01	c0.08	0.08	c0.12	0.01		c0.21	0.17			c0.25	
v/s Ratio Perm			0.08						0.06			
v/c Ratio	0.52	0.47	0.33	0.86	0.03		0.93	0.73	0.25		1.32	
Uniform Delay, d1	28.8	22.2	12.4	25.0	15.1		22.6	21.4	18.9		24.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	10.8	1.3	0.3	24.6	0.0		27.3	6.4	0.4		161.6	
Delay (s)	39.5	23.5	12.6	49.6	15.1		49.9	27.8	19.3		185.9	
Level of Service	D	C	B	D	B		D	C	B		F	
Approach Delay (s)		17.5			46.1			32.8			185.9	
Approach LOS		B			D			C			F	

Intersection Summary			
HCM Average Control Delay	62.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	131	7	13	227	293	64
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	146	8	14	252	326	71

Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total (vph)	146	8	267	326	71
Volume Left (vph)	146	0	14	0	0
Volume Right (vph)	0	8	0	0	71
Hadj (s)	0.23	-0.57	0.04	0.03	-0.57
Departure Headway (s)	5.5	3.2	4.8	4.7	3.2
Degree Utilization, x	0.22	0.01	0.35	0.42	0.06
Capacity (veh/h)	588	1121	726	738	1121
Control Delay (s)	10.1	6.2	10.3	11.1	6.4
Approach Delay (s)	9.9		10.3	10.3	
Approach LOS	A		B	B	

Intersection Summary			
Delay	10.2		
HCM Level of Service	B		
Intersection Capacity Utilization	36.5%	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	2.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1717		1770	1863	1489	1770	1851	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1717		1770	1863	1489	1770	1851	
Volume (vph)	21	138	265	198	11	12	337	279	326	20	375	17
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	23	153	294	220	12	13	374	310	362	22	417	19
RTOR Reduction (vph)	0	0	107	0	9	0	0	0	186	0	2	0
Lane Group Flow (vph)	23	153	187	220	16	0	374	310	176	22	434	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Prot		Perm	Prot		
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	2.6	12.9	33.1	13.3	23.6		20.2	42.6	42.6	2.6	25.0	
Effective Green, g (s)	2.6	12.9	33.1	13.3	23.6		20.2	42.6	42.6	4.6	25.0	
Actuated g/C Ratio	0.03	0.15	0.38	0.15	0.27		0.23	0.49	0.49	0.05	0.29	
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	53	275	672	269	464		409	908	726	93	529	
v/s Ratio Prot	0.01	c0.08	0.06	c0.12	0.01		c0.21	0.17		0.01	c0.23	
v/s Ratio Perm			0.05						0.12			
v/c Ratio	0.43	0.56	0.28	0.82	0.03		0.91	0.34	0.24	0.24	0.82	
Uniform Delay, d1	41.7	34.6	18.9	35.9	23.5		32.8	13.8	13.0	39.7	29.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.6	2.4	0.2	17.3	0.0		24.6	0.2	0.2	1.3	9.8	
Delay (s)	47.3	37.0	19.1	53.1	23.5		57.3	14.0	13.2	41.0	39.0	
Level of Service	D	D	B	D	C		E	B	B	D	D	
Approach Delay (s)		26.3			50.1			29.2			39.1	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	16.0
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	4.0	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.66	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1838	1052	1681	1697	1583	1770	3539	1524	1770	3523	
Flt Permitted		0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1838	1052	1681	1697	1583	1770	3539	1524	1770	3523	
Volume (vph)	4	10	4	509	39	534	17	547	389	302	743	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)	4	11	4	536	41	562	18	576	409	318	782	19
RTOR Reduction (vph)	0	0	4	0	0	186	0	0	290	0	3	0
Lane Group Flow (vph)	0	15	0	281	296	376	18	576	119	318	798	0
Confl. Peds. (#/hr)			25						25			25
Turn Type	Split		Perm	Split		pm+ov	Prot		Perm	Prot		
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases			7			8			2			
Actuated Green, G (s)		0.8	0.8	12.5	12.5	25.8	0.8	17.4	17.4	13.3	29.9	
Effective Green, g (s)		0.8	0.8	12.5	12.5	25.8	0.8	17.4	17.4	13.3	29.9	
Actuated g/C Ratio		0.01	0.01	0.21	0.21	0.43	0.01	0.29	0.29	0.22	0.50	
Clearance Time (s)		4.0	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	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		25	14	350	354	786	24	1026	442	392	1756	
v/s Ratio Prot		c0.01		0.17	c0.17	0.11	0.01	c0.16		c0.18	0.23	
v/s Ratio Perm			0.00			0.13			0.08			
v/c Ratio		0.60	0.00	0.80	0.84	0.48	0.75	0.56	0.27	0.81	0.45	
Uniform Delay, d1		29.4	29.2	22.6	22.8	12.3	29.5	18.1	16.4	22.2	9.8	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.63	
Incremental Delay, d2		33.2	0.1	12.5	15.6	0.5	80.1	2.2	1.5	10.4	0.7	
Delay (s)		62.6	29.3	35.1	38.4	12.7	109.6	20.3	17.9	30.5	6.9	
Level of Service		E	C	D	D	B	F	C	B	C	A	
Approach Delay (s)		55.6			24.9			20.9			13.6	
Approach LOS		E			C			C			B	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.2%	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	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00	1.00	0.95	0.96		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1854	1583	1681	1666		3433	3539	1481	1770	3492	
Flt Permitted		1.00	1.00	0.95	0.96		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1854	1583	1681	1666		3433	3539	1481	1770	3492	
Volume (vph)	19	191	316	319	17	18	447	318	237	104	336	24
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	201	333	336	18	19	471	335	249	109	354	25
RTOR Reduction (vph)	0	0	274	0	7	0	0	0	181	0	9	0
Lane Group Flow (vph)	0	221	59	190	176	0	471	335	68	109	370	0
Confl. Peds. (#/hr)	25					25			25			25
Turn Type	Split		Perm	Split			Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		10.7	10.7	10.6	10.6		11.7	16.4	16.4	6.3	11.0	
Effective Green, g (s)		10.7	10.7	10.6	10.6		11.7	16.4	16.4	6.3	11.0	
Actuated g/C Ratio		0.18	0.18	0.18	0.18		0.19	0.27	0.27	0.10	0.18	
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	3.0	3.0	3.0	5.0	
Lane Grp Cap (vph)		331	282	297	294		669	967	405	186	640	
v/s Ratio Prot		c0.12		c0.11	0.11		c0.14	0.09		0.06	c0.11	
v/s Ratio Perm			0.04						0.05			
v/c Ratio		0.67	0.21	0.64	0.60		0.70	0.35	0.17	0.59	0.58	
Uniform Delay, d1		23.0	21.0	22.9	22.7		22.5	17.5	16.6	25.6	22.4	
Progression Factor		1.00	1.00	1.00	1.00		0.85	0.87	1.14	1.00	1.00	
Incremental Delay, d2		5.0	0.4	4.5	3.2		2.9	0.8	0.8	4.7	3.8	
Delay (s)		28.0	21.4	27.4	26.0		22.1	16.0	19.6	30.3	26.2	
Level of Service		C	C	C	C		C	B	B	C	C	
Approach Delay (s)		24.1			26.7			19.6			27.1	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.4%	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	4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.92		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	1863	1583	1770	1813		1770	1863	1461		1814	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	1863	1583	1770	1813		1770	1863	1461		1814	
Volume (vph)	122	90	392	515	102	22	241	242	198	14	91	19
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)	128	95	413	542	107	23	254	255	208	15	96	20
RTOR Reduction (vph)	0	0	158	0	9	0	0	0	164	0	8	0
Lane Group Flow (vph)	128	95	255	542	121	0	254	255	44	0	123	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		Perm	Split		
Protected Phases	5	2	3	1	6		3	3		4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	8.0	7.4	22.4	24.5	23.9		15.0	15.0	15.0		7.5	
Effective Green, g (s)	8.0	7.4	22.4	24.5	23.9		15.0	15.0	15.0		7.5	
Actuated g/C Ratio	0.11	0.11	0.32	0.35	0.34		0.21	0.21	0.21		0.11	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	201	196	594	616	615		377	397	311		193	
v/s Ratio Prot	0.07	0.05	c0.09	c0.31	0.07		c0.14	0.14			c0.07	
v/s Ratio Perm			0.07						0.03			
v/c Ratio	0.64	0.48	0.43	0.88	0.20		0.67	0.64	0.14		0.64	
Uniform Delay, d1	29.8	29.7	19.0	21.6	16.5		25.5	25.3	22.5		30.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	6.5	2.2	0.5	13.6	0.2		4.7	3.5	0.2		6.7	
Delay (s)	36.3	31.9	19.5	35.1	16.6		30.2	28.8	22.7		36.9	
Level of Service	D	C	B	D	B		C	C	C		D	
Approach Delay (s)		24.7			31.5			27.5			36.9	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	1	76	8	1	3	0
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	1	110	12	1	4	0

Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total (vph)	1	110	13	4	0
Volume Left (vph)	1	0	12	0	0
Volume Right (vph)	0	110	0	0	0
Hadj (s)	0.23	-0.57	0.21	0.03	0.00
Departure Headway (s)	4.2	3.2	4.1	3.9	3.2
Degree Utilization, x	0.00	0.10	0.01	0.00	0.00
Capacity (veh/h)	846	1121	870	905	1121
Control Delay (s)	7.2	6.5	7.2	7.0	6.2
Approach Delay (s)	6.6		7.2	7.0	
Approach LOS	A		A	A	

Intersection Summary			
Delay	6.6		
HCM Level of Service	A		
Intersection Capacity Utilization	16.9%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.78	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1820	1237	1681	1687	1583	1770	3539	1537	1770	3531	
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1820	1237	1681	1687	1583	1770	3539	1537	1770	3531	
Volume (vph)	29	33	15	417	4	450	8	652	618	247	524	7
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)	31	35	16	439	4	474	8	686	651	260	552	7
RTOR Reduction (vph)	0	0	15	0	0	79	0	0	330	0	1	0
Lane Group Flow (vph)	0	66	1	220	223	395	8	686	321	260	558	0
Confl. Peds. (#/hr)			25						25			25
Turn Type	Split		Perm	Split		pm+ov	Prot		Perm	Prot		
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases			7			8			2			
Actuated Green, G (s)		3.2	3.2	15.3	15.3	32.4	0.8	38.4	38.4	17.1	54.7	
Effective Green, g (s)		3.2	3.2	15.3	15.3	32.4	0.8	38.4	38.4	17.1	54.7	
Actuated g/C Ratio		0.04	0.04	0.17	0.17	0.36	0.01	0.43	0.43	0.19	0.61	
Clearance Time (s)		4.0	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	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		65	44	286	287	640	16	1510	656	336	2146	
v/s Ratio Prot		c0.04		0.13	c0.13	0.12	0.00	0.19		c0.15	0.16	
v/s Ratio Perm			0.00			0.13			c0.21			
v/c Ratio		1.02	0.01	0.77	0.78	0.62	0.50	0.45	0.49	0.77	0.26	
Uniform Delay, d1		43.4	41.9	35.7	35.7	23.7	44.4	18.3	18.7	34.6	8.2	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.82	0.75	
Incremental Delay, d2		116.0	0.1	11.8	12.4	1.8	22.5	1.0	2.6	9.5	0.3	
Delay (s)		159.4	42.0	47.4	48.1	25.5	66.9	19.3	21.3	37.9	6.4	
Level of Service		F	D	D	D	C	E	B	C	D	A	
Approach Delay (s)		136.5			36.2			20.6			16.4	
Approach LOS		F			D			C			B	

Intersection Summary			
HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.3%	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	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1854	1583	1681	1638		3433	3539	1508	1770	3500	
Flt Permitted		1.00	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1854	1583	1681	1638		3433	3539	1508	1770	3500	
Volume (vph)	10	101	229	304	54	53	379	247	394	64	179	11
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)	11	106	241	320	57	56	399	260	415	67	188	12
RTOR Reduction (vph)	0	0	211	0	16	0	0	0	230	0	5	0
Lane Group Flow (vph)	0	117	30	218	199	0	399	260	185	67	195	0
Confl. Peds. (#/hr)	25					25			25			25
Turn Type	Split		Perm	Split			Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		11.3	11.3	16.2	16.2		15.3	40.1	40.1	6.4	31.2	
Effective Green, g (s)		11.3	11.3	16.2	16.2		15.3	40.1	40.1	6.4	31.2	
Actuated g/C Ratio		0.13	0.13	0.18	0.18		0.17	0.45	0.45	0.07	0.35	
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	3.0	3.0	3.0	5.0	
Lane Grp Cap (vph)		233	199	303	295		584	1577	672	126	1213	
v/s Ratio Prot		c0.06		c0.13	0.12		c0.12	0.07		c0.04	0.06	
v/s Ratio Perm			0.02						c0.12			
v/c Ratio		0.50	0.15	0.72	0.68		0.68	0.16	0.28	0.53	0.16	
Uniform Delay, d1		36.7	35.1	34.8	34.4		35.1	14.9	15.8	40.4	20.3	
Progression Factor		1.00	1.00	1.00	1.00		0.75	0.68	0.51	1.00	1.00	
Incremental Delay, d2		1.7	0.4	7.9	6.0		2.8	0.2	0.9	4.3	0.3	
Delay (s)		38.4	35.4	42.7	40.5		29.1	10.3	8.9	44.6	20.6	
Level of Service		D	D	D	D		C	B	A	D	C	
Approach Delay (s)		36.4			41.6			16.7			26.6	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	52.6%	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		4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.93		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1836		1770	1863	1476		1841	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1836		1770	1863	1476		1841	
Volume (vph)	26	162	318	250	18	2	382	89	392	10	220	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)	27	171	335	263	19	2	402	94	413	11	232	19
RTOR Reduction (vph)	0	0	191	0	1	0	0	0	307	0	4	0
Lane Group Flow (vph)	27	171	144	263	20	0	402	94	106	0	258	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		Perm	Split		
Protected Phases	5	2	3	1	6		3	3		4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	7.0	14.0	34.8	14.1	21.1		20.8	20.8	20.8		16.0	
Effective Green, g (s)	7.0	14.0	34.8	14.1	21.1		20.8	20.8	20.8		16.0	
Actuated g/C Ratio	0.09	0.17	0.43	0.17	0.26		0.26	0.26	0.26		0.20	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	153	322	759	308	479		455	479	379		364	
v/s Ratio Prot	0.02	c0.09	0.05	c0.15	0.01		c0.23	0.05			c0.14	
v/s Ratio Perm			0.04						0.07			
v/c Ratio	0.18	0.53	0.19	0.85	0.04		0.88	0.20	0.28		0.71	
Uniform Delay, d1	34.3	30.5	14.3	32.4	22.3		28.9	23.5	24.1		30.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.6	1.9	0.1	19.9	0.0		18.0	0.2	0.4		6.2	
Delay (s)	34.8	32.4	14.4	52.3	22.4		46.9	23.7	24.5		36.5	
Level of Service	C	C	B	D	C		D	C	C		D	
Approach Delay (s)		21.2			50.1			34.3			36.5	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	33.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	80.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	0	18	35	0	0	0
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	0	32	62	0	0	0

Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total (vph)	0	32	63	0	0
Volume Left (vph)	0	0	63	0	0
Volume Right (vph)	0	32	0	0	0
Hadj (s)	0.00	-0.57	0.23	0.00	0.00
Departure Headway (s)	4.0	3.2	4.1	4.0	3.2
Degree Utilization, x	0.00	0.03	0.07	0.00	0.00
Capacity (veh/h)	883	1121	858	900	1121
Control Delay (s)	7.0	6.3	7.5	7.0	6.2
Approach Delay (s)	6.3		7.5	0.0	
Approach LOS	A		A	A	

Intersection Summary			
Delay	7.1		
HCM Level of Service	A		
Intersection Capacity Utilization	6.7%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.66	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1838	1052	1681	1696	1583	1770	3539	1523	1770	3523	
Flt Permitted		0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1838	1052	1681	1696	1583	1770	3539	1523	1770	3523	
Volume (vph)	4	10	4	532	39	554	17	547	437	318	743	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)	4	11	4	560	41	583	18	576	460	335	782	19
RTOR Reduction (vph)	0	0	4	0	0	184	0	0	330	0	3	0
Lane Group Flow (vph)	0	15	0	292	309	399	18	576	130	335	798	0
Confl. Peds. (#/hr)			25						25			25
Turn Type	Split		Perm	Split		pm+ov	Prot		Perm	Prot		
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases			7			8			2			
Actuated Green, G (s)		0.8	0.8	12.7	12.7	26.2	0.8	17.0	17.0	13.5	29.7	
Effective Green, g (s)		0.8	0.8	12.7	12.7	26.2	0.8	17.0	17.0	13.5	29.7	
Actuated g/C Ratio		0.01	0.01	0.21	0.21	0.44	0.01	0.28	0.28	0.22	0.49	
Clearance Time (s)		4.0	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	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		25	14	356	359	797	24	1003	432	398	1744	
v/s Ratio Prot		c0.01		0.17	c0.18	0.11	0.01	c0.16		c0.19	0.23	
v/s Ratio Perm			0.00			0.14			0.09			
v/c Ratio		0.60	0.00	0.82	0.86	0.50	0.75	0.57	0.30	0.84	0.46	
Uniform Delay, d1		29.4	29.2	22.6	22.8	12.2	29.5	18.4	16.8	22.2	9.9	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.62	
Incremental Delay, d2		33.2	0.1	14.0	18.6	0.5	80.1	2.4	1.8	12.8	0.7	
Delay (s)		62.6	29.3	36.6	41.4	12.7	109.6	20.8	18.6	33.3	6.9	
Level of Service		E	C	D	D	B	F	C	B	C	A	
Approach Delay (s)		55.6			26.1			21.4			14.7	
Approach LOS		E			C			C			B	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.4%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00	0.93	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00	1.00	0.95	0.96		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1854	1583	1681	1666		3433	3539	1480	1770	3493	
Flt Permitted		1.00	1.00	0.95	0.96		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1854	1583	1681	1666		3433	3539	1480	1770	3493	
Volume (vph)	19	191	316	329	17	18	447	320	255	104	341	24
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	201	333	346	18	19	471	337	268	109	359	25
RTOR Reduction (vph)	0	0	274	0	7	0	0	0	195	0	8	0
Lane Group Flow (vph)	0	221	59	195	181	0	471	337	73	109	376	0
Confl. Peds. (#/hr)	25					25			25			25
Turn Type	Split		Perm	Split			Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		10.7	10.7	10.7	10.7		11.8	16.3	16.3	6.3	10.8	
Effective Green, g (s)		10.7	10.7	10.7	10.7		11.8	16.3	16.3	6.3	10.8	
Actuated g/C Ratio		0.18	0.18	0.18	0.18		0.20	0.27	0.27	0.10	0.18	
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	3.0	3.0	3.0	5.0	
Lane Grp Cap (vph)		331	282	300	297		675	961	402	186	629	
v/s Ratio Prot		c0.12		c0.12	0.11		c0.14	0.10		0.06	c0.11	
v/s Ratio Perm			0.04						0.05			
v/c Ratio		0.67	0.21	0.65	0.61		0.70	0.35	0.18	0.59	0.60	
Uniform Delay, d1		23.0	21.0	22.9	22.7		22.4	17.6	16.7	25.6	22.6	
Progression Factor		1.00	1.00	1.00	1.00		0.85	0.87	1.12	1.00	1.00	
Incremental Delay, d2		5.0	0.4	5.0	3.7		2.7	0.9	0.8	4.7	4.2	
Delay (s)		28.0	21.4	27.9	26.4		21.8	16.1	19.7	30.3	26.8	
Level of Service		C	C	C	C		C	B	B	C	C	
Approach Delay (s)		24.1			27.2			19.5			27.5	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.92		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1810		1770	1863	1461		1826	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1810		1770	1863	1461		1826	
Volume (vph)	122	90	392	515	102	24	241	305	198	15	134	19
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)	128	95	413	542	107	25	254	321	208	16	141	20
RTOR Reduction (vph)	0	0	124	0	10	0	0	0	164	0	6	0
Lane Group Flow (vph)	128	95	289	542	122	0	254	321	44	0	171	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		Perm	Split		
Protected Phases	5	2	3	1	6		3	3		4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	8.0	7.4	22.5	24.5	23.9		15.1	15.1	15.1		7.7	
Effective Green, g (s)	8.0	7.4	22.5	24.5	23.9		15.1	15.1	15.1		7.7	
Actuated g/C Ratio	0.11	0.10	0.32	0.35	0.34		0.21	0.21	0.21		0.11	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	200	195	593	613	612		378	398	312		199	
v/s Ratio Prot	0.07	0.05	c0.10	c0.31	0.07		0.14	c0.17			c0.09	
v/s Ratio Perm			0.08						0.03			
v/c Ratio	0.64	0.49	0.49	0.88	0.20		0.67	0.81	0.14		0.86	
Uniform Delay, d1	30.0	29.9	19.4	21.8	16.6		25.5	26.4	22.5		31.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	6.8	2.3	0.6	14.2	0.2		4.7	11.3	0.2		28.7	
Delay (s)	36.8	32.1	20.1	36.0	16.8		30.2	37.8	22.8		59.6	
Level of Service	D	C	C	D	B		C	D	C		E	
Approach Delay (s)		25.2			32.2			31.3			59.6	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM Average Control Delay	32.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	70.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	38	76	8	67	47	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	40	80	8	71	49	5

Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total (vph)	40	80	79	49	5
Volume Left (vph)	40	0	8	0	0
Volume Right (vph)	0	80	0	0	5
Hadj (s)	0.23	-0.57	0.06	0.03	-0.57
Departure Headway (s)	4.4	3.2	4.1	4.1	3.2
Degree Utilization, x	0.05	0.07	0.09	0.06	0.00
Capacity (veh/h)	785	1121	857	861	1121
Control Delay (s)	7.6	6.4	7.5	7.3	6.2
Approach Delay (s)	6.8		7.5	7.2	
Approach LOS	A		A	A	

Intersection Summary			
Delay	7.1		
HCM Level of Service	A		
Intersection Capacity Utilization	20.2%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.78	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1820	1237	1681	1686	1583	1770	3539	1535	1770	3531	
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1820	1237	1681	1686	1583	1770	3539	1535	1770	3531	
Volume (vph)	29	33	15	542	4	603	8	642	753	319	524	7
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)	31	35	16	571	4	635	8	676	793	336	552	7
RTOR Reduction (vph)	0	0	15	0	0	77	0	0	323	0	1	0
Lane Group Flow (vph)	0	66	1	286	289	558	8	676	470	336	558	0
Confl. Peds. (#/hr)			25						25			25
Turn Type	Split		Perm	Split		pm+ov	Prot		Perm	Prot		
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases			7			8			2			
Actuated Green, G (s)		3.2	3.2	16.8	16.8	35.1	0.8	35.7	35.7	18.3	53.2	
Effective Green, g (s)		3.2	3.2	16.8	16.8	35.1	0.8	35.7	35.7	18.3	53.2	
Actuated g/C Ratio		0.04	0.04	0.19	0.19	0.39	0.01	0.40	0.40	0.20	0.59	
Clearance Time (s)		4.0	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	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		65	44	314	315	688	16	1404	609	360	2087	
v/s Ratio Prot		c0.04		0.17	c0.17	0.16	0.00	0.19		c0.19	0.16	
v/s Ratio Perm			0.00			0.19			c0.31			
v/c Ratio		1.02	0.01	0.91	0.92	0.81	0.50	0.48	0.77	0.93	0.27	
Uniform Delay, d1		43.4	41.9	35.9	35.9	24.5	44.4	20.2	23.6	35.3	8.9	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.83	0.74	
Incremental Delay, d2		116.0	0.1	29.1	30.1	7.2	22.5	1.2	9.1	27.9	0.3	
Delay (s)		159.4	42.0	64.9	66.0	31.7	66.9	21.4	32.7	57.0	6.8	
Level of Service		F	D	E	E	C	E	C	C	E	A	
Approach Delay (s)		136.5			47.7			27.8			25.7	
Approach LOS		F			D			C			C	

Intersection Summary			
HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00	1.00	0.95	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00	1.00	0.95	0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1854	1583	1681	1645		3433	3539	1507	1770	3503	
Flt Permitted		1.00	1.00	0.95	0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1854	1583	1681	1645		3433	3539	1507	1770	3503	
Volume (vph)	10	101	229	363	54	53	379	260	523	64	192	11
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)	11	106	241	382	57	56	399	274	551	67	202	12
RTOR Reduction (vph)	0	0	211	0	13	0	0	0	313	0	4	0
Lane Group Flow (vph)	0	117	30	250	232	0	399	274	238	67	210	0
Confl. Peds. (#/hr)	25					25			25			25
Turn Type	Split		Perm	Split			Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		11.3	11.3	17.5	17.5		15.2	38.8	38.8	6.4	30.0	
Effective Green, g (s)		11.3	11.3	17.5	17.5		15.2	38.8	38.8	6.4	30.0	
Actuated g/C Ratio		0.13	0.13	0.19	0.19		0.17	0.43	0.43	0.07	0.33	
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	3.0	3.0	3.0	5.0	
Lane Grp Cap (vph)		233	199	327	320		580	1526	650	126	1168	
v/s Ratio Prot		c0.06		c0.15	0.14		c0.12	0.08		c0.04	0.06	
v/s Ratio Perm			0.02						c0.16			
v/c Ratio		0.50	0.15	0.76	0.73		0.69	0.18	0.37	0.53	0.18	
Uniform Delay, d1		36.7	35.1	34.3	34.0		35.2	15.8	17.3	40.4	21.3	
Progression Factor		1.00	1.00	1.00	1.00		0.77	0.73	0.85	1.00	1.00	
Incremental Delay, d2		1.7	0.4	10.2	7.9		2.6	0.2	1.2	4.3	0.3	
Delay (s)		38.4	35.4	44.5	41.9		29.5	11.7	15.9	44.6	21.6	
Level of Service		D	D	D	D		C	B	B	D	C	
Approach Delay (s)		36.4			43.2			19.4			27.1	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM Average Control Delay	27.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.93		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85		1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1749		1770	1863	1467		1851	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1749		1770	1863	1467		1851	
Volume (vph)	26	162	318	245	18	12	377	306	387	20	503	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)	27	171	335	258	19	13	397	322	407	21	529	19
RTOR Reduction (vph)	0	0	74	0	10	0	0	0	314	0	1	0
Lane Group Flow (vph)	27	171	261	258	22	0	397	322	93	0	568	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		Perm	Split		
Protected Phases	5	2	3	1	6		3	3		4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	3.1	13.2	34.2	14.0	24.1		21.0	21.0	21.0		28.0	
Effective Green, g (s)	3.1	13.2	34.2	14.0	24.1		21.0	21.0	21.0		28.0	
Actuated g/C Ratio	0.03	0.14	0.37	0.15	0.26		0.23	0.23	0.23		0.30	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	60	267	656	269	457		403	424	334		562	
v/s Ratio Prot	0.02	c0.09	0.09	c0.15	0.01		c0.22	0.17			c0.31	
v/s Ratio Perm			0.07						0.06			
v/c Ratio	0.45	0.64	0.40	0.96	0.05		0.99	0.76	0.28		1.01	
Uniform Delay, d1	43.7	37.3	21.4	38.8	25.5		35.4	33.2	29.3		32.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	5.3	5.4	0.4	43.2	0.1		40.6	7.6	0.5		40.5	
Delay (s)	49.0	42.7	21.8	82.0	25.5		76.0	40.9	29.8		72.6	
Level of Service	D	D	C	F	C		E	D	C		E	
Approach Delay (s)		29.9			75.7			49.3			72.6	
Approach LOS		C			E			D			E	

Intersection Summary			
HCM Average Control Delay	53.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	131	18	35	227	293	64
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	138	19	37	239	308	67

Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total (vph)	138	19	276	308	67
Volume Left (vph)	138	0	37	0	0
Volume Right (vph)	0	19	0	0	67
Hadj (s)	0.23	-0.57	0.06	0.03	-0.57
Departure Headway (s)	5.5	3.2	4.7	4.7	3.2
Degree Utilization, x	0.21	0.02	0.36	0.40	0.06
Capacity (veh/h)	589	1121	732	741	1121
Control Delay (s)	10.0	6.3	10.4	10.8	6.4
Approach Delay (s)	9.5		10.4	10.0	
Approach LOS	A		B	A	

Intersection Summary			
Delay	10.0		
HCM Level of Service	B		
Intersection Capacity Utilization	46.6%	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	2.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1810		1770	1863	1540	1770	1828	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1810		1770	1863	1540	1770	1828	
Volume (vph)	122	90	392	515	102	24	241	305	198	15	134	19
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)	128	95	413	542	107	25	254	321	208	16	141	20
RTOR Reduction (vph)	0	0	137	0	8	0	0	0	77	0	5	0
Lane Group Flow (vph)	128	95	276	542	124	0	254	321	131	16	156	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Prot		pm+ov	Prot		
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	8.8	13.1	29.1	28.9	33.2		16.0	25.0	53.9	2.4	11.4	
Effective Green, g (s)	8.8	13.1	29.1	28.9	33.2		16.0	25.0	53.9	4.4	11.4	
Actuated g/C Ratio	0.10	0.15	0.34	0.34	0.39		0.19	0.29	0.63	0.05	0.13	
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	182	286	614	599	704		332	545	1044	91	244	
v/s Ratio Prot	0.07	0.05	c0.08	c0.31	0.07		c0.14	c0.17	0.04	0.01	0.09	
v/s Ratio Perm			0.09						0.04			
v/c Ratio	0.70	0.33	0.45	0.90	0.18		0.77	0.59	0.13	0.18	0.64	
Uniform Delay, d1	37.0	32.2	21.9	26.9	17.1		32.9	25.8	6.3	38.8	35.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.6	0.7	0.5	17.1	0.1		10.1	1.6	0.1	0.9	5.4	
Delay (s)	48.7	32.9	22.4	44.1	17.2		43.0	27.4	6.4	39.7	40.4	
Level of Service	D	C	C	D	B		D	C	A	D	D	
Approach Delay (s)		29.3			38.8			26.9			40.4	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	85.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.7%	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	2.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1749		1770	1863	1495	1770	1853	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1749		1770	1863	1495	1770	1853	
Volume (vph)	26	162	318	245	18	12	377	306	387	20	503	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)	27	171	335	258	19	13	397	322	407	21	529	19
RTOR Reduction (vph)	0	0	83	0	10	0	0	0	109	0	1	0
Lane Group Flow (vph)	27	171	252	258	22	0	397	322	298	21	547	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Prot		pm+ov	Prot		
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	3.9	15.7	43.0	18.5	30.3		27.3	62.4	80.9	2.6	37.7	
Effective Green, g (s)	3.9	15.7	43.0	18.5	30.3		27.3	62.4	80.9	4.6	37.7	
Actuated g/C Ratio	0.03	0.14	0.37	0.16	0.26		0.24	0.54	0.70	0.04	0.33	
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	60	254	646	284	460		419	1009	1102	71	606	
v/s Ratio Prot	0.02	c0.09	0.09	c0.15	0.01		c0.22	0.17	0.04	0.01	c0.30	
v/s Ratio Perm			0.07						0.16			
v/c Ratio	0.45	0.67	0.39	0.91	0.05		0.95	0.32	0.27	0.30	0.90	
Uniform Delay, d1	54.6	47.3	26.5	47.5	31.7		43.2	14.6	6.3	53.7	37.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.3	6.9	0.4	30.4	0.0		30.6	0.2	0.1	2.3	16.7	
Delay (s)	59.9	54.2	26.9	77.9	31.7		73.8	14.8	6.4	56.1	53.7	
Level of Service	E	D	C	E	C		E	B	A	E	D	
Approach Delay (s)		37.3			72.8			32.6			53.8	
Approach LOS		D			E			C			D	

Intersection Summary			
HCM Average Control Delay	43.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	115.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1810		1770	1863	1544		3464	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1810		1770	1863	1544		3464	
Volume (vph)	122	90	392	515	102	24	241	305	198	15	134	19
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)	128	95	413	542	107	25	254	321	208	16	141	20
RTOR Reduction (vph)	0	0	115	0	7	0	0	0	88	0	9	0
Lane Group Flow (vph)	128	95	298	542	125	0	254	321	120	0	168	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		pm+ov	Split		
Protected Phases	5	2	3	1	6		3	3	1	4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	9.7	12.6	34.2	32.6	35.5		21.6	21.6	54.2		11.1	
Effective Green, g (s)	9.7	12.6	34.2	32.6	35.5		21.6	21.6	54.2		11.1	
Actuated g/C Ratio	0.10	0.13	0.36	0.35	0.38		0.23	0.23	0.58		0.12	
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		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	183	250	644	615	684		407	429	891		409	
v/s Ratio Prot	0.07	0.05	c0.11	c0.31	0.07		0.14	c0.17	0.05		c0.05	
v/s Ratio Perm			0.08						0.03			
v/c Ratio	0.70	0.38	0.46	0.88	0.18		0.62	0.75	0.13		0.41	
Uniform Delay, d1	40.7	37.1	22.8	28.8	19.5		32.5	33.6	9.1		38.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	11.1	1.0	0.5	13.9	0.1		3.0	7.0	0.1		0.7	
Delay (s)	51.8	38.1	23.4	42.8	19.6		35.5	40.6	9.2		39.0	
Level of Service	D	D	C	D	B		D	D	A		D	
Approach Delay (s)		31.3			38.2			30.6			39.0	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	33.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	93.9	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	4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.97		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1749		1770	1863	1532		3515	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1749		1770	1863	1532		3515	
Volume (vph)	26	162	318	245	18	12	377	306	387	20	503	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)	27	171	335	258	19	13	397	322	407	21	529	19
RTOR Reduction (vph)	0	0	56	0	9	0	0	0	217	0	2	0
Lane Group Flow (vph)	27	171	279	258	23	0	397	322	190	0	567	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		pm+ov	Split		
Protected Phases	5	2	3	1	6		3	3	1	4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	2.4	10.4	31.7	15.5	23.5		21.3	21.3	36.8		15.8	
Effective Green, g (s)	2.4	10.4	31.7	15.5	23.5		21.3	21.3	36.8		15.8	
Actuated g/C Ratio	0.03	0.13	0.40	0.20	0.30		0.27	0.27	0.47		0.20	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	54	245	715	347	520		477	502	714		703	
v/s Ratio Prot	0.02	c0.09	0.11	c0.15	0.01		c0.22	0.17	0.05		c0.16	
v/s Ratio Perm			0.07						0.07			
v/c Ratio	0.50	0.70	0.39	0.74	0.04		0.83	0.64	0.27		0.81	
Uniform Delay, d1	37.7	32.8	16.8	29.9	19.8		27.2	25.5	12.9		30.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	7.1	8.7	0.4	8.4	0.0		11.8	2.8	0.2		6.7	
Delay (s)	44.8	41.5	17.1	38.2	19.8		39.0	28.3	13.1		36.9	
Level of Service	D	D	B	D	B		D	C	B		D	
Approach Delay (s)		26.4			36.2			26.5			36.9	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	79.0	Sum of lost time (s)	16.0
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	4.0	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.66	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1838	1052	1681	1700	1583	1770	3539	1526	1770	3523	
Flt Permitted		0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1838	1052	1681	1700	1583	1770	3539	1526	1770	3523	
Volume (vph)	4	10	4	394	39	513	20	461	335	294	617	15
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)	4	11	4	415	41	540	21	485	353	309	649	16
RTOR Reduction (vph)	0	0	4	0	0	196	0	0	247	0	2	0
Lane Group Flow (vph)	0	15	0	222	234	344	21	485	106	309	663	0
Confl. Peds. (#/hr)			25						25			25
Turn Type	Split		Perm	Split		pm+ov	Prot		Perm	Prot		
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases			7			8			2			
Actuated Green, G (s)		0.8	0.8	12.0	12.0	25.2	0.8	18.0	18.0	13.2	30.4	
Effective Green, g (s)		0.8	0.8	12.0	12.0	25.2	0.8	18.0	18.0	13.2	30.4	
Actuated g/C Ratio		0.01	0.01	0.20	0.20	0.42	0.01	0.30	0.30	0.22	0.51	
Clearance Time (s)		4.0	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	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		25	14	336	340	770	24	1062	458	389	1785	
v/s Ratio Prot		c0.01		0.13	c0.14	0.10	0.01	c0.14		c0.17	0.19	
v/s Ratio Perm			0.00			0.12			0.07			
v/c Ratio		0.60	0.00	0.66	0.69	0.45	0.88	0.46	0.23	0.79	0.37	
Uniform Delay, d1		29.4	29.2	22.1	22.3	12.4	29.6	17.0	15.8	22.1	9.0	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.62	
Incremental Delay, d2		33.2	0.1	4.8	5.7	0.4	127.4	1.4	1.2	9.8	0.5	
Delay (s)		62.6	29.3	26.9	28.0	12.8	156.9	18.5	17.0	31.6	6.1	
Level of Service		E	C	C	C	B	F	B	B	C	A	
Approach Delay (s)		55.6			19.5			21.2			14.2	
Approach LOS		E			B			C			B	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.1%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00	1.00	0.95	0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1854	1583	1681	1651		3433	3539	1489	1770	3494	
Flt Permitted		1.00	1.00	0.95	0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1854	1583	1681	1651		3433	3539	1489	1770	3494	
Volume (vph)	19	191	316	181	17	18	447	318	83	104	336	24
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	201	333	191	18	19	471	335	87	109	354	25
RTOR Reduction (vph)	0	0	274	0	13	0	0	0	60	0	9	0
Lane Group Flow (vph)	0	221	59	115	100	0	471	335	27	109	370	0
Confl. Peds. (#/hr)	25					25			25			25
Turn Type	Split		Perm	Split			Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		10.7	10.7	8.4	8.4		11.8	18.6	18.6	6.3	13.1	
Effective Green, g (s)		10.7	10.7	8.4	8.4		11.8	18.6	18.6	6.3	13.1	
Actuated g/C Ratio		0.18	0.18	0.14	0.14		0.20	0.31	0.31	0.10	0.22	
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	3.0	3.0	3.0	5.0	
Lane Grp Cap (vph)		331	282	235	231		675	1097	462	186	763	
v/s Ratio Prot		c0.12		c0.07	0.06		c0.14	0.09		0.06	c0.11	
v/s Ratio Perm			0.04						0.02			
v/c Ratio		0.67	0.21	0.49	0.43		0.70	0.31	0.06	0.59	0.49	
Uniform Delay, d1		23.0	21.0	23.8	23.6		22.4	15.8	14.5	25.6	20.5	
Progression Factor		1.00	1.00	1.00	1.00		0.87	0.88	1.05	1.00	1.00	
Incremental Delay, d2		5.0	0.4	1.6	1.3		2.8	0.6	0.2	4.7	2.2	
Delay (s)		28.0	21.4	25.4	24.9		22.3	14.5	15.5	30.3	22.7	
Level of Service		C	C	C	C		C	B	B	C	C	
Approach Delay (s)		24.1			25.2			18.7			24.4	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.92		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	1863	1583	1770	1813		1770	1863	1460		1814	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	1863	1583	1770	1813		1770	1863	1460		1814	
Volume (vph)	122	90	257	513	101	22	181	242	195	14	91	19
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)	128	95	271	540	106	23	191	255	205	15	96	20
RTOR Reduction (vph)	0	0	159	0	9	0	0	0	161	0	8	0
Lane Group Flow (vph)	128	95	112	540	120	0	191	255	44	0	123	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		Perm	Split		
Protected Phases	5	2	3	1	6		3	3		4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	8.0	7.4	22.3	24.4	23.8		14.9	14.9	14.9		7.5	
Effective Green, g (s)	8.0	7.4	22.3	24.4	23.8		14.9	14.9	14.9		7.5	
Actuated g/C Ratio	0.11	0.11	0.32	0.35	0.34		0.21	0.21	0.21		0.11	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	202	196	593	615	615		376	395	310		194	
v/s Ratio Prot	0.07	c0.05	0.04	c0.31	0.07		0.11	c0.14			c0.07	
v/s Ratio Perm			0.03						0.03			
v/c Ratio	0.63	0.48	0.19	0.88	0.19		0.51	0.65	0.14		0.63	
Uniform Delay, d1	29.7	29.6	17.4	21.5	16.4		24.4	25.2	22.5		30.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	6.4	2.2	0.2	13.4	0.2		1.1	3.6	0.2		6.6	
Delay (s)	36.1	31.8	17.5	34.9	16.6		25.5	28.8	22.7		36.6	
Level of Service	D	C	B	C	B		C	C	C		D	
Approach Delay (s)		25.1			31.4			25.9			36.6	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	1	76	8	1	3	0
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	1	110	12	1	4	0

Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total (vph)	1	110	13	4	0
Volume Left (vph)	1	0	12	0	0
Volume Right (vph)	0	110	0	0	0
Hadj (s)	0.23	-0.57	0.21	0.03	0.00
Departure Headway (s)	4.2	3.2	4.1	3.9	3.2
Degree Utilization, x	0.00	0.10	0.01	0.00	0.00
Capacity (veh/h)	846	1121	870	905	1121
Control Delay (s)	7.2	6.5	7.2	7.0	6.2
Approach Delay (s)	6.6		7.2	7.0	
Approach LOS	A		A	A	

Intersection Summary			
Delay	6.6		
HCM Level of Service	A		
Intersection Capacity Utilization	16.9%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.78	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1820	1237	1681	1687	1583	1770	3539	1539	1770	3532	
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1820	1237	1681	1687	1583	1770	3539	1539	1770	3532	
Volume (vph)	29	33	15	327	4	430	10	455	496	240	419	5
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)	31	35	16	344	4	453	11	479	522	253	441	5
RTOR Reduction (vph)	0	0	15	0	0	137	0	0	285	0	1	0
Lane Group Flow (vph)	0	66	1	172	176	316	11	479	237	253	445	0
Confl. Peds. (#/hr)			25						25			25
Turn Type	Split		Perm	Split		pm+ov	Prot		Perm	Prot		
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases			7			8			2			
Actuated Green, G (s)		3.2	3.2	14.0	14.0	30.0	0.8	40.8	40.8	16.0	56.0	
Effective Green, g (s)		3.2	3.2	14.0	14.0	30.0	0.8	40.8	40.8	16.0	56.0	
Actuated g/C Ratio		0.04	0.04	0.16	0.16	0.33	0.01	0.45	0.45	0.18	0.62	
Clearance Time (s)		4.0	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	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		65	44	261	262	598	16	1604	698	315	2198	
v/s Ratio Prot		c0.04		0.10	c0.10	0.09	0.01	0.14		c0.14	0.13	
v/s Ratio Perm			0.00			0.11			c0.15			
v/c Ratio		1.02	0.01	0.66	0.67	0.53	0.69	0.30	0.34	0.80	0.20	
Uniform Delay, d1		43.4	41.9	35.8	35.8	24.3	44.5	15.6	15.9	35.5	7.3	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.97	
Incremental Delay, d2		116.0	0.1	5.9	6.6	0.8	80.1	0.5	1.3	13.0	0.2	
Delay (s)		159.4	42.0	41.7	42.5	25.1	124.6	16.0	17.2	43.0	7.3	
Level of Service		F	D	D	D	C	F	B	B	D	A	
Approach Delay (s)		136.5			32.5			17.8			20.2	
Approach LOS		F			C			B			C	

Intersection Summary			
HCM Average Control Delay	26.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.3%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.98		1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00	1.00	0.95	0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1854	1583	1681	1609		3433	3539	1511	1770	3501	
Flt Permitted		1.00	1.00	0.95	0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1854	1583	1681	1609		3433	3539	1511	1770	3501	
Volume (vph)	10	101	229	167	54	53	379	247	155	64	179	11
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)	11	106	241	176	57	56	399	260	163	67	188	12
RTOR Reduction (vph)	0	0	211	0	28	0	0	0	85	0	4	0
Lane Group Flow (vph)	0	117	30	143	118	0	399	260	78	67	196	0
Confl. Peds. (#/hr)	25					25			25			25
Turn Type	Split		Perm	Split			Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		11.3	11.3	13.0	13.0		17.2	43.3	43.3	6.4	32.5	
Effective Green, g (s)		11.3	11.3	13.0	13.0		17.2	43.3	43.3	6.4	32.5	
Actuated g/C Ratio		0.13	0.13	0.14	0.14		0.19	0.48	0.48	0.07	0.36	
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	3.0	3.0	3.0	5.0	
Lane Grp Cap (vph)		233	199	243	232		656	1703	727	126	1264	
v/s Ratio Prot		c0.06		c0.09	0.07		c0.12	c0.07		c0.04	0.06	
v/s Ratio Perm			0.02						0.05			
v/c Ratio		0.50	0.15	0.59	0.51		0.61	0.15	0.11	0.53	0.15	
Uniform Delay, d1		36.7	35.1	36.0	35.5		33.3	13.1	12.8	40.4	19.5	
Progression Factor		1.00	1.00	1.00	1.00		0.75	0.78	0.73	1.00	1.00	
Incremental Delay, d2		1.7	0.4	3.6	1.7		1.4	0.2	0.3	4.3	0.3	
Delay (s)		38.4	35.4	39.6	37.3		26.5	10.3	9.6	44.6	19.7	
Level of Service		D	D	D	D		C	B	A	D	B	
Approach Delay (s)		36.4			38.4			18.0			26.0	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM Average Control Delay	26.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.92		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1835		1770	1863	1460		1841	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1835		1770	1863	1460		1841	
Volume (vph)	26	162	211	246	17	2	259	89	386	10	220	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)	27	171	222	259	18	2	273	94	406	11	232	19
RTOR Reduction (vph)	0	0	133	0	1	0	0	0	320	0	4	0
Lane Group Flow (vph)	27	171	89	259	19	0	273	94	86	0	258	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		Perm	Split		
Protected Phases	5	2	3	1	6		3	3		4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	6.6	14.3	30.2	13.7	21.4		15.9	15.9	15.9		15.5	
Effective Green, g (s)	6.6	14.3	30.2	13.7	21.4		15.9	15.9	15.9		15.5	
Actuated g/C Ratio	0.09	0.19	0.40	0.18	0.28		0.21	0.21	0.21		0.21	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	155	353	718	322	521		373	393	308		378	
v/s Ratio Prot	0.02	c0.09	0.03	c0.15	0.01		c0.15	0.05			c0.14	
v/s Ratio Perm			0.03						0.06			
v/c Ratio	0.17	0.48	0.12	0.80	0.04		0.73	0.24	0.28		0.68	
Uniform Delay, d1	31.9	27.3	14.3	29.6	19.5		27.8	24.7	24.9		27.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.5	1.2	0.1	13.5	0.0		7.2	0.3	0.5		5.0	
Delay (s)	32.4	28.5	14.3	43.1	19.6		35.0	25.0	25.4		32.7	
Level of Service	C	C	B	D	B		C	C	C		C	
Approach Delay (s)		21.3			41.4			28.8			32.7	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	29.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	75.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	0	18	35	0	0	0
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	0	32	62	0	0	0

Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total (vph)	0	32	63	0	0
Volume Left (vph)	0	0	63	0	0
Volume Right (vph)	0	32	0	0	0
Hadj (s)	0.00	-0.57	0.23	0.00	0.00
Departure Headway (s)	4.0	3.2	4.1	4.0	3.2
Degree Utilization, x	0.00	0.03	0.07	0.00	0.00
Capacity (veh/h)	883	1121	858	900	1121
Control Delay (s)	7.0	6.3	7.5	7.0	6.2
Approach Delay (s)	6.3		7.5	0.0	
Approach LOS	A		A	A	

Intersection Summary			
Delay	7.1		
HCM Level of Service	A		
Intersection Capacity Utilization	6.7%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.66	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1838	1052	1681	1699	1583	1770	3539	1525	1770	3523	
Flt Permitted		0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1838	1052	1681	1699	1583	1770	3539	1525	1770	3523	
Volume (vph)	4	10	4	417	39	533	20	461	383	309	617	15
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)	4	11	4	439	41	561	21	485	403	325	649	16
RTOR Reduction (vph)	0	0	4	0	0	195	0	0	283	0	2	0
Lane Group Flow (vph)	0	15	0	234	246	366	21	485	120	325	663	0
Confl. Peds. (#/hr)			25						25			25
Turn Type	Split		Perm	Split		pm+ov	Prot		Perm	Prot		
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases			7			8			2			
Actuated Green, G (s)		0.8	0.8	12.1	12.1	25.4	0.8	17.8	17.8	13.3	30.3	
Effective Green, g (s)		0.8	0.8	12.1	12.1	25.4	0.8	17.8	17.8	13.3	30.3	
Actuated g/C Ratio		0.01	0.01	0.20	0.20	0.42	0.01	0.30	0.30	0.22	0.51	
Clearance Time (s)		4.0	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	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		25	14	339	343	776	24	1050	452	392	1779	
v/s Ratio Prot		c0.01		0.14	c0.14	0.10	0.01	c0.14		c0.18	0.19	
v/s Ratio Perm			0.00			0.13			0.08			
v/c Ratio		0.60	0.00	0.69	0.72	0.47	0.88	0.46	0.26	0.83	0.37	
Uniform Delay, d1		29.4	29.2	22.2	22.4	12.5	29.6	17.2	16.1	22.3	9.1	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.62	
Incremental Delay, d2		33.2	0.1	5.9	7.0	0.5	127.4	1.5	1.4	12.4	0.5	
Delay (s)		62.6	29.3	28.2	29.3	12.9	156.9	18.7	17.5	34.1	6.1	
Level of Service		E	C	C	C	B	F	B	B	C	A	
Approach Delay (s)		55.6			20.2			21.4			15.3	
Approach LOS		E			C			C			B	

Intersection Summary			
HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.3%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00	1.00	0.95	0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1854	1583	1681	1652		3433	3539	1489	1770	3494	
Flt Permitted		1.00	1.00	0.95	0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1854	1583	1681	1652		3433	3539	1489	1770	3494	
Volume (vph)	19	191	316	191	17	18	447	320	101	104	341	24
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	201	333	201	18	19	471	337	106	109	359	25
RTOR Reduction (vph)	0	0	274	0	12	0	0	0	73	0	8	0
Lane Group Flow (vph)	0	221	59	120	106	0	471	337	33	109	376	0
Confl. Peds. (#/hr)	25					25			25			25
Turn Type	Split		Perm	Split			Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		10.7	10.7	8.4	8.4		11.8	18.6	18.6	6.3	13.1	
Effective Green, g (s)		10.7	10.7	8.4	8.4		11.8	18.6	18.6	6.3	13.1	
Actuated g/C Ratio		0.18	0.18	0.14	0.14		0.20	0.31	0.31	0.10	0.22	
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	3.0	3.0	3.0	5.0	
Lane Grp Cap (vph)		331	282	235	231		675	1097	462	186	763	
v/s Ratio Prot		c0.12		c0.07	0.06		c0.14	0.10		0.06	c0.11	
v/s Ratio Perm			0.04						0.02			
v/c Ratio		0.67	0.21	0.51	0.46		0.70	0.31	0.07	0.59	0.49	
Uniform Delay, d1		23.0	21.0	23.9	23.7		22.4	15.8	14.6	25.6	20.5	
Progression Factor		1.00	1.00	1.00	1.00		0.87	0.88	1.05	1.00	1.00	
Incremental Delay, d2		5.0	0.4	1.9	1.4		2.8	0.6	0.3	4.7	2.3	
Delay (s)		28.0	21.4	25.8	25.2		22.3	14.5	15.6	30.3	22.8	
Level of Service		C	C	C	C		C	B	B	C	C	
Approach Delay (s)		24.1			25.5			18.7			24.5	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.92		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1809		1770	1863	1461		1826	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1809		1770	1863	1461		1826	
Volume (vph)	122	90	257	513	101	24	181	305	195	15	134	19
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)	128	95	271	540	106	25	191	321	205	16	141	20
RTOR Reduction (vph)	0	0	124	0	10	0	0	0	161	0	6	0
Lane Group Flow (vph)	128	95	147	540	121	0	191	321	44	0	171	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		Perm	Split		
Protected Phases	5	2	3	1	6		3	3		4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	8.0	7.4	22.6	24.4	23.8		15.2	15.2	15.2		7.7	
Effective Green, g (s)	8.0	7.4	22.6	24.4	23.8		15.2	15.2	15.2		7.7	
Actuated g/C Ratio	0.11	0.10	0.32	0.35	0.34		0.21	0.21	0.21		0.11	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	200	195	596	611	609		381	401	314		199	
v/s Ratio Prot	0.07	c0.05	0.05	c0.31	0.07		0.11	c0.17			c0.09	
v/s Ratio Perm			0.04						0.03			
v/c Ratio	0.64	0.49	0.25	0.88	0.20		0.50	0.80	0.14		0.86	
Uniform Delay, d1	30.0	29.9	17.8	21.8	16.7		24.4	26.3	22.5		31.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	6.8	2.3	0.2	14.2	0.2		1.0	10.9	0.2		28.7	
Delay (s)	36.8	32.1	18.0	36.0	16.9		25.5	37.2	22.7		59.6	
Level of Service	D	C	B	D	B		C	D	C		E	
Approach Delay (s)		25.6			32.3			29.9			59.6	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	38	76	8	67	47	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	40	80	8	71	49	5

Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total (vph)	40	80	79	49	5
Volume Left (vph)	40	0	8	0	0
Volume Right (vph)	0	80	0	0	5
Hadj (s)	0.23	-0.57	0.06	0.03	-0.57
Departure Headway (s)	4.4	3.2	4.1	4.1	3.2
Degree Utilization, x	0.05	0.07	0.09	0.06	0.00
Capacity (veh/h)	785	1121	857	861	1121
Control Delay (s)	7.6	6.4	7.5	7.3	6.2
Approach Delay (s)	6.8		7.5	7.2	
Approach LOS	A		A	A	

Intersection Summary			
Delay	7.1		
HCM Level of Service	A		
Intersection Capacity Utilization	20.2%	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	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.78	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1820	1237	1681	1687	1583	1770	3539	1536	1770	3532	
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1820	1237	1681	1687	1583	1770	3539	1536	1770	3532	
Volume (vph)	29	33	15	451	4	583	10	445	631	312	419	5
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)	31	35	16	475	4	614	11	468	664	328	441	5
RTOR Reduction (vph)	0	0	15	0	0	131	0	0	320	0	1	0
Lane Group Flow (vph)	0	66	1	238	241	483	11	468	344	328	445	0
Confl. Peds. (#/hr)			25						25			25
Turn Type	Split		Perm	Split		pm+ov	Prot		Perm	Prot		
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases			7			8			2			
Actuated Green, G (s)		3.2	3.2	15.7	15.7	34.2	0.8	36.6	36.6	18.5	54.3	
Effective Green, g (s)		3.2	3.2	15.7	15.7	34.2	0.8	36.6	36.6	18.5	54.3	
Actuated g/C Ratio		0.04	0.04	0.17	0.17	0.38	0.01	0.41	0.41	0.21	0.60	
Clearance Time (s)		4.0	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	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		65	44	293	294	672	16	1439	625	364	2131	
v/s Ratio Prot		c0.04		0.14	c0.14	0.15	0.01	0.13		c0.19	0.13	
v/s Ratio Perm			0.00			0.16			c0.22			
v/c Ratio		1.02	0.01	0.81	0.82	0.72	0.69	0.33	0.55	0.90	0.21	
Uniform Delay, d1		43.4	41.9	35.7	35.8	23.8	44.5	18.3	20.4	34.9	8.1	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.89	
Incremental Delay, d2		116.0	0.1	15.6	16.2	3.7	80.1	0.6	3.5	23.0	0.2	
Delay (s)		159.4	42.0	51.3	51.9	27.5	124.6	18.9	23.9	52.9	7.4	
Level of Service		F	D	D	D	C	F	B	C	D	A	
Approach Delay (s)		136.5			38.1			22.8			26.7	
Approach LOS		F			D			C			C	

Intersection Summary			
HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00	1.00	0.95	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.98		1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1854	1583	1681	1625		3433	3539	1510	1770	3503	
Flt Permitted		1.00	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1854	1583	1681	1625		3433	3539	1510	1770	3503	
Volume (vph)	10	101	229	226	54	53	379	260	284	64	192	11
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)	11	106	241	238	57	56	399	274	299	67	202	12
RTOR Reduction (vph)	0	0	211	0	21	0	0	0	160	0	4	0
Lane Group Flow (vph)	0	117	30	176	154	0	399	274	139	67	210	0
Confl. Peds. (#/hr)	25					25			25			25
Turn Type	Split		Perm	Split			Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		11.3	11.3	14.5	14.5		14.2	41.8	41.8	6.4	34.0	
Effective Green, g (s)		11.3	11.3	14.5	14.5		14.2	41.8	41.8	6.4	34.0	
Actuated g/C Ratio		0.13	0.13	0.16	0.16		0.16	0.46	0.46	0.07	0.38	
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	3.0	3.0	3.0	5.0	
Lane Grp Cap (vph)		233	199	271	262		542	1644	701	126	1323	
v/s Ratio Prot		c0.06		c0.10	0.09		c0.12	0.08		c0.04	0.06	
v/s Ratio Perm			0.02						c0.09			
v/c Ratio		0.50	0.15	0.65	0.59		0.74	0.17	0.20	0.53	0.16	
Uniform Delay, d1		36.7	35.1	35.4	35.0		36.1	14.0	14.2	40.4	18.5	
Progression Factor		1.00	1.00	1.00	1.00		0.85	0.83	1.07	1.00	1.00	
Incremental Delay, d2		1.7	0.4	5.3	3.4		4.3	0.2	0.5	4.3	0.3	
Delay (s)		38.4	35.4	40.7	38.3		34.8	11.8	15.7	44.6	18.8	
Level of Service		D	D	D	D		C	B	B	D	B	
Approach Delay (s)		36.4			39.5			22.4			24.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	28.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
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	4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.92		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85		1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1746		1770	1863	1460		1851	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1746		1770	1863	1460		1851	
Volume (vph)	26	162	211	241	17	12	254	306	381	20	503	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)	27	171	222	254	18	13	267	322	401	21	529	19
RTOR Reduction (vph)	0	0	78	0	10	0	0	0	316	0	1	0
Lane Group Flow (vph)	27	171	144	254	21	0	267	322	85	0	568	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Split		Perm	Split		
Protected Phases	5	2	3	1	6		3	3		4	4	
Permitted Phases			2						3			
Actuated Green, G (s)	3.0	10.8	29.4	14.0	21.8		18.6	18.6	18.6		28.1	
Effective Green, g (s)	3.0	10.8	29.4	14.0	21.8		18.6	18.6	18.6		28.1	
Actuated g/C Ratio	0.03	0.12	0.34	0.16	0.25		0.21	0.21	0.21		0.32	
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	3.5	3.0	3.0	3.5		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	61	230	604	283	435		376	396	310		594	
v/s Ratio Prot	0.02	c0.09	0.05	c0.14	0.01		0.15	c0.17			c0.31	
v/s Ratio Perm			0.04						0.06			
v/c Ratio	0.44	0.74	0.24	0.90	0.05		0.71	0.81	0.27		0.96	
Uniform Delay, d1	41.4	37.0	21.0	36.0	25.0		31.9	32.8	28.8		29.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	5.1	12.6	0.2	28.4	0.1		6.2	12.0	0.5		26.1	
Delay (s)	46.5	49.6	21.2	64.5	25.0		38.2	44.8	29.3		55.1	
Level of Service	D	D	C	E	C		D	D	C		E	
Approach Delay (s)		34.4			60.2			36.7			55.1	
Approach LOS		C			E			D			E	

Intersection Summary			
HCM Average Control Delay	43.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	87.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	131	18	35	227	293	64
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	138	19	37	239	308	67

Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total (vph)	138	19	276	308	67
Volume Left (vph)	138	0	37	0	0
Volume Right (vph)	0	19	0	0	67
Hadj (s)	0.23	-0.57	0.06	0.03	-0.57
Departure Headway (s)	5.5	3.2	4.7	4.7	3.2
Degree Utilization, x	0.21	0.02	0.36	0.40	0.06
Capacity (veh/h)	589	1121	732	741	1121
Control Delay (s)	10.0	6.3	10.4	10.8	6.4
Approach Delay (s)	9.5		10.4	10.0	
Approach LOS	A		B	A	

Intersection Summary			
Delay	10.0		
HCM Level of Service	B		
Intersection Capacity Utilization	46.6%	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	2.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1809		1770	1863	1542	1770	1828	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1809		1770	1863	1542	1770	1828	
Volume (vph)	122	90	257	513	101	24	181	305	195	15	134	19
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)	128	95	271	540	106	25	191	321	205	16	141	20
RTOR Reduction (vph)	0	0	173	0	8	0	0	0	78	0	5	0
Lane Group Flow (vph)	128	95	98	540	123	0	191	321	127	16	156	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Prot		pm+ov	Prot		
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	8.8	13.0	26.2	28.7	32.9		13.2	23.6	52.3	2.4	12.8	
Effective Green, g (s)	8.8	13.5	26.7	28.7	33.4		13.2	23.6	52.3	4.4	12.8	
Actuated g/C Ratio	0.10	0.16	0.32	0.34	0.40		0.16	0.28	0.62	0.05	0.15	
Clearance Time (s)	4.0	4.5	4.0	4.0	4.5		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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	185	299	577	603	718		277	522	1031	92	278	
v/s Ratio Prot	0.07	c0.05	0.03	c0.31	0.07		c0.11	c0.17	0.04	0.01	0.09	
v/s Ratio Perm			0.04						0.04			
v/c Ratio	0.69	0.32	0.17	0.90	0.17		0.69	0.61	0.12	0.17	0.56	
Uniform Delay, d1	36.4	31.3	20.7	26.3	16.4		33.6	26.3	6.5	38.2	33.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.6	0.6	0.1	15.8	0.1		7.0	2.2	0.1	0.9	2.6	
Delay (s)	47.0	31.9	20.9	42.1	16.6		40.5	28.5	6.6	39.1	35.7	
Level of Service	D	C	C	D	B		D	C	A	D	D	
Approach Delay (s)		29.8			37.1			25.4			36.0	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	2.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1746		1770	1863	1510	1770	1853	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1746		1770	1863	1510	1770	1853	
Volume (vph)	26	162	211	241	17	12	254	306	381	20	503	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)	27	171	222	254	18	13	267	322	401	21	529	19
RTOR Reduction (vph)	0	0	102	0	9	0	0	0	135	0	1	0
Lane Group Flow (vph)	27	171	120	254	22	0	267	322	266	21	547	0
Confl. Peds. (#/hr)									25			
Turn Type	Prot		pm+ov	Prot			Prot		pm+ov	Prot		
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	3.8	13.6	30.7	16.8	26.6		17.1	46.4	63.2	2.6	31.9	
Effective Green, g (s)	3.8	13.6	30.7	16.8	26.6		17.1	46.4	63.2	4.6	31.9	
Actuated g/C Ratio	0.04	0.14	0.32	0.18	0.28		0.18	0.49	0.66	0.05	0.33	
Clearance Time (s)	4.0	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		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	71	266	576	312	487		317	906	1064	85	620	
v/s Ratio Prot	0.02	c0.09	0.04	c0.14	0.01		c0.15	0.17	0.04	0.01	c0.30	
v/s Ratio Perm			0.04						0.13			
v/c Ratio	0.38	0.64	0.21	0.81	0.04		0.84	0.36	0.25	0.25	0.88	
Uniform Delay, d1	44.7	38.6	23.5	37.8	25.1		37.8	15.2	6.5	43.7	30.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.4	5.2	0.2	14.9	0.0		18.0	0.2	0.1	1.5	13.9	
Delay (s)	48.0	43.8	23.7	52.7	25.2		55.8	15.5	6.6	45.3	43.8	
Level of Service	D	D	C	D	C		E	B	A	D	D	
Approach Delay (s)		33.5			49.7			22.8			43.9	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	33.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	95.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX C:
FREEWAY LEVEL OF SERVICE CALCULATIONS

HCM 2000 Jurisdiction Caltrans
Diverge Ramp Junctions Analysis Year 2009
Capacity Analysis Without Mid-Town Analyst GR

General Information			*Freeway Data*									*Off-Ramp Volume Adjustment*										
Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
SR 17 NB	Mount Herman Rd	Existing AM	2	65.0	2,400	No	35.0	952	180	0	180	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	1,012
SR 17 NB	Mount Herman Rd	Existing PM	2	65.0	2,265	No	35.0	774	180	0	180	0.92	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	850
SR 17 NB	Mount Herman Rd	Existing Sat	2	65.0	2,174	No	35.0	818	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	898
SR 17 NB	Granite Creek Rd	Existing AM	2	65.0	2,273	No	25.0	517	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	580
SR 17 NB	Granite Creek Rd	Existing PM	2	65.0	1,777	No	25.0	373	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	419
SR 17 NB	Santas Village Rd	Existing AM	2	65.0	2,049	No	20.0	24	250	0	250	0.69	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	35
SR 17 NB	Santas Village Rd	Existing PM	2	65.0	1,649	No	20.0	7	250	0	250	0.56	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	13
SR 17 SB	Mount Herman Rd	Existing AM	2	65.0	1,533	No	25.0	268	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	285
SR 17 SB	Mount Herman Rd	Existing PM	2	65.0	1,820	No	25.0	454	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	483
SR 17 SB	Mount Herman Rd	Existing Sat	2	65.0	1,912	No	25.0	341	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	363
SR 17 SB	Granite Creek Rd	Existing AM	2	65.0	1,343	No	25.0	298	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	334
SR 17 SB	Granite Creek Rd	Existing PM	2	65.0	1,703	No	25.0	227	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	255
SR 17 NB	Mount Herman Rd	Existing+P AM	2	65.0	2,431	No	35.0	983	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,045
SR 17 NB	Mount Herman Rd	Existing+P PM	2	65.0	2,345	No	35.0	876	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	962
SR 17 NB	Mount Herman Rd	Existing+P Sat	2	65.0	2,295	No	35.0	975	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,070
SR 17 NB	Granite Creek Rd	Existing+AP AM	2	65.0	2,310	No	25.0	517	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	580
SR 17 NB	Granite Creek Rd	Existing+AP PM	2	65.0	1,875	No	25.0	373	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	419
SR 17 NB	Santas Village Rd	Existing+AP AM	2	65.0	2,086	No	20.0	61	250	0	250	0.69	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	89
SR 17 NB	Santas Village Rd	Existing+AP PM	2	65.0	1,742	No	20.0	138	250	0	250	0.56	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	249
SR 17 SB	Mount Herman Rd	Existing+P AM	2	65.0	1,543	No	25.0	278	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	296
SR 17 SB	Mount Herman Rd	Existing+P PM	2	65.0	1,847	No	25.0	520	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	553
SR 17 SB	Mount Herman Rd	Existing+P Sat	2	65.0	1,952	No	25.0	441	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	469
SR 17 SB	Granite Creek Rd	Existing+AP AM	2	65.0	1,353	No	25.0	308	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	346
SR 17 SB	Granite Creek Rd	Existing+AP PM	2	65.0	1,730	No	25.0	286	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	321
SR 17 NB	Mount Herman Rd	Cuml AM	2	65.0	2,539	No	35.0	1,031	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,096
SR 17 NB	Mount Herman Rd	Cuml PM	2	65.0	2,478	No	35.0	936	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,028
SR 17 NB	Mount Herman Rd	Cuml Sat	2	65.0	2,504	No	35.0	1,093	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,200
SR 17 NB	Granite Creek Rd	Cuml AM	2	65.0	2,375	No	25.0	538	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	604
SR 17 NB	Granite Creek Rd	Cuml PM	2	65.0	1,898	No	25.0	424	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	476
SR 17 NB	Santas Village Rd	Cuml AM	2	65.0	2,149	No	20.0	77	250	0	250	0.69	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	113
SR 17 NB	Santas Village Rd	Cuml PM	2	65.0	1,741	No	20.0	18	250	0	250	0.56	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	32
SR 17 SB	Mount Herman Rd	Cuml AM	2	65.0	1,606	No	25.0	303	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	322
SR 17 SB	Mount Herman Rd	Cuml PM	2	65.0	1,971	No	25.0	528	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	561
SR 17 SB	Mount Herman Rd	Cuml Sat	2	65.0	2,065	No	25.0	446	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	474
SR 17 SB	Granite Creek Rd	Cuml AM	2	65.0	1,404	No	25.0	332	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	373
SR 17 SB	Granite Creek Rd	Cuml PM	2	65.0	1,789	No	25.0	257	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	288
SR 17 NB	Mount Herman Rd	Cuml+P AM	2	65.0	2,570	No	35.0	1,062	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,129
SR 17 NB	Mount Herman Rd	Cuml+P PM	2	65.0	2,558	No	35.0	1,038	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,140
SR 17 NB	Mount Herman Rd	Cuml+P Sat	2	65.0	2,625	No	35.0	1,250	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,372
SR 17 NB	Granite Creek Rd	Cuml+AP AM	2	65.0	2,412	No	25.0	538	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	604
SR 17 NB	Granite Creek Rd	Cuml+AP PM	2	65.0	1,996	No	25.0	424	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	476
SR 17 NB	Santas Village Rd	Cuml+AP AM	2	65.0	2,186	No	20.0	114	250	0	250	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	128
SR 17 NB	Santas Village Rd	Cuml+AP PM	2	65.0	1,834	No	20.0	149	250	0	250	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	167
SR 17 SB	Mount Herman Rd	Cuml+P AM	2	65.0	1,616	No	25.0	313	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	333
SR 17 SB	Mount Herman Rd	Cuml+P PM	2	65.0	1,998	No	25.0	594	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	632
SR 17 SB	Mount Herman Rd	Cuml+P Sat	2	65.0	2,105	No	25.0	546	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	580
SR 17 SB	Granite Creek Rd	Cuml+AP AM	2	65.0	1,414	No	25.0	342	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	384
SR 17 SB	Granite Creek Rd	Cuml+AP PM	2	65.0	1,816	No	25.0	316	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	355

HCM 2000
Diverge Ramp Junctions
Capacity Analysis Without Mid-Town

General Information		*Adjacent Upstream Ramp Data*														*Adjacent Downstream Ramp Data*													
Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Exists?	Distance	Volume (vph)	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													

HCM 2000
Diverge Ramp Junctions
Capacity Analysis Without Mid-Town

General Information		*v_{12} Estimation*				*Capacity Checks*															*Results*		*Speed Estimation*			
Freeway/ Direction	Off-ramp	L_{EQ} 25-13	L_{EQ} 25-14	P_{FD}	v_{12} (pcph)	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
SR 17 NB	Mount Herman Rd			1.000	2,635	2,635	4,800	No	0	No	No	2,635	4,400	No	1,623	4,800	No	1,012	2,000	No	**25.3**	**C**	0.519	53.1	0.0	53.1
SR 17 NB	Mount Herman Rd			1.000	2,487	2,487	4,800	No	0	No	No	2,487	4,400	No	1,637	4,800	No	850	2,000	No	**24.0**	**C**	0.504	53.4	0.0	53.4
SR 17 NB	Mount Herman Rd			1.000	2,387	2,387	4,800	No	0	No	No	2,387	4,400	No	1,489	4,800	No	898	2,000	No	**23.2**	**C**	0.509	53.3	0.0	53.3
SR 17 NB	Granite Creek Rd			1.000	2,495	2,495	4,800	No	0	No	No	2,495	4,400	No	1,915	4,800	No	580	1,900	No	**24.1**	**C**	0.610	51.0	0.0	51.0
SR 17 NB	Granite Creek Rd			1.000	1,951	1,951	4,800	No	0	No	No	1,951	4,400	No	1,532	4,800	No	419	1,900	No	**19.4**	**B**	0.596	51.3	0.0	51.3
SR 17 NB	Santas Village Rd			1.000	2,249	2,249	4,800	No	0	No	No	2,249	4,400	No	2,214	4,800	No	35	1,900	No	**21.3**	**C**	0.626	50.6	0.0	50.6
SR 17 NB	Santas Village Rd			1.000	1,810	1,810	4,800	No	0	No	No	1,810	4,400	No	1,798	4,800	No	13	1,900	No	**17.6**	**B**	0.624	50.6	0.0	50.6
SR 17 SB	Mount Herman Rd			1.000	1,683	1,683	4,800	No	0	No	No	1,683	4,400	No	1,398	4,800	No	285	1,900	No	**17.1**	**B**	0.584	51.6	0.0	51.6
SR 17 SB	Mount Herman Rd			1.000	1,998	1,998	4,800	No	0	No	No	1,998	4,400	No	1,515	4,800	No	483	1,900	No	**19.8**	**B**	0.601	51.2	0.0	51.2
SR 17 SB	Mount Herman Rd			1.000	2,099	2,099	4,800	No	0	No	No	2,099	4,400	No	1,737	4,800	No	363	1,900	No	**20.7**	**C**	0.591	51.4	0.0	51.4
SR 17 SB	Granite Creek Rd			1.000	1,474	1,474	4,800	No	0	No	No	1,474	4,400	No	1,140	4,800	No	334	1,900	No	**15.3**	**B**	0.588	51.5	0.0	51.5
SR 17 SB	Granite Creek Rd			1.000	1,870	1,870	4,800	No	0	No	No	1,870	4,400	No	1,615	4,800	No	255	1,900	No	**18.7**	**B**	0.581	51.6	0.0	51.6
SR 17 NB	Mount Herman Rd			1.000	2,669	2,669	4,800	No	0	No	No	2,669	4,400	No	1,624	4,800	No	1,045	2,000	No	**25.6**	**C**	0.522	53.0	0.0	53.0
SR 17 NB	Mount Herman Rd			1.000	2,574	2,574	4,800	No	0	No	No	2,574	4,400	No	1,613	4,800	No	962	2,000	No	**24.8**	**C**	0.515	53.2	0.0	53.2
SR 17 NB	Mount Herman Rd			1.000	2,520	2,520	4,800	No	0	No	No	2,520	4,400	No	1,449	4,800	No	1,070	2,000	No	**24.3**	**C**	0.524	52.9	0.0	52.9
SR 17 NB	Granite Creek Rd			1.000	2,536	2,536	4,800	No	0	No	No	2,536	4,400	No	1,956	4,800	No	580	1,900	No	**24.4**	**C**	0.610	51.0	0.0	51.0
SR 17 NB	Granite Creek Rd			1.000	2,058	2,058	4,800	No	0	No	No	2,058	4,400	No	1,640	4,800	No	419	1,900	No	**20.3**	**C**	0.596	51.3	0.0	51.3
SR 17 NB	Santas Village Rd			1.000	2,290	2,290	4,800	No	0	No	No	2,290	4,400	No	2,201	4,800	No	89	1,900	No	**21.7**	**C**	0.631	50.5	0.0	50.5
SR 17 NB	Santas Village Rd			1.000	1,912	1,912	4,800	No	0	No	No	1,912	4,400	No	1,664	4,800	No	249	1,900	No	**18.4**	**B**	0.645	50.2	0.0	50.2
SR 17 SB	Mount Herman Rd			1.000	1,694	1,694	4,800	No	0	No	No	1,694	4,400	No	1,398	4,800	No	296	1,900	No	**17.2**	**B**	0.585	51.6	0.0	51.6
SR 17 SB	Mount Herman Rd			1.000	2,028	2,028	4,800	No	0	No	No	2,028	4,400	No	1,475	4,800	No	553	1,900	No	**20.1**	**C**	0.608	51.0	0.0	51.0
SR 17 SB	Mount Herman Rd			1.000	2,143	2,143	4,800	No	0	No	No	2,143	4,400	No	1,674	4,800	No	469	1,900	No	**21.1**	**C**	0.600	51.2	0.0	51.2
SR 17 SB	Granite Creek Rd			1.000	1,485	1,485	4,800	No	0	No	No	1,485	4,400	No	1,140	4,800	No	346	1,900	No	**15.4**	**B**	0.589	51.5	0.0	51.5
SR 17 SB	Granite Creek Rd			1.000	1,899	1,899	4,800	No	0	No	No	1,899	4,400	No	1,578	4,800	No	321	1,900	No	**19.0**	**B**	0.587	51.5	0.0	51.5
SR 17 NB	Mount Herman Rd			1.000	2,787	2,787	4,800	No	0	No	No	2,787	4,400	No	1,691	4,800	No	1,096	2,000	No	**26.6**	**C**	0.527	52.9	0.0	52.9
SR 17 NB	Mount Herman Rd			1.000	2,720	2,720	4,800	No	0	No	No	2,720	4,400	No	1,693	4,800	No	1,028	2,000	No	**26.0**	**C**	0.520	53.0	0.0	53.0
SR 17 NB	Mount Herman Rd			1.000	2,749	2,749	4,800	No	0	No	No	2,749	4,400	No	1,549	4,800	No	1,200	2,000	No	**26.3**	**C**	0.536	52.7	0.0	52.7
SR 17 NB	Granite Creek Rd			1.000	2,607	2,607	4,800	No	0	No	No	2,607	4,400	No	2,004	4,800	No	604	1,900	No	**25.1**	**C**	0.612	50.9	0.0	50.9
SR 17 NB	Granite Creek Rd			1.000	2,084	2,084	4,800	No	0	No	No	2,084	4,400	No	1,608	4,800	No	476	1,900	No	**20.6**	**C**	0.601	51.2	0.0	51.2
SR 17 NB	Santas Village Rd			1.000	2,359	2,359	4,800	No	0	No	No	2,359	4,400	No	2,247	4,800	No	113	1,900	No	**22.3**	**C**	0.633	50.4	0.0	50.4
SR 17 NB	Santas Village Rd			1.000	1,911	1,911	4,800	No	0	No	No	1,911	4,400	No	1,879	4,800	No	32	1,900	No	**18.4**	**B**	0.626	50.6	0.0	50.6
SR 17 SB	Mount Herman Rd			1.000	1,763	1,763	4,800	No	0	No	No	1,763	4,400	No	1,441	4,800	No	322	1,900	No	**17.8**	**B**	0.587	51.5	0.0	51.5
SR 17 SB	Mount Herman Rd			1.000	2,164	2,164	4,800	No	0	No	No	2,164	4,400	No	1,602	4,800	No	561	1,900	No	**21.2**	**C**	0.609	51.0	0.0	51.0
SR 17 SB	Mount Herman Rd			1.000	2,267	2,267	4,800	No	0	No	No	2,267	4,400	No	1,793	4,800	No	474	1,900	No	**22.1**	**C**	0.601	51.2	0.0	51.2
SR 17 SB	Granite Creek Rd			1.000	1,541	1,541	4,800	No	0	No	No	1,541	4,400	No	1,169	4,800	No	373	1,900	No	**15.9**	**B**	0.592	51.4	0.0	51.4
SR 17 SB	Granite Creek Rd			1.000	1,964	1,964	4,800	No	0	No	No	1,964	4,400	No	1,676	4,800	No	288	1,900	No	**19.5**	**B**	0.584	51.6	0.0	51.6
SR 17 NB	Mount Herman Rd			1.000	2,821	2,821	4,800	No	0	No	No	2,821	4,400	No	1,692	4,800	No	1,129	2,000	No	**26.9**	**C**	0.530	52.8	0.0	52.8
SR 17 NB	Mount Herman Rd			1.000	2,808	2,808	4,800	No	0	No	No	2,808	4,400	No	1,669	4,800	No	1,140	2,000	No	**26.8**	**C**	0.531	52.8	0.0	52.8
SR 17 NB	Mount Herman Rd			1.000	2,882	2,882	4,800	No	0	No	No	2,882	4,400	No	1,510	4,800	No	1,372	2,000	No	**27.4**	**C**	0.552	52.3	0.0	52.3
SR 17 NB	Granite Creek Rd			1.000	2,648	2,648	4,800	No	0	No	No	2,648	4,400	No	2,044	4,800	No	604	1,900	No	**25.4**	**C**	0.612	50.9	0.0	50.9
SR 17 NB	Granite Creek Rd			1.000	2,191	2,191	4,800	No	0	No	No	2,191	4,400	No	1,715	4,800	No	476	1,900	No	**21.5**	**C**	0.601	51.2	0.0	51.2
SR 17 NB	Santas Village Rd			1.000	2,400	2,400	4,800	No	0	No	No	2,400	4,400	No	2,272	4,800	No	128	1,900	No	**22.6**	**C**	0.635	50.4	0.0	50.4
SR 17 NB	Santas Village Rd			1.000	2,013	2,013	4,800	No	0	No	No	2,013	4,400	No	1,846	4,800	No	167	1,900	No	**19.3**	**B**	0.638	50.3	0.0	50.3
SR 17 SB	Mount Herman Rd			1.000	1,774	1,774	4,800	No	0	No	No	1,774	4,400	No	1,441	4,800	No	333	1,900	No	**17.9**	**B**	0.588	51.5	0.0	51.5
SR 17 SB	Mount Herman Rd			1.000	2,193	2,193	4,800	No	0	No	No	2,193	4,400	No	1,562	4,800	No	632	1,900	No	**21.5**	**C**	0.615	50.9	0.0	50.9
SR 17 SB	Mount Herman Rd			1.000	2,311	2,311	4,800	No	0	No	No	2,311	4,400	No	1,730	4,800	No	580	1,900	No	**22.5**	**C**	0.610	51.0	0.0	51.0
SR 17 SB	Granite Creek Rd			1.000	1,552	1,552	4,800	No	0	No	No	1,552	4,400	No	1,169	4,800	No	384	1,900	No	**16.0**	**B**	0.593	51.4	0.0	51.4
SR 17 SB	Granite Creek Rd			1.000	1,994	1,994	4,800	No	0	No	No	1,994	4,400	No	1,639	4,800	No	355	1,900	No	**19.8**	**B**	0.590	51.4	0.0	51.4

HCM 2000
Merge Ramp Junctions
Capacity Analysis Without Mid-Town

Jurisdiction Caltrans
Analysis Year 2009
Analyst GR

General Information			*Freeway Data*									*On-Ramp Volume Adjustment*										
Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
SR 17 NB	Mount Herman Rd	Existing AM	2	65.0	1,448	No	25.0	824	450	0	450	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	876
SR 17 NB	Mount Herman Rd	Existing PM	2	65.0	1,492	No	25.0	285	450	0	450	0.92	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	313
SR 17 NB	Mount Herman Rd	Existing Sat	2	65.0	1,356	No	25.0	331	450	0	450	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	363
SR 17 NB	Granite Creek Rd	Existing AM	2	65.0	1,755	No	25.0	294	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	330
SR 17 NB	Granite Creek Rd	Existing PM	2	65.0	1,403	No	25.0	246	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	276
SR 17 NB	Santas Village Rd	Existing AM	2	65.0	1,736	No	20.0	5	500	0	500	0.69	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	7
SR 17 NB	Santas Village Rd	Existing PM	2	65.0	1,409	No	20.0	13	500	0	500	0.56	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	23
SR 17 SB	Mount Herman Rd	Existing AM	2	65.0	1,265	No	35.0	995	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	1,058
SR 17 SB	Mount Herman Rd	Existing PM	2	65.0	1,366	No	35.0	644	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	685
SR 17 SB	Mount Herman Rd	Existing Sat	2	65.0	1,571	No	35.0	811	340	0	340	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	862
SR 17 SB	Granite Creek Rd	Existing AM	2	65.0	1,045	No	25.0	487	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	547
SR 17 SB	Granite Creek Rd	Existing PM	2	65.0	1,475	No	25.0	344	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	386
SR 17 NB	Mount Herman Rd	Existing+P AM	2	65.0	1,448	No	25.0	829	450	0	450	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	881
SR 17 NB	Mount Herman Rd	Existing+P PM	2	65.0	1,470	No	25.0	338	450	0	450	0.92	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	371
SR 17 NB	Mount Herman Rd	Existing+P Sat	2	65.0	1,320	No	25.0	413	450	0	450	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	453
SR 17 NB	Granite Creek Rd	Existing+AP AM	2	65.0	1,792	No	25.0	294	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	330
SR 17 NB	Granite Creek Rd	Existing+AP PM	2	65.0	1,501	No	25.0	246	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	276
SR 17 NB	Santas Village Rd	Existing+AP AM	2	65.0	1,736	No	20.0	10	500	0	500	0.69	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	15
SR 17 NB	Santas Village Rd	Existing+AP PM	2	65.0	1,371	No	20.0	77	500	0	500	0.56	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	139
SR 17 SB	Mount Herman Rd	Existing+P AM	2	65.0	1,265	No	35.0	1,010	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	1,074
SR 17 SB	Mount Herman Rd	Existing+P PM	2	65.0	1,327	No	35.0	766	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	814
SR 17 SB	Mount Herman Rd	Existing+P Sat	2	65.0	1,511	No	35.0	987	340	0	340	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,049
SR 17 SB	Granite Creek Rd	Existing+AP AM	2	65.0	1,045	No	25.0	505	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	567
SR 17 SB	Granite Creek Rd	Existing+AP PM	2	65.0	1,443	No	25.0	474	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	532
SR 17 NB	Mount Herman Rd	Cuml AM	2	65.0	1,508	No	25.0	866	450	0	450	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	921
SR 17 NB	Mount Herman Rd	Cuml PM	2	65.0	1,543	No	25.0	355	450	0	450	0.92	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	390
SR 17 NB	Mount Herman Rd	Cuml Sat	2	65.0	1,411	No	25.0	415	450	0	450	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	456
SR 17 NB	Granite Creek Rd	Cuml AM	2	65.0	1,836	No	25.0	313	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	351
SR 17 NB	Granite Creek Rd	Cuml PM	2	65.0	1,473	No	25.0	269	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	302
SR 17 NB	Santas Village Rd	Cuml AM	2	65.0	1,783	No	20.0	8	500	0	500	0.69	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	12
SR 17 NB	Santas Village Rd	Cuml PM	2	65.0	1,490	No	20.0	35	500	0	500	0.56	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	63
SR 17 SB	Mount Herman Rd	Cuml AM	2	65.0	1,302	No	35.0	1,074	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	1,142
SR 17 SB	Mount Herman Rd	Cuml PM	2	65.0	1,444	No	35.0	817	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	869
SR 17 SB	Mount Herman Rd	Cuml Sat	2	65.0	1,619	No	35.0	1,022	340	0	340	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,087
SR 17 SB	Granite Creek Rd	Cuml AM	2	65.0	1,072	No	25.0	533	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	598
SR 17 SB	Granite Creek Rd	Cuml PM	2	65.0	1,531	No	25.0	439	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	493
SR 17 NB	Mount Herman Rd	Cuml+P AM	2	65.0	1,508	No	25.0	871	450	0	450	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	926
SR 17 NB	Mount Herman Rd	Cuml+P PM	2	65.0	1,521	No	25.0	408	450	0	450	0.92	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	448
SR 17 NB	Mount Herman Rd	Cuml+P Sat	2	65.0	1,375	No	25.0	497	450	0	450	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	546
SR 17 NB	Granite Creek Rd	Cuml+AP AM	2	65.0	1,873	No	25.0	313	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	351
SR 17 NB	Granite Creek Rd	Cuml+AP PM	2	65.0	1,571	No	25.0	269	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	302
SR 17 NB	Santas Village Rd	Cuml+AP AM	2	65.0	1,783	No	20.0	13	500	0	500	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	15
SR 17 NB	Santas Village Rd	Cuml+AP PM	2	65.0	1,452	No	20.0	99	500	0	500	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	111
SR 17 SB	Mount Herman Rd	Cuml+P AM	2	65.0	1,302	No	35.0	1,089	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	1,158
SR 17 SB	Mount Herman Rd	Cuml+P PM	2	65.0	1,405	No	35.0	939	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	998
SR 17 SB	Mount Herman Rd	Cuml+P Sat	2	65.0	1,559	No	35.0	1,198	340	0	340	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,274
SR 17 SB	Granite Creek Rd	Cuml+AP AM	2	65.0	1,072	No	25.0	551	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	618
SR 17 SB	Granite Creek Rd	Cuml+AP PM	2	65.0	1,499	No	25.0	569	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	639

HCM 2000
Merge Ramp Junctions
Capacity Analysis Without Mid-Town

General Information		*Adjacent Upstream Ramp Data*														*Adjacent Downstream Ramp Data*													
Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Exists?	Distance	Volume (vph)	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
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SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
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SR 17 SB	Mount Herman Rd	No														No													
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SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													

HCM 2000
Merge Ramp Junctions
Capacity Analysis Without Mid-Town

General Information		*v_{12} Estimation*							*Capacity Checks*																*Results*	
Freeway/		L_{EQ}		P_{FM} Equations				v_{12}	v_{Fi}	Max v_{Fi}		v_{FO}	Max v_{FO}		v_3, v_{av34}	v_3, v_{av34}	v_3, v_{av34}	v_{12a}	v_{R12a}	Max v_{R12a}		v_R	Max v_R		Density, D	Level of
Direction	On-ramp	25-2	25-3	1	2	3	P_{FM}	(pcph)	(pcph)	(pcph)	LOS F?	(pcph)	(pcph)	LOS F?	(pcphpl)	> 2,700?	>1.5*v_{12}/2?	(pcph)	(pcph)	(pcph)	LOS F?	(pcph)	(pcph)	LOS F?	(pcplpm)	Service
SR 17 NB	Mount Herman Rd			0.590			1.000	1,590	1,590	4,800	No	2,466	4,800	No	0	No	No	1,590	2,466	4,600	No	876	1,900	No	**21.5**	**C**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,638	1,638	4,800	No	1,951	4,800	No	0	No	No	1,638	1,951	4,600	No	313	1,900	No	**17.7**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,489	1,489	4,800	No	1,852	4,800	No	0	No	No	1,489	1,852	4,600	No	363	1,900	No	**16.9**	**B**
SR 17 NB	Granite Creek Rd			0.587			1.000	1,927	1,927	4,800	No	2,257	4,800	No	0	No	No	1,927	2,257	4,600	No	330	1,900	No	**20.8**	**C**
SR 17 NB	Granite Creek Rd			0.587			1.000	1,540	1,540	4,800	No	1,816	4,800	No	0	No	No	1,540	1,816	4,600	No	276	1,900	No	**17.4**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,906	1,906	4,800	No	1,913	4,800	No	0	No	No	1,906	1,913	4,600	No	7	1,900	No	**17.3**	**B**
SR 17 NB	Santas Village Rd						1.000	1,547	1,547	4,800	No	1,570	4,800	No	0	No	No	1,547	1,570	4,600	No	23	1,900	No	**14.6**	**B**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,389	1,389	4,800	No	2,447	4,800	No	0	No	No	1,389	2,447	4,600	No	1,058	2,000	No	**21.9**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,500	1,500	4,800	No	2,184	4,800	No	0	No	No	1,500	2,184	4,600	No	685	2,000	No	**20.1**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,725	1,725	4,800	No	2,587	4,800	No	0	No	No	1,725	2,587	4,600	No	862	2,000	No	**23.1**	**C**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,147	1,147	4,800	No	1,694	4,800	No	0	No	No	1,147	1,694	4,600	No	547	1,900	No	**14.0**	**B**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,619	1,619	4,800	No	2,005	4,800	No	0	No	No	1,619	2,005	4,600	No	386	1,900	No	**16.6**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,590	1,590	4,800	No	2,471	4,800	No	0	No	No	1,590	2,471	4,600	No	881	1,900	No	**21.5**	**C**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,614	1,614	4,800	No	1,985	4,800	No	0	No	No	1,614	1,985	4,600	No	371	1,900	No	**18.0**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,449	1,449	4,800	No	1,903	4,800	No	0	No	No	1,449	1,903	4,600	No	453	1,900	No	**17.3**	**B**
SR 17 NB	Granite Creek Rd			0.587			1.000	1,967	1,967	4,800	No	2,297	4,800	No	0	No	No	1,967	2,297	4,600	No	330	1,900	No	**21.1**	**C**
SR 17 NB	Granite Creek Rd			0.587			1.000	1,648	1,648	4,800	No	1,924	4,800	No	0	No	No	1,648	1,924	4,600	No	276	1,900	No	**18.2**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,906	1,906	4,800	No	1,920	4,800	No	0	No	No	1,906	1,920	4,600	No	15	1,900	No	**17.3**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,505	1,505	4,800	No	1,644	4,800	No	0	No	No	1,505	1,644	4,600	No	139	1,900	No	**15.1**	**B**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,389	1,389	4,800	No	2,463	4,800	No	0	No	No	1,389	2,463	4,600	No	1,074	2,000	No	**22.1**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,457	1,457	4,800	No	2,271	4,800	No	0	No	No	1,457	2,271	4,600	No	814	2,000	No	**20.7**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,659	1,659	4,800	No	2,708	4,800	No	0	No	No	1,659	2,708	4,600	No	1,049	2,000	No	**24.0**	**C**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,147	1,147	4,800	No	1,714	4,800	No	0	No	No	1,147	1,714	4,600	No	567	1,900	No	**14.2**	**B**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,584	1,584	4,800	No	2,116	4,800	No	0	No	No	1,584	2,116	4,600	No	532	1,900	No	**17.3**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,656	1,656	4,800	No	2,576	4,800	No	0	No	No	1,656	2,576	4,600	No	921	1,900	No	**22.3**	**C**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,694	1,694	4,800	No	2,084	4,800	No	0	No	No	1,694	2,084	4,600	No	390	1,900	No	**18.7**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,549	1,549	4,800	No	2,005	4,800	No	0	No	No	1,549	2,005	4,600	No	456	1,900	No	**18.1**	**B**
SR 17 NB	Granite Creek Rd			0.587			1.000	2,016	2,016	4,800	No	2,367	4,800	No	0	No	No	2,016	2,367	4,600	No	351	1,900	No	**21.6**	**C**
SR 17 NB	Granite Creek Rd			0.587			1.000	1,617	1,617	4,800	No	1,919	4,800	No	0	No	No	1,617	1,919	4,600	No	302	1,900	No	**18.2**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,957	1,957	4,800	No	1,969	4,800	No	0	No	No	1,957	1,969	4,600	No	12	1,900	No	**17.7**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,636	1,636	4,800	No	1,699	4,800	No	0	No	No	1,636	1,699	4,600	No	63	1,900	No	**15.6**	**B**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,429	1,429	4,800	No	2,571	4,800	No	0	No	No	1,429	2,571	4,600	No	1,142	2,000	No	**22.9**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,585	1,585	4,800	No	2,454	4,800	No	0	No	No	1,585	2,454	4,600	No	869	2,000	No	**22.1**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,777	1,777	4,800	No	2,864	4,800	No	0	No	No	1,777	2,864	4,600	No	1,087	2,000	No	**25.2**	**C**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,177	1,177	4,800	No	1,775	4,800	No	0	No	No	1,177	1,775	4,600	No	598	1,900	No	**14.7**	**B**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,681	1,681	4,800	No	2,173	4,800	No	0	No	No	1,681	2,173	4,600	No	493	1,900	No	**17.8**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,656	1,656	4,800	No	2,582	4,800	No	0	No	No	1,656	2,582	4,600	No	926	1,900	No	**22.4**	**C**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,670	1,670	4,800	No	2,118	4,800	No	0	No	No	1,670	2,118	4,600	No	448	1,900	No	**19.0**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,510	1,510	4,800	No	2,055	4,800	No	0	No	No	1,510	2,055	4,600	No	546	1,900	No	**18.4**	**B**
SR 17 NB	Granite Creek Rd			0.587			1.000	2,056	2,056	4,800	No	2,407	4,800	No	0	No	No	2,056	2,407	4,600	No	351	1,900	No	**22.0**	**C**
SR 17 NB	Granite Creek Rd			0.587			1.000	1,725	1,725	4,800	No	2,027	4,800	No	0	No	No	1,725	2,027	4,600	No	302	1,900	No	**19.0**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,957	1,957	4,800	No	1,972	4,800	No	0	No	No	1,957	1,972	4,600	No	15	1,900	No	**17.7**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,594	1,594	4,800	No	1,705	4,800	No	0	No	No	1,594	1,705	4,600	No	111	1,900	No	**15.6**	**B**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,429	1,429	4,800	No	2,587	4,800	No	0	No	No	1,429	2,587	4,600	No	1,158	2,000	No	**23.0**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,542	1,542	4,800	No	2,541	4,800	No	0	No	No	1,542	2,541	4,600	No	998	2,000	No	**22.7**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,712	1,712	4,800	No	2,985	4,800	No	0	No	No	1,712	2,985	4,600	No	1,274	2,000	No	**26.0**	**C**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,177	1,177	4,800	No	1,795	4,800	No	0	No	No	1,177	1,795	4,600	No	618	1,900	No	**14.8**	**B**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,646	1,646	4,800	No	2,284	4,800	No	0	No	No	1,646	2,284	4,600	No	639	1,900	No	**18.6**	**B**

HCM 2000
Merge Ramp Junctions
Capacity Analysis Without Mid-Town

General Information		*Speed Estimation*			
Freeway/ Direction	On-ramp	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
SR 17 NB	Mount Herman Rd	0.344	57.1	0.0	57.1
SR 17 NB	Mount Herman Rd	0.326	57.5	0.0	57.5
SR 17 NB	Mount Herman Rd	0.323	57.6	0.0	57.6
SR 17 NB	Granite Creek Rd	0.341	57.2	0.0	57.2
SR 17 NB	Granite Creek Rd	0.328	57.5	0.0	57.5
SR 17 NB	Santas Village Rd	0.327	57.5	0.0	57.5
SR 17 NB	Santas Village Rd	0.320	57.6	0.0	57.6
SR 17 SB	Mount Herman Rd	0.342	57.1	0.0	57.1
SR 17 SB	Mount Herman Rd	0.332	57.4	0.0	57.4
SR 17 SB	Mount Herman Rd	0.349	57.0	0.0	57.0
SR 17 SB	Granite Creek Rd	0.307	57.9	0.0	57.9
SR 17 SB	Granite Creek Rd	0.315	57.8	0.0	57.8
SR 17 NB	Mount Herman Rd	0.345	57.1	0.0	57.1
SR 17 NB	Mount Herman Rd	0.327	57.5	0.0	57.5
SR 17 NB	Mount Herman Rd	0.325	57.5	0.0	57.5
SR 17 NB	Granite Creek Rd	0.343	57.1	0.0	57.1
SR 17 NB	Granite Creek Rd	0.331	57.4	0.0	57.4
SR 17 NB	Santas Village Rd	0.328	57.5	0.0	57.5
SR 17 NB	Santas Village Rd	0.321	57.6	0.0	57.6
SR 17 SB	Mount Herman Rd	0.343	57.1	0.0	57.1
SR 17 SB	Mount Herman Rd	0.335	57.3	0.0	57.3
SR 17 SB	Mount Herman Rd	0.356	56.8	0.0	56.8
SR 17 SB	Granite Creek Rd	0.308	57.9	0.0	57.9
SR 17 SB	Granite Creek Rd	0.318	57.7	0.0	57.7
SR 17 NB	Mount Herman Rd	0.350	57.0	0.0	57.0
SR 17 NB	Mount Herman Rd	0.330	57.4	0.0	57.4
SR 17 NB	Mount Herman Rd	0.327	57.5	0.0	57.5
SR 17 NB	Granite Creek Rd	0.346	57.1	0.0	57.1
SR 17 NB	Granite Creek Rd	0.331	57.4	0.0	57.4
SR 17 NB	Santas Village Rd	0.329	57.4	0.0	57.4
SR 17 NB	Santas Village Rd	0.322	57.6	0.0	57.6
SR 17 SB	Mount Herman Rd	0.348	57.0	0.0	57.0
SR 17 SB	Mount Herman Rd	0.343	57.1	0.0	57.1
SR 17 SB	Mount Herman Rd	0.366	56.6	0.0	56.6
SR 17 SB	Granite Creek Rd	0.309	57.9	0.0	57.9
SR 17 SB	Granite Creek Rd	0.320	57.6	0.0	57.6
SR 17 NB	Mount Herman Rd	0.350	56.9	0.0	56.9
SR 17 NB	Mount Herman Rd	0.331	57.4	0.0	57.4
SR 17 NB	Mount Herman Rd	0.329	57.4	0.0	57.4
SR 17 NB	Granite Creek Rd	0.347	57.0	0.0	57.0
SR 17 NB	Granite Creek Rd	0.334	57.3	0.0	57.3
SR 17 NB	Santas Village Rd	0.329	57.4	0.0	57.4
SR 17 NB	Santas Village Rd	0.322	57.6	0.0	57.6
SR 17 SB	Mount Herman Rd	0.349	57.0	0.0	57.0
SR 17 SB	Mount Herman Rd	0.347	57.0	0.0	57.0
SR 17 SB	Mount Herman Rd	0.374	56.4	0.0	56.4
SR 17 SB	Granite Creek Rd	0.309	57.9	0.0	57.9
SR 17 SB	Granite Creek Rd	0.324	57.5	0.0	57.5

HCM 2000 Jurisdiction Caltrans
Diverge Ramp Junctions Analysis Year 2009
Capacity Analysis With Mid-Town Analyst GR

General Information			*Freeway Data*									*Off-Ramp Volume Adjustment*										
Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
SR 17 NB	Mount Herman Rd	Existing AM	2	65.0	2,400	No	35.0	952	180	0	180	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	1,012
SR 17 NB	Mount Herman Rd	Existing PM	2	65.0	2,265	No	35.0	774	180	0	180	0.92	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	850
SR 17 NB	Mount Herman Rd	Existing Sat	2	65.0	2,174	No	35.0	818	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	898
SR 17 NB	Granite Creek Rd	Existing AM	2	65.0	2,273	No	25.0	517	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	580
SR 17 NB	Granite Creek Rd	Existing PM	2	65.0	1,777	No	25.0	373	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	419
SR 17 NB	Santas Village Rd	Existing AM	2	65.0	2,049	No	20.0	24	250	0	250	0.69	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	35
SR 17 NB	Santas Village Rd	Existing PM	2	65.0	1,649	No	20.0	7	250	0	250	0.56	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	13
SR 17 SB	Mount Herman Rd	Existing AM	2	65.0	1,533	No	25.0	268	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	285
SR 17 SB	Mount Herman Rd	Existing PM	2	65.0	1,820	No	25.0	454	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	483
SR 17 SB	Mount Herman Rd	Existing Sat	2	65.0	1,912	No	25.0	341	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	363
SR 17 SB	Granite Creek Rd	Existing AM	2	65.0	1,343	No	25.0	298	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	334
SR 17 SB	Granite Creek Rd	Existing PM	2	65.0	1,703	No	25.0	227	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	255
SR 17 NB	Mount Herman Rd	Existing+P AM	2	65.0	2,431	No	35.0	983	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,045
SR 17 NB	Mount Herman Rd	Existing+P PM	2	65.0	2,345	No	35.0	876	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	962
SR 17 NB	Mount Herman Rd	Existing+P Sat	2	65.0	2,295	No	35.0	975	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,070
SR 17 NB	Granite Creek Rd	Existing+AP AM	2	65.0	2,310	No	25.0	517	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	580
SR 17 NB	Granite Creek Rd	Existing+AP PM	2	65.0	1,875	No	25.0	373	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	419
SR 17 NB	Santas Village Rd	Existing+AP AM	2	65.0	2,086	No	20.0	61	250	0	250	0.69	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	89
SR 17 NB	Santas Village Rd	Existing+AP PM	2	65.0	1,742	No	20.0	138	250	0	250	0.56	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	249
SR 17 SB	Mount Herman Rd	Existing+P AM	2	65.0	1,543	No	25.0	278	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	296
SR 17 SB	Mount Herman Rd	Existing+P PM	2	65.0	1,847	No	25.0	520	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	553
SR 17 SB	Mount Herman Rd	Existing+P Sat	2	65.0	1,952	No	25.0	441	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	469
SR 17 SB	Granite Creek Rd	Existing+AP AM	2	65.0	1,353	No	25.0	308	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	346
SR 17 SB	Granite Creek Rd	Existing+AP PM	2	65.0	1,730	No	25.0	286	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	321
SR 17 NB	Mount Herman Rd	Cuml AM	2	65.0	2,539	No	35.0	1,029	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,094
SR 17 NB	Mount Herman Rd	Cuml PM	2	65.0	2,478	No	35.0	932	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,023
SR 17 NB	Mount Herman Rd	Cuml Sat	2	65.0	2,504	No	35.0	1,089	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,196
SR 17 NB	Granite Creek Rd	Cuml AM	2	65.0	2,374	No	25.0	531	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	596
SR 17 NB	Granite Creek Rd	Cuml PM	2	65.0	1,892	No	25.0	409	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	459
SR 17 NB	Santas Village Rd	Cuml AM	2	65.0	2,149	No	20.0	77	250	0	250	0.69	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	113
SR 17 NB	Santas Village Rd	Cuml PM	2	65.0	1,741	No	20.0	18	250	0	250	0.56	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	32
SR 17 SB	Mount Herman Rd	Cuml AM	2	65.0	1,607	No	25.0	303	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	322
SR 17 SB	Mount Herman Rd	Cuml PM	2	65.0	1,967	No	25.0	521	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	554
SR 17 SB	Mount Herman Rd	Cuml Sat	2	65.0	2,060	No	25.0	438	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	466
SR 17 SB	Granite Creek Rd	Cuml AM	2	65.0	1,404	No	25.0	327	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	367
SR 17 SB	Granite Creek Rd	Cuml PM	2	65.0	1,789	No	25.0	248	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	278
SR 17 NB	Mount Herman Rd	Cuml+P AM	2	65.0	2,570	No	35.0	1,060	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,127
SR 17 NB	Mount Herman Rd	Cuml+P PM	2	65.0	2,558	No	35.0	1,034	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,135
SR 17 NB	Mount Herman Rd	Cuml+P Sat	2	65.0	2,625	No	35.0	1,246	180	0	180	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,368
SR 17 NB	Granite Creek Rd	Cuml+AP AM	2	65.0	2,411	No	25.0	531	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	596
SR 17 NB	Granite Creek Rd	Cuml+AP PM	2	65.0	1,990	No	25.0	409	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	459
SR 17 NB	Santas Village Rd	Cuml+AP AM	2	65.0	2,186	No	20.0	114	250	0	250	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	128
SR 17 NB	Santas Village Rd	Cuml+AP PM	2	65.0	1,834	No	20.0	149	250	0	250	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	167
SR 17 SB	Mount Herman Rd	Cuml+P AM	2	65.0	1,617	No	25.0	313	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	333
SR 17 SB	Mount Herman Rd	Cuml+P PM	2	65.0	1,994	No	25.0	587	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	624
SR 17 SB	Mount Herman Rd	Cuml+P Sat	2	65.0	2,100	No	25.0	538	180	0	180	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	572
SR 17 SB	Granite Creek Rd	Cuml+AP AM	2	65.0	1,414	No	25.0	337	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	378
SR 17 SB	Granite Creek Rd	Cuml+AP PM	2	65.0	1,816	No	25.0	307	180	0	180	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	345

HCM 2000
Diverge Ramp Junctions
Capacity Analysis With Mid-Town

General Information

Freeway/ Direction	Off-ramp	Adjacent Upstream Ramp Data: Exists?	Distance	Volume (vph)	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Adjacent Downstream Ramp Data: Exists?	Distance	Volume (vph)	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													

HCM 2000
Diverge Ramp Junctions
Capacity Analysis With Mid-Town

General Information		*v_{12} Estimation*				*Capacity Checks*															*Results*		*Speed Estimation*			
Freeway/ Direction	Off-ramp	L_{EQ} 25-13	L_{EQ} 25-14	P_{FD}	v_{12} (pcph)	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
SR 17 NB	Mount Herman Rd			1.000	2,635	2,635	4,800	No	0	No	No	2,635	4,400	No	1,623	4,800	No	1,012	2,000	No	**25.3**	**C**	0.519	53.1	0.0	53.1
SR 17 NB	Mount Herman Rd			1.000	2,487	2,487	4,800	No	0	No	No	2,487	4,400	No	1,637	4,800	No	850	2,000	No	**24.0**	**C**	0.504	53.4	0.0	53.4
SR 17 NB	Mount Herman Rd			1.000	2,387	2,387	4,800	No	0	No	No	2,387	4,400	No	1,489	4,800	No	898	2,000	No	**23.2**	**C**	0.509	53.3	0.0	53.3
SR 17 NB	Granite Creek Rd			1.000	2,495	2,495	4,800	No	0	No	No	2,495	4,400	No	1,915	4,800	No	580	1,900	No	**24.1**	**C**	0.610	51.0	0.0	51.0
SR 17 NB	Granite Creek Rd			1.000	1,951	1,951	4,800	No	0	No	No	1,951	4,400	No	1,532	4,800	No	419	1,900	No	**19.4**	**B**	0.596	51.3	0.0	51.3
SR 17 NB	Santas Village Rd			1.000	2,249	2,249	4,800	No	0	No	No	2,249	4,400	No	2,214	4,800	No	35	1,900	No	**21.3**	**C**	0.626	50.6	0.0	50.6
SR 17 NB	Santas Village Rd			1.000	1,810	1,810	4,800	No	0	No	No	1,810	4,400	No	1,798	4,800	No	13	1,900	No	**17.6**	**B**	0.624	50.6	0.0	50.6
SR 17 SB	Mount Herman Rd			1.000	1,683	1,683	4,800	No	0	No	No	1,683	4,400	No	1,398	4,800	No	285	1,900	No	**17.1**	**B**	0.584	51.6	0.0	51.6
SR 17 SB	Mount Herman Rd			1.000	1,998	1,998	4,800	No	0	No	No	1,998	4,400	No	1,515	4,800	No	483	1,900	No	**19.8**	**B**	0.601	51.2	0.0	51.2
SR 17 SB	Mount Herman Rd			1.000	2,099	2,099	4,800	No	0	No	No	2,099	4,400	No	1,737	4,800	No	363	1,900	No	**20.7**	**C**	0.591	51.4	0.0	51.4
SR 17 SB	Granite Creek Rd			1.000	1,474	1,474	4,800	No	0	No	No	1,474	4,400	No	1,140	4,800	No	334	1,900	No	**15.3**	**B**	0.588	51.5	0.0	51.5
SR 17 SB	Granite Creek Rd			1.000	1,870	1,870	4,800	No	0	No	No	1,870	4,400	No	1,615	4,800	No	255	1,900	No	**18.7**	**B**	0.581	51.6	0.0	51.6
SR 17 NB	Mount Herman Rd			1.000	2,669	2,669	4,800	No	0	No	No	2,669	4,400	No	1,624	4,800	No	1,045	2,000	No	**25.6**	**C**	0.522	53.0	0.0	53.0
SR 17 NB	Mount Herman Rd			1.000	2,574	2,574	4,800	No	0	No	No	2,574	4,400	No	1,613	4,800	No	962	2,000	No	**24.8**	**C**	0.515	53.2	0.0	53.2
SR 17 NB	Mount Herman Rd			1.000	2,520	2,520	4,800	No	0	No	No	2,520	4,400	No	1,449	4,800	No	1,070	2,000	No	**24.3**	**C**	0.524	52.9	0.0	52.9
SR 17 NB	Granite Creek Rd			1.000	2,536	2,536	4,800	No	0	No	No	2,536	4,400	No	1,956	4,800	No	580	1,900	No	**24.4**	**C**	0.610	51.0	0.0	51.0
SR 17 NB	Granite Creek Rd			1.000	2,058	2,058	4,800	No	0	No	No	2,058	4,400	No	1,640	4,800	No	419	1,900	No	**20.3**	**C**	0.596	51.3	0.0	51.3
SR 17 NB	Santas Village Rd			1.000	2,290	2,290	4,800	No	0	No	No	2,290	4,400	No	2,201	4,800	No	89	1,900	No	**21.7**	**C**	0.631	50.5	0.0	50.5
SR 17 NB	Santas Village Rd			1.000	1,912	1,912	4,800	No	0	No	No	1,912	4,400	No	1,664	4,800	No	249	1,900	No	**18.4**	**B**	0.645	50.2	0.0	50.2
SR 17 SB	Mount Herman Rd			1.000	1,694	1,694	4,800	No	0	No	No	1,694	4,400	No	1,398	4,800	No	296	1,900	No	**17.2**	**B**	0.585	51.6	0.0	51.6
SR 17 SB	Mount Herman Rd			1.000	2,028	2,028	4,800	No	0	No	No	2,028	4,400	No	1,475	4,800	No	553	1,900	No	**20.1**	**C**	0.608	51.0	0.0	51.0
SR 17 SB	Mount Herman Rd			1.000	2,143	2,143	4,800	No	0	No	No	2,143	4,400	No	1,674	4,800	No	469	1,900	No	**21.1**	**C**	0.600	51.2	0.0	51.2
SR 17 SB	Granite Creek Rd			1.000	1,485	1,485	4,800	No	0	No	No	1,485	4,400	No	1,140	4,800	No	346	1,900	No	**15.4**	**B**	0.589	51.5	0.0	51.5
SR 17 SB	Granite Creek Rd			1.000	1,899	1,899	4,800	No	0	No	No	1,899	4,400	No	1,578	4,800	No	321	1,900	No	**19.0**	**B**	0.587	51.5	0.0	51.5
SR 17 NB	Mount Herman Rd			1.000	2,787	2,787	4,800	No	0	No	No	2,787	4,400	No	1,693	4,800	No	1,094	2,000	No	**26.6**	**C**	0.526	52.9	0.0	52.9
SR 17 NB	Mount Herman Rd			1.000	2,720	2,720	4,800	No	0	No	No	2,720	4,400	No	1,697	4,800	No	1,023	2,000	No	**26.0**	**C**	0.520	53.0	0.0	53.0
SR 17 NB	Mount Herman Rd			1.000	2,749	2,749	4,800	No	0	No	No	2,749	4,400	No	1,553	4,800	No	1,196	2,000	No	**26.3**	**C**	0.536	52.7	0.0	52.7
SR 17 NB	Granite Creek Rd			1.000	2,606	2,606	4,800	No	0	No	No	2,606	4,400	No	2,010	4,800	No	596	1,900	No	**25.0**	**C**	0.612	50.9	0.0	50.9
SR 17 NB	Granite Creek Rd			1.000	2,077	2,077	4,800	No	0	No	No	2,077	4,400	No	1,618	4,800	No	459	1,900	No	**20.5**	**C**	0.599	51.2	0.0	51.2
SR 17 NB	Santas Village Rd			1.000	2,359	2,359	4,800	No	0	No	No	2,359	4,400	No	2,247	4,800	No	113	1,900	No	**22.3**	**C**	0.633	50.4	0.0	50.4
SR 17 NB	Santas Village Rd			1.000	1,911	1,911	4,800	No	0	No	No	1,911	4,400	No	1,879	4,800	No	32	1,900	No	**18.4**	**B**	0.626	50.6	0.0	50.6
SR 17 SB	Mount Herman Rd			1.000	1,764	1,764	4,800	No	0	No	No	1,764	4,400	No	1,442	4,800	No	322	1,900	No	**17.8**	**B**	0.587	51.5	0.0	51.5
SR 17 SB	Mount Herman Rd			1.000	2,159	2,159	4,800	No	0	No	No	2,159	4,400	No	1,606	4,800	No	554	1,900	No	**21.2**	**C**	0.608	51.0	0.0	51.0
SR 17 SB	Mount Herman Rd			1.000	2,262	2,262	4,800	No	0	No	No	2,262	4,400	No	1,796	4,800	No	466	1,900	No	**22.1**	**C**	0.600	51.2	0.0	51.2
SR 17 SB	Granite Creek Rd			1.000	1,541	1,541	4,800	No	0	No	No	1,541	4,400	No	1,174	4,800	No	367	1,900	No	**15.9**	**B**	0.591	51.4	0.0	51.4
SR 17 SB	Granite Creek Rd			1.000	1,964	1,964	4,800	No	0	No	No	1,964	4,400	No	1,686	4,800	No	278	1,900	No	**19.5**	**B**	0.583	51.6	0.0	51.6
SR 17 NB	Mount Herman Rd			1.000	2,821	2,821	4,800	No	0	No	No	2,821	4,400	No	1,694	4,800	No	1,127	2,000	No	**26.9**	**C**	0.529	52.8	0.0	52.8
SR 17 NB	Mount Herman Rd			1.000	2,808	2,808	4,800	No	0	No	No	2,808	4,400	No	1,673	4,800	No	1,135	2,000	No	**26.8**	**C**	0.530	52.8	0.0	52.8
SR 17 NB	Mount Herman Rd			1.000	2,882	2,882	4,800	No	0	No	No	2,882	4,400	No	1,514	4,800	No	1,368	2,000	No	**27.4**	**C**	0.551	52.3	0.0	52.3
SR 17 NB	Granite Creek Rd			1.000	2,647	2,647	4,800	No	0	No	No	2,647	4,400	No	2,051	4,800	No	596	1,900	No	**25.4**	**C**	0.612	50.9	0.0	50.9
SR 17 NB	Granite Creek Rd			1.000	2,185	2,185	4,800	No	0	No	No	2,185	4,400	No	1,726	4,800	No	459	1,900	No	**21.4**	**C**	0.599	51.2	0.0	51.2
SR 17 NB	Santas Village Rd			1.000	2,400	2,400	4,800	No	0	No	No	2,400	4,400	No	2,272	4,800	No	128	1,900	No	**22.6**	**C**	0.635	50.4	0.0	50.4
SR 17 NB	Santas Village Rd			1.000	2,013	2,013	4,800	No	0	No	No	2,013	4,400	No	1,846	4,800	No	167	1,900	No	**19.3**	**B**	0.638	50.3	0.0	50.3
SR 17 SB	Mount Herman Rd			1.000	1,775	1,775	4,800	No	0	No	No	1,775	4,400	No	1,442	4,800	No	333	1,900	No	**17.9**	**B**	0.588	51.5	0.0	51.5
SR 17 SB	Mount Herman Rd			1.000	2,189	2,189	4,800	No	0	No	No	2,189	4,400	No	1,565	4,800	No	624	1,900	No	**21.5**	**C**	0.614	50.9	0.0	50.9
SR 17 SB	Mount Herman Rd			1.000	2,305	2,305	4,800	No	0	No	No	2,305	4,400	No	1,733	4,800	No	572	1,900	No	**22.5**	**C**	0.609	51.0	0.0	51.0
SR 17 SB	Granite Creek Rd			1.000	1,552	1,552	4,800	No	0	No	No	1,552	4,400	No	1,174	4,800	No	378	1,900	No	**16.0**	**B**	0.592	51.4	0.0	51.4
SR 17 SB	Granite Creek Rd			1.000	1,994	1,994	4,800	No	0	No	No	1,994	4,400	No	1,649	4,800	No	345	1,900	No	**19.8**	**B**	0.589	51.5	0.0	51.5

HCM 2000
Merge Ramp Junctions
Capacity Analysis With Mid-Town

Jurisdiction Caltrans
Analysis Year 2009
Analyst GR

General Information			*Freeway Data*									*On-Ramp Volume Adjustment*										
Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
SR 17 NB	Mount Herman Rd	Existing AM	2	65.0	1,448	No	25.0	824	450	0	450	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	876
SR 17 NB	Mount Herman Rd	Existing PM	2	65.0	1,492	No	25.0	285	450	0	450	0.92	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	313
SR 17 NB	Mount Herman Rd	Existing Sat	2	65.0	1,356	No	25.0	331	450	0	450	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	363
SR 17 NB	Granite Creek Rd	Existing AM	2	65.0	1,755	No	25.0	294	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	330
SR 17 NB	Granite Creek Rd	Existing PM	2	65.0	1,403	No	25.0	246	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	276
SR 17 NB	Santas Village Rd	Existing AM	2	65.0	1,736	No	20.0	5	500	0	500	0.69	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	7
SR 17 NB	Santas Village Rd	Existing PM	2	65.0	1,409	No	20.0	13	500	0	500	0.56	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	23
SR 17 SB	Mount Herman Rd	Existing AM	2	65.0	1,265	No	35.0	995	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	1,058
SR 17 SB	Mount Herman Rd	Existing PM	2	65.0	1,366	No	35.0	644	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	685
SR 17 SB	Mount Herman Rd	Existing Sat	2	65.0	1,571	No	35.0	811	340	0	340	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	862
SR 17 SB	Granite Creek Rd	Existing AM	2	65.0	1,045	No	25.0	487	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	547
SR 17 SB	Granite Creek Rd	Existing PM	2	65.0	1,475	No	25.0	344	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	386
SR 17 NB	Mount Herman Rd	Existing+P AM	2	65.0	1,448	No	25.0	829	450	0	450	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	881
SR 17 NB	Mount Herman Rd	Existing+P PM	2	65.0	1,470	No	25.0	338	450	0	450	0.92	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	371
SR 17 NB	Mount Herman Rd	Existing+P Sat	2	65.0	1,320	No	25.0	413	450	0	450	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	453
SR 17 NB	Granite Creek Rd	Existing+AP AM	2	65.0	1,792	No	25.0	294	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	330
SR 17 NB	Granite Creek Rd	Existing+AP PM	2	65.0	1,501	No	25.0	246	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	276
SR 17 NB	Santas Village Rd	Existing+AP AM	2	65.0	1,736	No	20.0	10	500	0	500	0.69	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	15
SR 17 NB	Santas Village Rd	Existing+AP PM	2	65.0	1,371	No	20.0	77	500	0	500	0.56	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	139
SR 17 SB	Mount Herman Rd	Existing+P AM	2	65.0	1,265	No	35.0	1,010	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	1,074
SR 17 SB	Mount Herman Rd	Existing+P PM	2	65.0	1,327	No	35.0	766	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	814
SR 17 SB	Mount Herman Rd	Existing+P Sat	2	65.0	1,511	No	35.0	987	340	0	340	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,049
SR 17 SB	Granite Creek Rd	Existing+AP AM	2	65.0	1,045	No	25.0	505	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	567
SR 17 SB	Granite Creek Rd	Existing+AP PM	2	65.0	1,443	No	25.0	474	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	532
SR 17 NB	Mount Herman Rd	Cuml AM	2	65.0	1,510	No	25.0	861	450	0	450	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	915
SR 17 NB	Mount Herman Rd	Cuml PM	2	65.0	1,547	No	25.0	350	450	0	450	0.92	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	384
SR 17 NB	Mount Herman Rd	Cuml Sat	2	65.0	1,415	No	25.0	408	450	0	450	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	448
SR 17 NB	Granite Creek Rd	Cuml AM	2	65.0	1,842	No	25.0	307	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	345
SR 17 NB	Granite Creek Rd	Cuml PM	2	65.0	1,482	No	25.0	259	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	291
SR 17 NB	Santas Village Rd	Cuml AM	2	65.0	1,783	No	20.0	8	500	0	500	0.69	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	12
SR 17 NB	Santas Village Rd	Cuml PM	2	65.0	1,490	No	20.0	35	500	0	500	0.56	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	63
SR 17 SB	Mount Herman Rd	Cuml AM	2	65.0	1,306	No	35.0	1,070	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	1,138
SR 17 SB	Mount Herman Rd	Cuml PM	2	65.0	1,446	No	35.0	814	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	865
SR 17 SB	Mount Herman Rd	Cuml Sat	2	65.0	1,622	No	35.0	1,019	340	0	340	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,083
SR 17 SB	Granite Creek Rd	Cuml AM	2	65.0	1,077	No	25.0	523	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	587
SR 17 SB	Granite Creek Rd	Cuml PM	2	65.0	1,540	No	25.0	424	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	476
SR 17 NB	Mount Herman Rd	Cuml+P AM	2	65.0	1,510	No	25.0	866	450	0	450	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	921
SR 17 NB	Mount Herman Rd	Cuml+P PM	2	65.0	1,525	No	25.0	403	450	0	450	0.92	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	442
SR 17 NB	Mount Herman Rd	Cuml+P Sat	2	65.0	1,379	No	25.0	490	450	0	450	0.92	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	538
SR 17 NB	Granite Creek Rd	Cuml+AP AM	2	65.0	1,879	No	25.0	307	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	345
SR 17 NB	Granite Creek Rd	Cuml+AP PM	2	65.0	1,580	No	25.0	259	340	0	340	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	291
SR 17 NB	Santas Village Rd	Cuml+AP AM	2	65.0	1,783	No	20.0	13	500	0	500	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	15
SR 17 NB	Santas Village Rd	Cuml+AP PM	2	65.0	1,452	No	20.0	99	500	0	500	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	111
SR 17 SB	Mount Herman Rd	Cuml+P AM	2	65.0	1,306	No	35.0	1,085	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	1,154
SR 17 SB	Mount Herman Rd	Cuml+P PM	2	65.0	1,407	No	35.0	936	340	0	340	0.95	Level	4.0%	0.70	2.0%	0.0%	1.5	1.2	0.99	1.00	995
SR 17 SB	Mount Herman Rd	Cuml+P Sat	2	65.0	1,562	No	35.0	1,195	340	0	340	0.95	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	1,270
SR 17 SB	Granite Creek Rd	Cuml+AP AM	2	65.0	1,077	No	25.0	541	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	607
SR 17 SB	Granite Creek Rd	Cuml+AP PM	2	65.0	1,508	No	25.0	554	700	0	700	0.9	Level			2.0%	0.0%	1.5	1.2	0.99	1.00	622

HCM 2000
Merge Ramp Junctions
Capacity Analysis With Mid-Town

General Information

Freeway/ Direction	On-ramp	Adjacent Upstream Ramp Data: Exists?	Distance	Volume (vph)	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Adjacent Downstream Ramp Data: Exists?	Distance	Volume (vph)	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Mount Herman Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Granite Creek Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 NB	Santas Village Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Mount Herman Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													
SR 17 SB	Granite Creek Rd	No														No													

HCM 2000
Merge Ramp Junctions
Capacity Analysis With Mid-Town

General Information		*v_{12} Estimation*							*Capacity Checks*																*Results*	
Freeway/		L_{EQ}		P_{FM} Equations				v_{12}	v_{Fi}	Max v_{Fi}		v_{FO}	Max v_{FO}		v_3, v_{av34}	v_3, v_{av34}	v_3, v_{av34}	v_{12a}	v_{R12a}	Max v_{R12a}		v_R	Max v_R		Density, D	Level of
Direction	On-ramp	25-2	25-3	1	2	3	P_{FM}	(pcph)	(pcph)	(pcph)	LOS F?	(pcph)	(pcph)	LOS F?	(pcphpl)	> 2,700?	>1.5*v_{12}/2?	(pcph)	(pcph)	(pcph)	LOS F?	(pcph)	(pcph)	LOS F?	(pcplpm)	Service
SR 17 NB	Mount Herman Rd			0.590			1.000	1,590	1,590	4,800	No	2,466	4,800	No	0	No	No	1,590	2,466	4,600	No	876	1,900	No	**21.5**	**C**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,638	1,638	4,800	No	1,951	4,800	No	0	No	No	1,638	1,951	4,600	No	313	1,900	No	**17.7**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,489	1,489	4,800	No	1,852	4,800	No	0	No	No	1,489	1,852	4,600	No	363	1,900	No	**16.9**	**B**
SR 17 NB	Granite Creek Rd			0.587			1.000	1,927	1,927	4,800	No	2,257	4,800	No	0	No	No	1,927	2,257	4,600	No	330	1,900	No	**20.8**	**C**
SR 17 NB	Granite Creek Rd			0.587			1.000	1,540	1,540	4,800	No	1,816	4,800	No	0	No	No	1,540	1,816	4,600	No	276	1,900	No	**17.4**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,906	1,906	4,800	No	1,913	4,800	No	0	No	No	1,906	1,913	4,600	No	7	1,900	No	**17.3**	**B**
SR 17 NB	Santas Village Rd						1.000	1,547	1,547	4,800	No	1,570	4,800	No	0	No	No	1,547	1,570	4,600	No	23	1,900	No	**14.6**	**B**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,389	1,389	4,800	No	2,447	4,800	No	0	No	No	1,389	2,447	4,600	No	1,058	2,000	No	**21.9**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,500	1,500	4,800	No	2,184	4,800	No	0	No	No	1,500	2,184	4,600	No	685	2,000	No	**20.1**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,725	1,725	4,800	No	2,587	4,800	No	0	No	No	1,725	2,587	4,600	No	862	2,000	No	**23.1**	**C**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,147	1,147	4,800	No	1,694	4,800	No	0	No	No	1,147	1,694	4,600	No	547	1,900	No	**14.0**	**B**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,619	1,619	4,800	No	2,005	4,800	No	0	No	No	1,619	2,005	4,600	No	386	1,900	No	**16.6**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,590	1,590	4,800	No	2,471	4,800	No	0	No	No	1,590	2,471	4,600	No	881	1,900	No	**21.5**	**C**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,614	1,614	4,800	No	1,985	4,800	No	0	No	No	1,614	1,985	4,600	No	371	1,900	No	**18.0**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,449	1,449	4,800	No	1,903	4,800	No	0	No	No	1,449	1,903	4,600	No	453	1,900	No	**17.3**	**B**
SR 17 NB	Granite Creek Rd			0.587			1.000	1,967	1,967	4,800	No	2,297	4,800	No	0	No	No	1,967	2,297	4,600	No	330	1,900	No	**21.1**	**C**
SR 17 NB	Granite Creek Rd			0.587			1.000	1,648	1,648	4,800	No	1,924	4,800	No	0	No	No	1,648	1,924	4,600	No	276	1,900	No	**18.2**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,906	1,906	4,800	No	1,920	4,800	No	0	No	No	1,906	1,920	4,600	No	15	1,900	No	**17.3**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,505	1,505	4,800	No	1,644	4,800	No	0	No	No	1,505	1,644	4,600	No	139	1,900	No	**15.1**	**B**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,389	1,389	4,800	No	2,463	4,800	No	0	No	No	1,389	2,463	4,600	No	1,074	2,000	No	**22.1**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,457	1,457	4,800	No	2,271	4,800	No	0	No	No	1,457	2,271	4,600	No	814	2,000	No	**20.7**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,659	1,659	4,800	No	2,708	4,800	No	0	No	No	1,659	2,708	4,600	No	1,049	2,000	No	**24.0**	**C**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,147	1,147	4,800	No	1,714	4,800	No	0	No	No	1,147	1,714	4,600	No	567	1,900	No	**14.2**	**B**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,584	1,584	4,800	No	2,116	4,800	No	0	No	No	1,584	2,116	4,600	No	532	1,900	No	**17.3**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,658	1,658	4,800	No	2,573	4,800	No	0	No	No	1,658	2,573	4,600	No	915	1,900	No	**22.3**	**C**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,698	1,698	4,800	No	2,083	4,800	No	0	No	No	1,698	2,083	4,600	No	384	1,900	No	**18.7**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,553	1,553	4,800	No	2,001	4,800	No	0	No	No	1,553	2,001	4,600	No	448	1,900	No	**18.1**	**B**
SR 17 NB	Granite Creek Rd			0.587			1.000	2,022	2,022	4,800	No	2,367	4,800	No	0	No	No	2,022	2,367	4,600	No	345	1,900	No	**21.6**	**C**
SR 17 NB	Granite Creek Rd			0.587			1.000	1,627	1,627	4,800	No	1,918	4,800	No	0	No	No	1,627	1,918	4,600	No	291	1,900	No	**18.2**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,957	1,957	4,800	No	1,969	4,800	No	0	No	No	1,957	1,969	4,600	No	12	1,900	No	**17.7**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,636	1,636	4,800	No	1,699	4,800	No	0	No	No	1,636	1,699	4,600	No	63	1,900	No	**15.6**	**B**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,434	1,434	4,800	No	2,571	4,800	No	0	No	No	1,434	2,571	4,600	No	1,138	2,000	No	**22.9**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,587	1,587	4,800	No	2,453	4,800	No	0	No	No	1,587	2,453	4,600	No	865	2,000	No	**22.1**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,781	1,781	4,800	No	2,864	4,800	No	0	No	No	1,781	2,864	4,600	No	1,083	2,000	No	**25.2**	**C**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,182	1,182	4,800	No	1,769	4,800	No	0	No	No	1,182	1,769	4,600	No	587	1,900	No	**14.6**	**B**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,691	1,691	4,800	No	2,166	4,800	No	0	No	No	1,691	2,166	4,600	No	476	1,900	No	**17.8**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,658	1,658	4,800	No	2,578	4,800	No	0	No	No	1,658	2,578	4,600	No	921	1,900	No	**22.3**	**C**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,674	1,674	4,800	No	2,117	4,800	No	0	No	No	1,674	2,117	4,600	No	442	1,900	No	**19.0**	**B**
SR 17 NB	Mount Herman Rd			0.590			1.000	1,514	1,514	4,800	No	2,052	4,800	No	0	No	No	1,514	2,052	4,600	No	538	1,900	No	**18.4**	**B**
SR 17 NB	Granite Creek Rd			0.587			1.000	2,063	2,063	4,800	No	2,407	4,800	No	0	No	No	2,063	2,407	4,600	No	345	1,900	No	**22.0**	**C**
SR 17 NB	Granite Creek Rd			0.587			1.000	1,735	1,735	4,800	No	2,025	4,800	No	0	No	No	1,735	2,025	4,600	No	291	1,900	No	**19.0**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,957	1,957	4,800	No	1,972	4,800	No	0	No	No	1,957	1,972	4,600	No	15	1,900	No	**17.7**	**B**
SR 17 NB	Santas Village Rd			0.592			1.000	1,594	1,594	4,800	No	1,705	4,800	No	0	No	No	1,594	1,705	4,600	No	111	1,900	No	**15.6**	**B**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,434	1,434	4,800	No	2,587	4,800	No	0	No	No	1,434	2,587	4,600	No	1,154	2,000	No	**23.0**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,545	1,545	4,800	No	2,540	4,800	No	0	No	No	1,545	2,540	4,600	No	995	2,000	No	**22.7**	**C**
SR 17 SB	Mount Herman Rd			0.587			1.000	1,715	1,715	4,800	No	2,985	4,800	No	0	No	No	1,715	2,985	4,600	No	1,270	2,000	No	**26.0**	**C**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,182	1,182	4,800	No	1,789	4,800	No	0	No	No	1,182	1,789	4,600	No	607	1,900	No	**14.8**	**B**
SR 17 SB	Granite Creek Rd			0.597			1.000	1,656	1,656	4,800	No	2,277	4,800	No	0	No	No	1,656	2,277	4,600	No	622	1,900	No	**18.6**	**B**

HCM 2000
Merge Ramp Junctions
Capacity Analysis With Mid-Town

General Information		*Speed Estimation*			
Freeway/ Direction	On-ramp	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
SR 17 NB	Mount Herman Rd	0.344	57.1	0.0	57.1
SR 17 NB	Mount Herman Rd	0.326	57.5	0.0	57.5
SR 17 NB	Mount Herman Rd	0.323	57.6	0.0	57.6
SR 17 NB	Granite Creek Rd	0.341	57.2	0.0	57.2
SR 17 NB	Granite Creek Rd	0.328	57.5	0.0	57.5
SR 17 NB	Santas Village Rd	0.327	57.5	0.0	57.5
SR 17 NB	Santas Village Rd	0.320	57.6	0.0	57.6
SR 17 SB	Mount Herman Rd	0.342	57.1	0.0	57.1
SR 17 SB	Mount Herman Rd	0.332	57.4	0.0	57.4
SR 17 SB	Mount Herman Rd	0.349	57.0	0.0	57.0
SR 17 SB	Granite Creek Rd	0.307	57.9	0.0	57.9
SR 17 SB	Granite Creek Rd	0.315	57.8	0.0	57.8
SR 17 NB	Mount Herman Rd	0.345	57.1	0.0	57.1
SR 17 NB	Mount Herman Rd	0.327	57.5	0.0	57.5
SR 17 NB	Mount Herman Rd	0.325	57.5	0.0	57.5
SR 17 NB	Granite Creek Rd	0.343	57.1	0.0	57.1
SR 17 NB	Granite Creek Rd	0.331	57.4	0.0	57.4
SR 17 NB	Santas Village Rd	0.328	57.5	0.0	57.5
SR 17 NB	Santas Village Rd	0.321	57.6	0.0	57.6
SR 17 SB	Mount Herman Rd	0.343	57.1	0.0	57.1
SR 17 SB	Mount Herman Rd	0.335	57.3	0.0	57.3
SR 17 SB	Mount Herman Rd	0.356	56.8	0.0	56.8
SR 17 SB	Granite Creek Rd	0.308	57.9	0.0	57.9
SR 17 SB	Granite Creek Rd	0.318	57.7	0.0	57.7
SR 17 NB	Mount Herman Rd	0.350	57.0	0.0	57.0
SR 17 NB	Mount Herman Rd	0.330	57.4	0.0	57.4
SR 17 NB	Mount Herman Rd	0.327	57.5	0.0	57.5
SR 17 NB	Granite Creek Rd	0.346	57.1	0.0	57.1
SR 17 NB	Granite Creek Rd	0.331	57.4	0.0	57.4
SR 17 NB	Santas Village Rd	0.329	57.4	0.0	57.4
SR 17 NB	Santas Village Rd	0.322	57.6	0.0	57.6
SR 17 SB	Mount Herman Rd	0.348	57.0	0.0	57.0
SR 17 SB	Mount Herman Rd	0.343	57.1	0.0	57.1
SR 17 SB	Mount Herman Rd	0.366	56.6	0.0	56.6
SR 17 SB	Granite Creek Rd	0.309	57.9	0.0	57.9
SR 17 SB	Granite Creek Rd	0.320	57.6	0.0	57.6
SR 17 NB	Mount Herman Rd	0.350	57.0	0.0	57.0
SR 17 NB	Mount Herman Rd	0.331	57.4	0.0	57.4
SR 17 NB	Mount Herman Rd	0.329	57.4	0.0	57.4
SR 17 NB	Granite Creek Rd	0.347	57.0	0.0	57.0
SR 17 NB	Granite Creek Rd	0.334	57.3	0.0	57.3
SR 17 NB	Santas Village Rd	0.329	57.4	0.0	57.4
SR 17 NB	Santas Village Rd	0.322	57.6	0.0	57.6
SR 17 SB	Mount Herman Rd	0.349	57.0	0.0	57.0
SR 17 SB	Mount Herman Rd	0.347	57.0	0.0	57.0
SR 17 SB	Mount Herman Rd	0.374	56.4	0.0	56.4
SR 17 SB	Granite Creek Rd	0.309	57.9	0.0	57.9
SR 17 SB	Granite Creek Rd	0.324	57.5	0.0	57.5

APPENDIX D:
SIGNAL WARRANT AND QUEUE CALCULATIONS

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

The peak hour delay warrant is met when:

1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Project PM	0.5	43	1,042
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

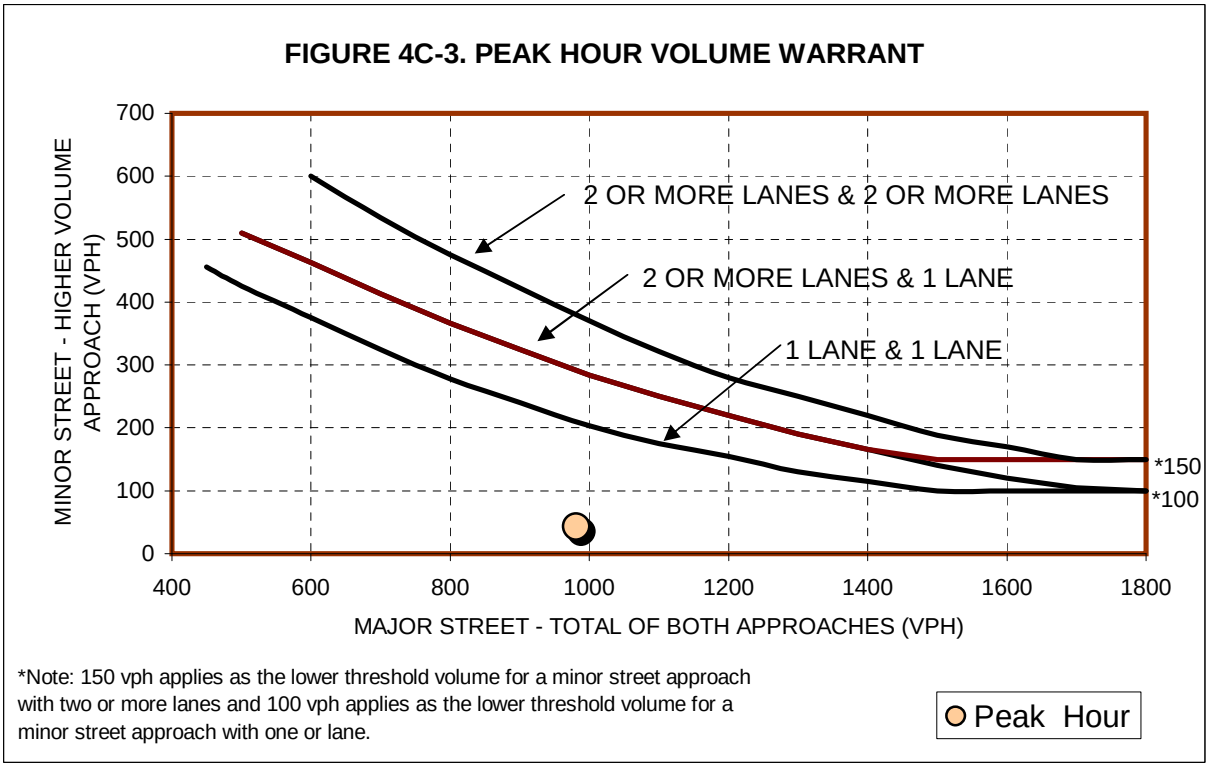
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
5:00 PM	981	43



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

The peak hour delay warrant is met when:

1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Project Saturday	2.8	65	1,343
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

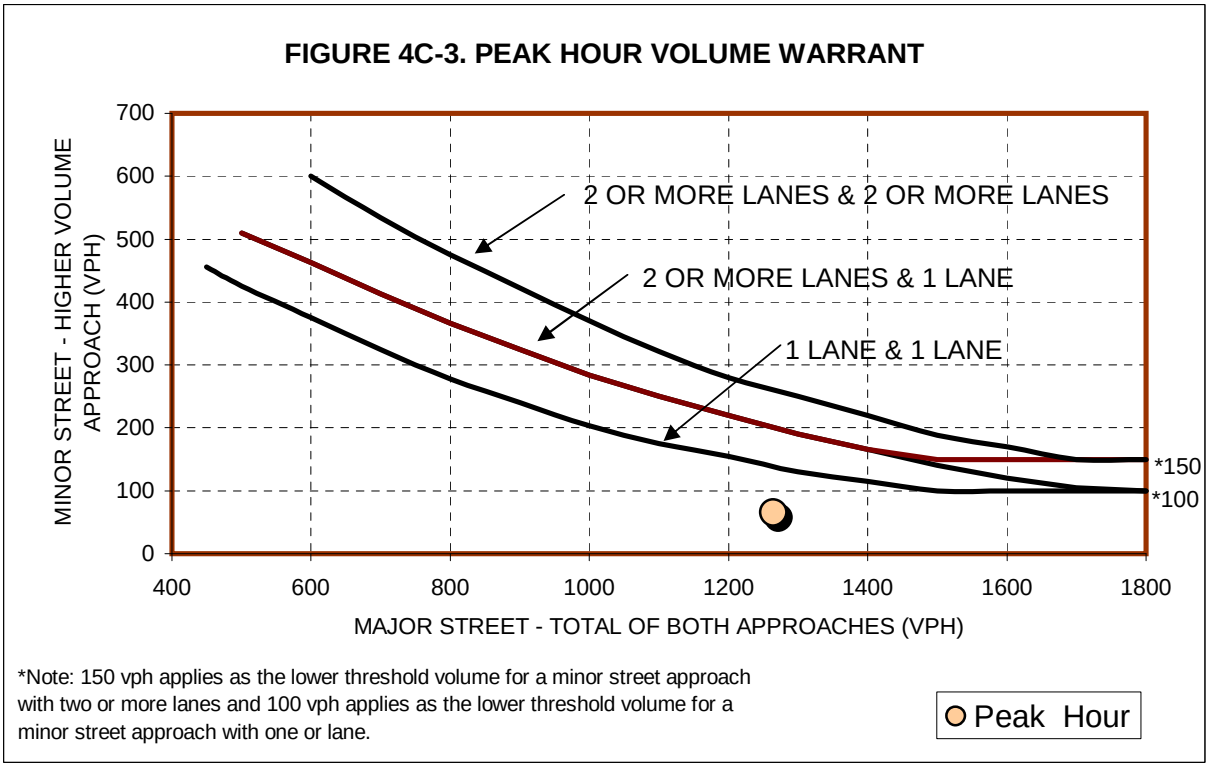
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
11:00 AM	1,265	65



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

The peak hour delay warrant is met when:

1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Cum+P AM	0.8	87	717
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Not Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

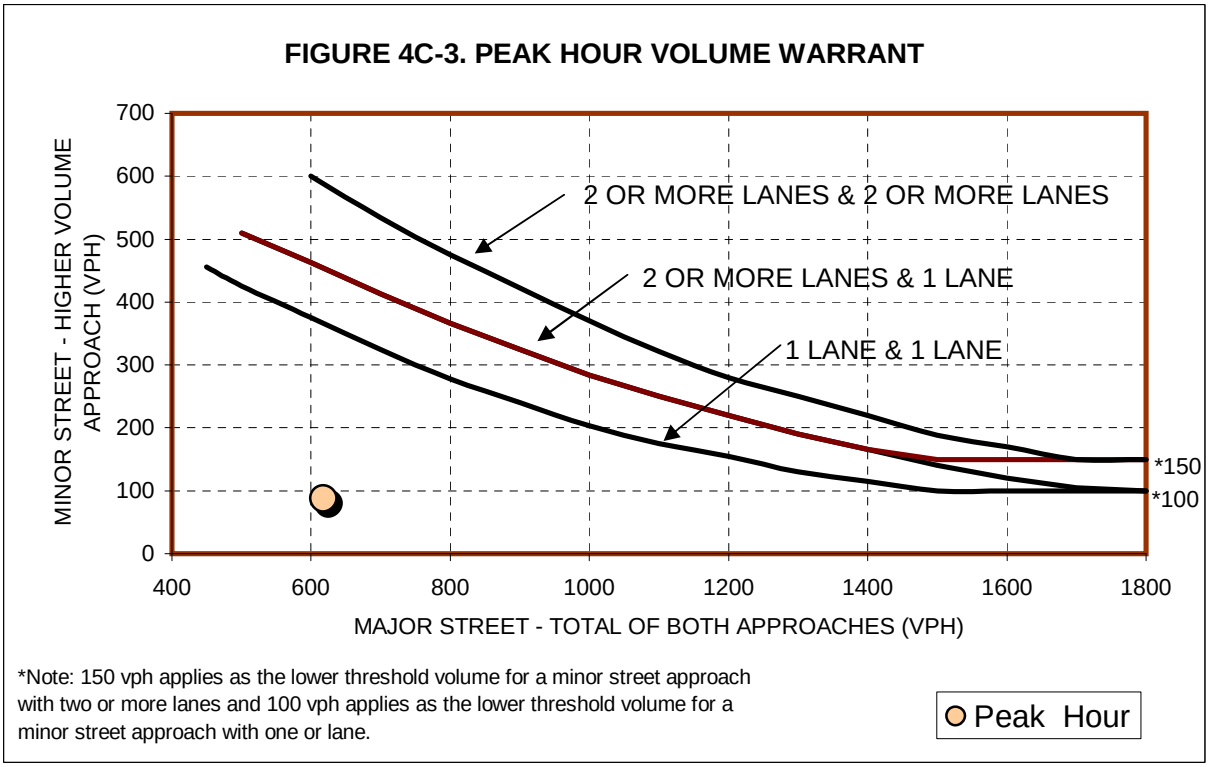
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
5:00 AM	618	87



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

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1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Cum+P PM	0.6	43	1,089
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

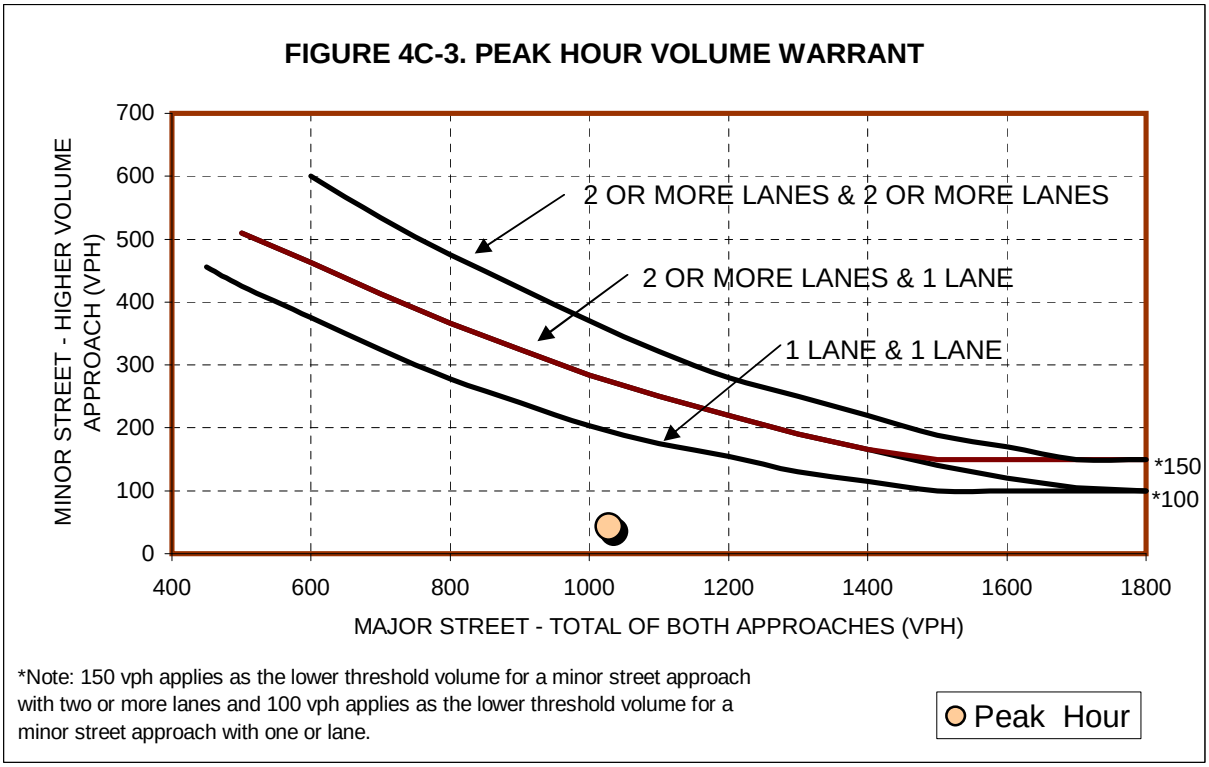
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
5:00 PM	1,028	43



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

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3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Cum+P Saturday	4.0	65	1,410
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

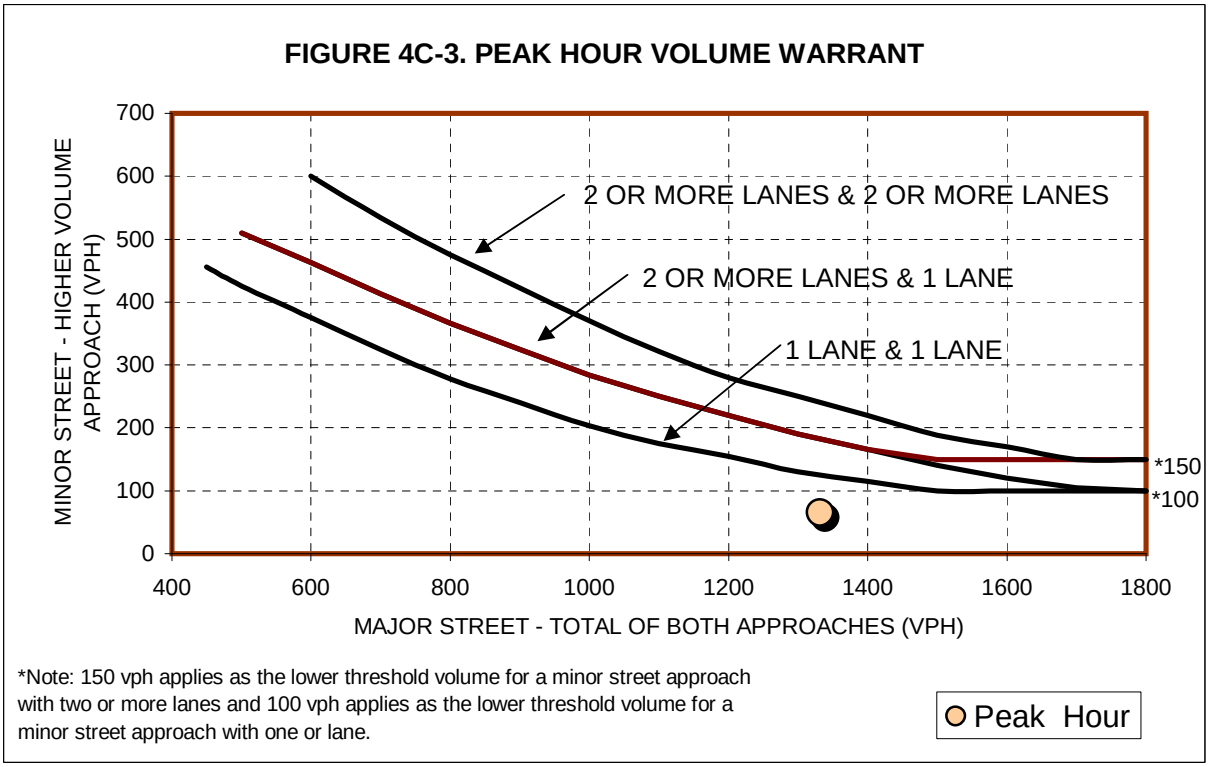
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
11:00 AM	1,332	65



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

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3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Mid-Town Cum+P A	0.8	87	717
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Not Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

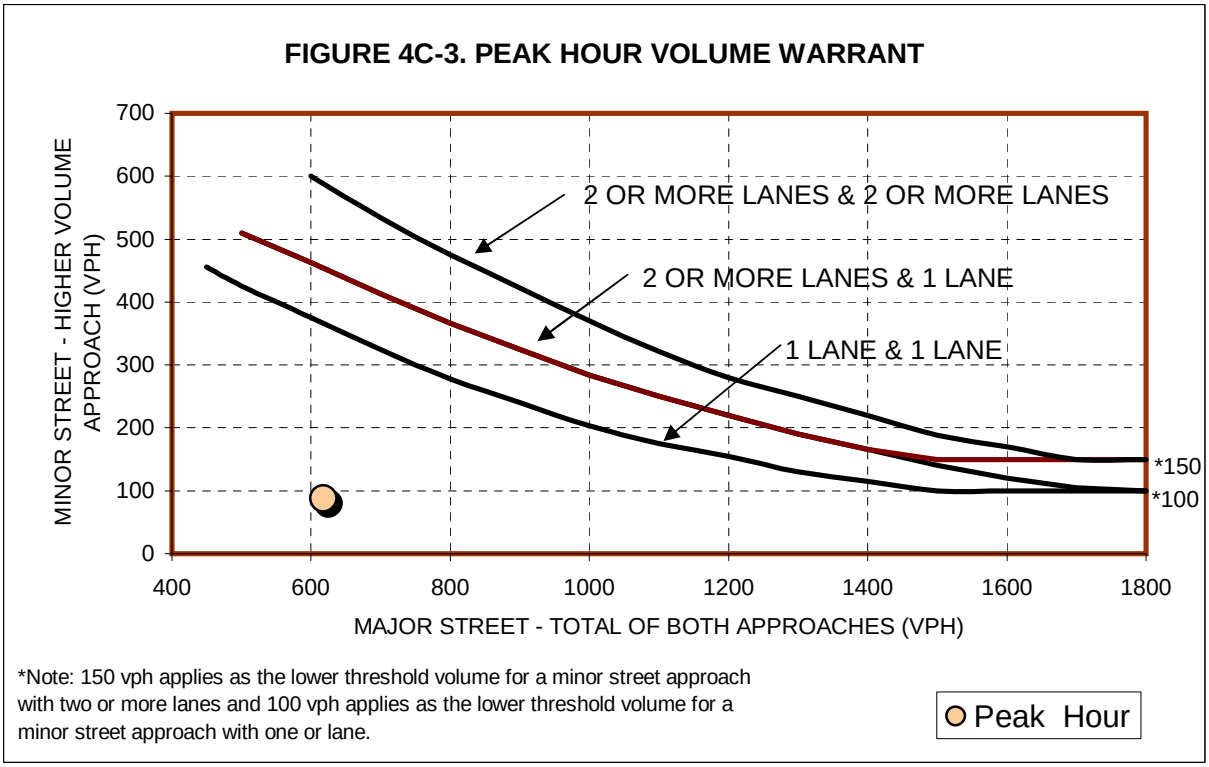
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
5:00 AM	618	87



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

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2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Mid-Town Cum+P P	0.6	43	1,089
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

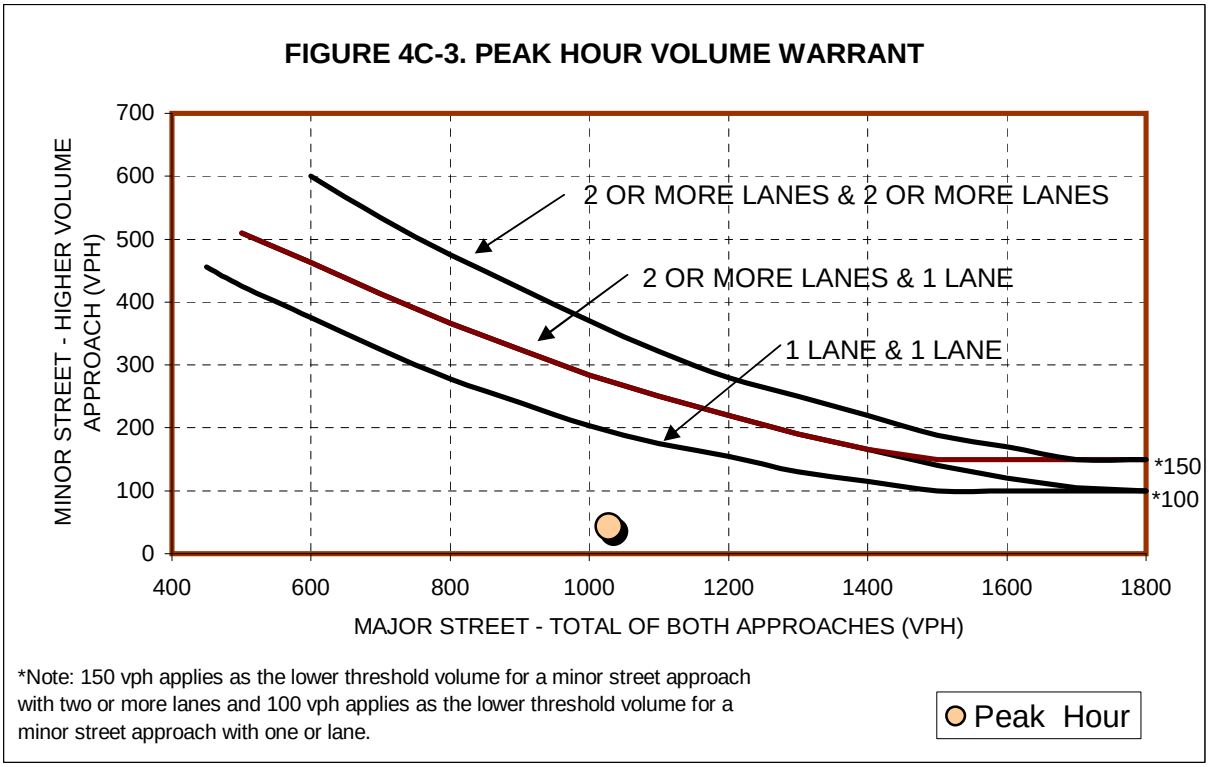
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
5:00 PM	1,028	43



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

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2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Mid-Town Cum+P Sa	4.0	65	1,410
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

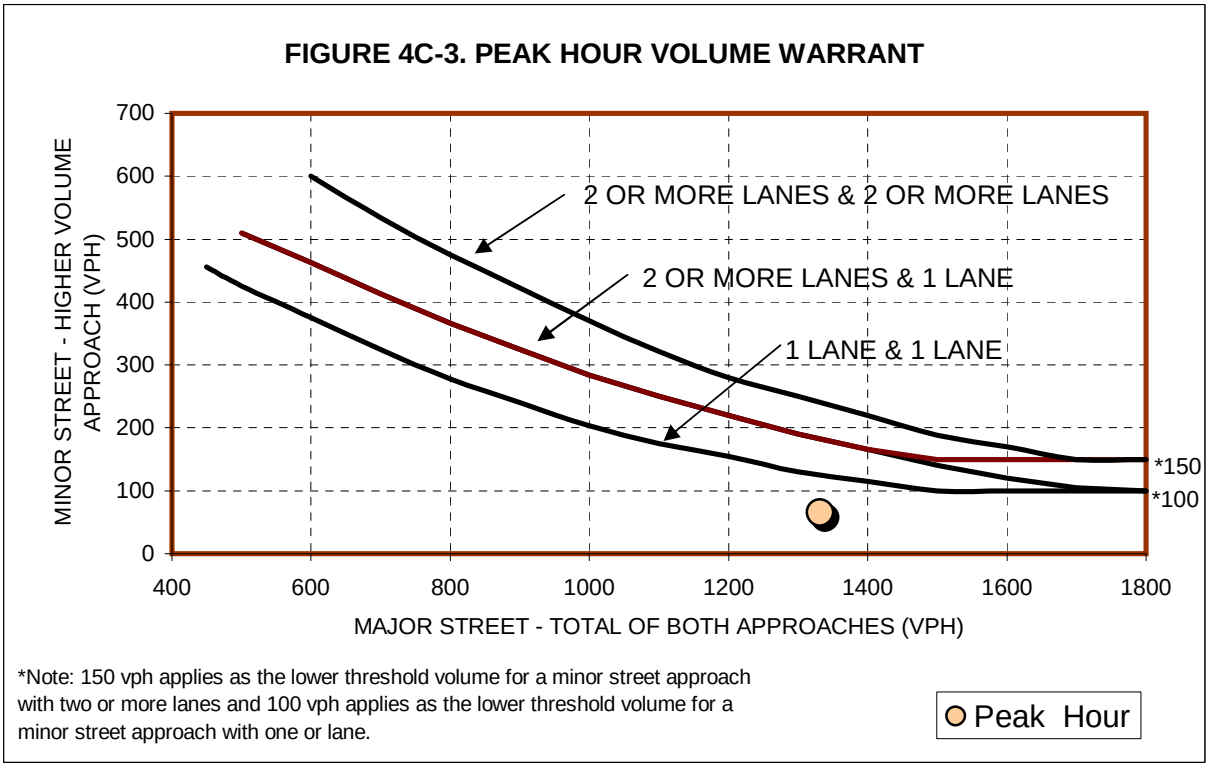
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
11:00 AM	1,332	65



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

The peak hour delay warrant is met when:

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2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Project PM	0.3	40	1,540
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

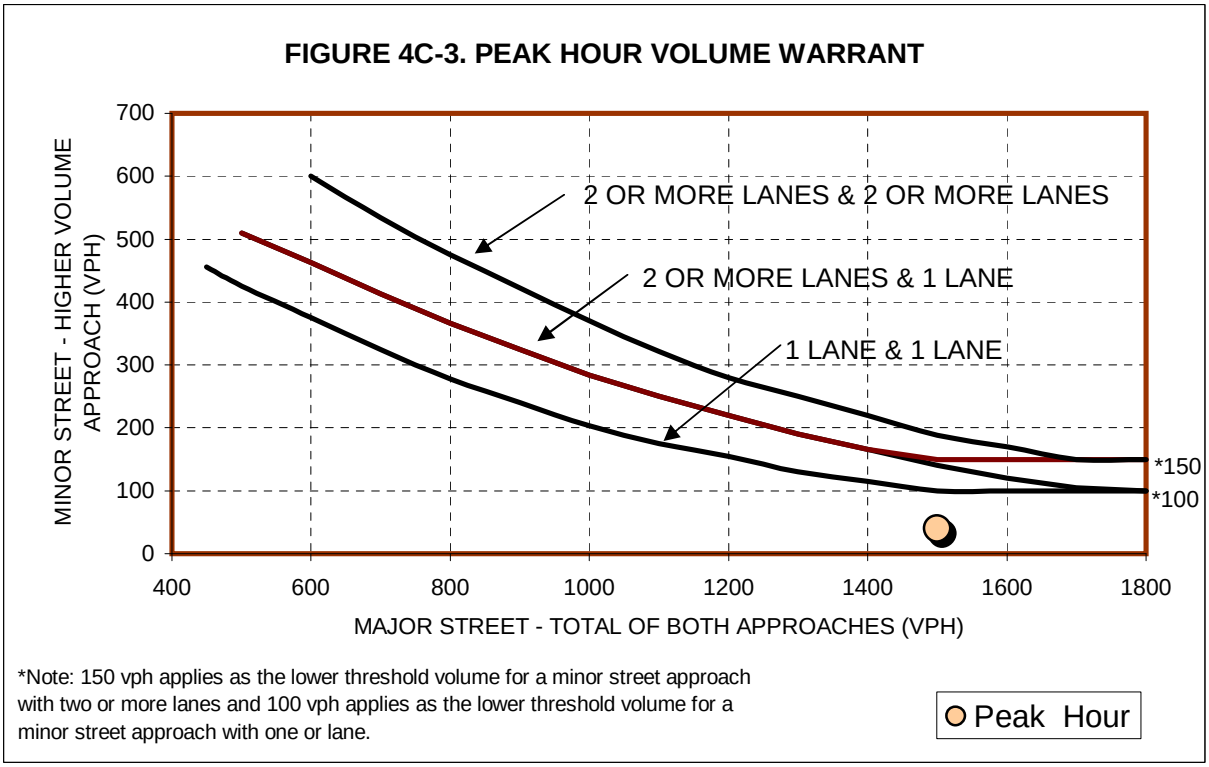
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
5:00 PM	1,500	40



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

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1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Cumulative AM	0.2	30	1,883
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

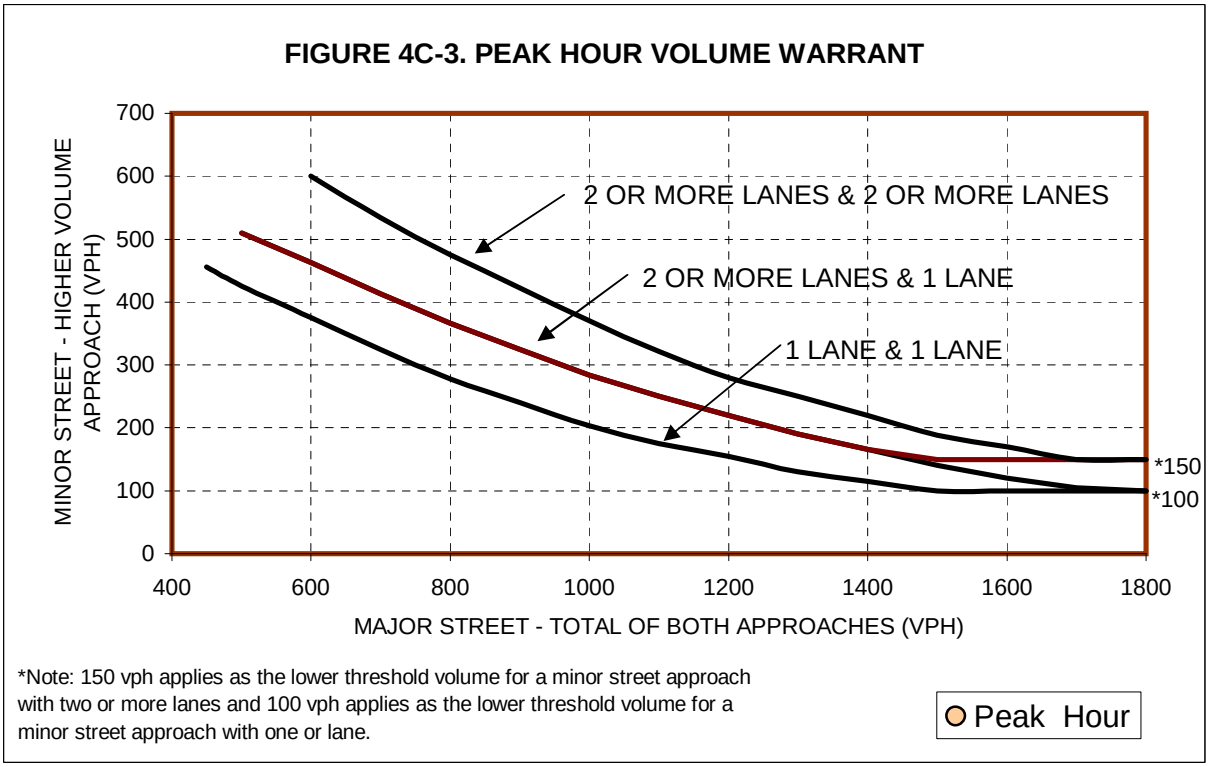
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
5:00 AM	1,853	30



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

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2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Cumulative PM	0.4	40	1,706
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

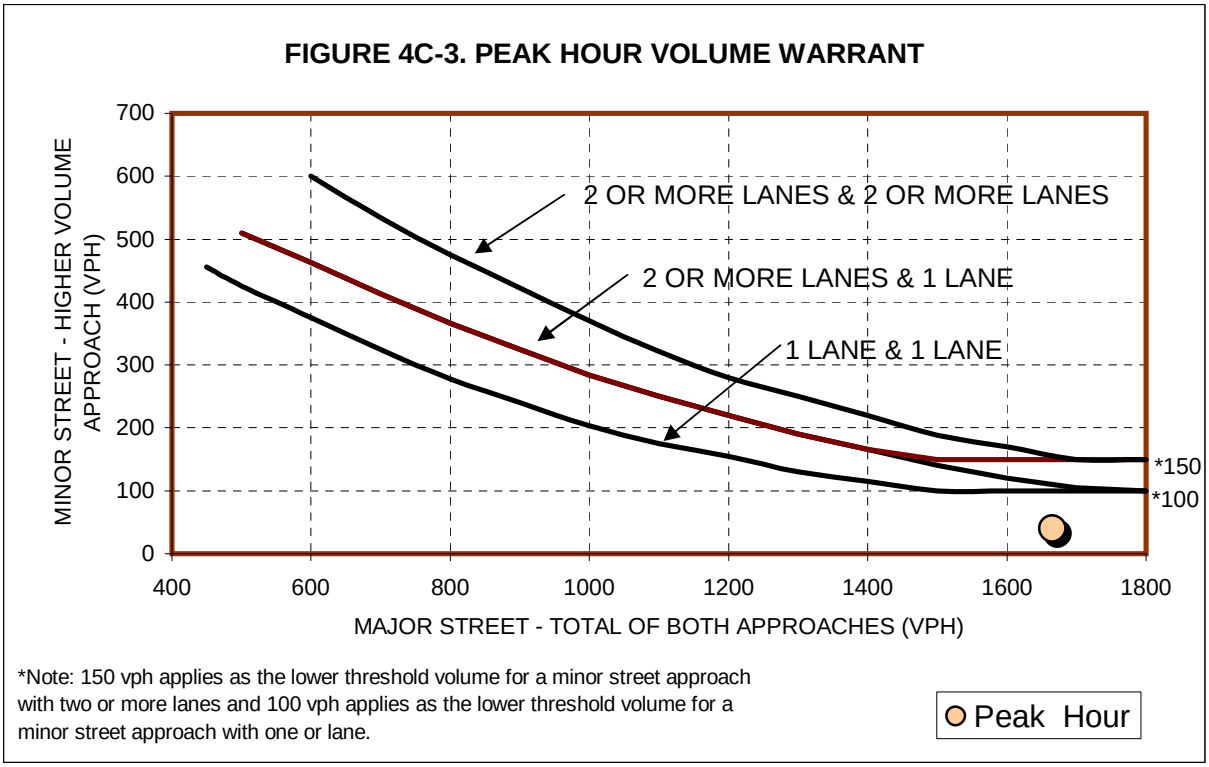
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
5:00 PM	1,666	40



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

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2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Cumulative Saturday	0.3	38	1,599
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

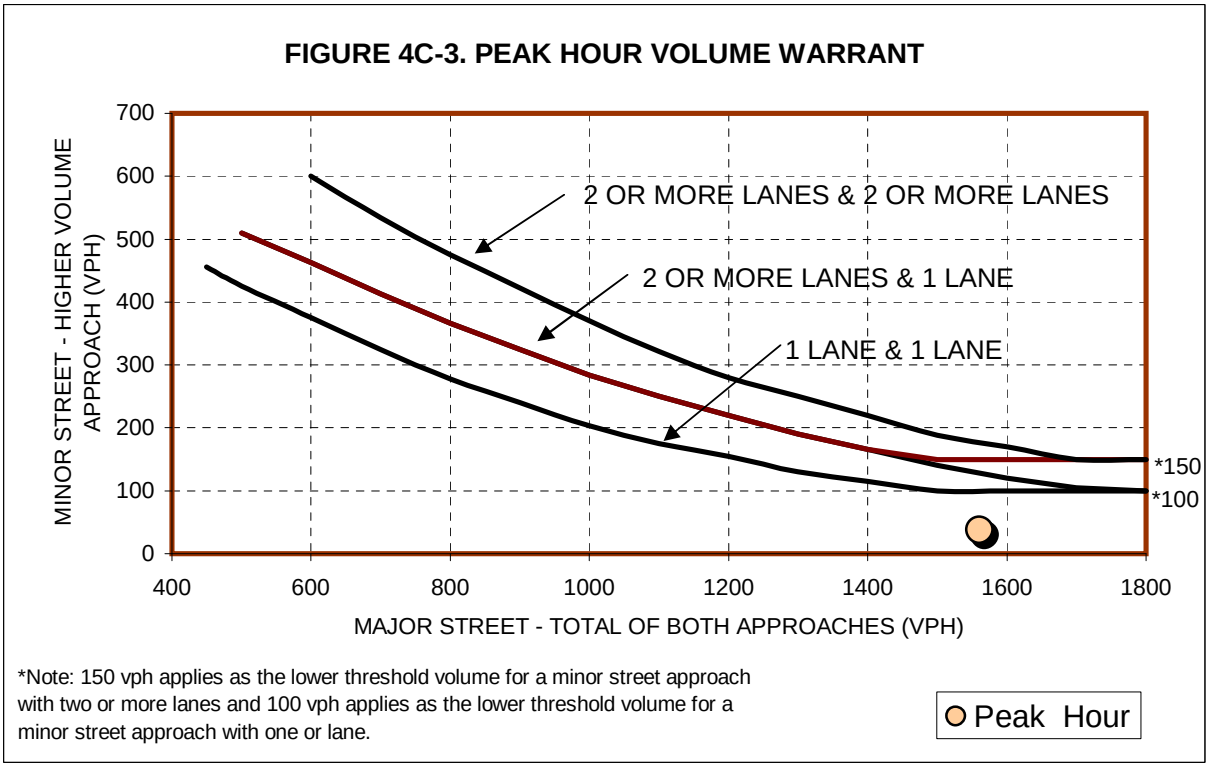
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
11:00 AM	1,561	38



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

The peak hour delay warrant is met when:

1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Cumulative AM	0.2	30	1,919
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

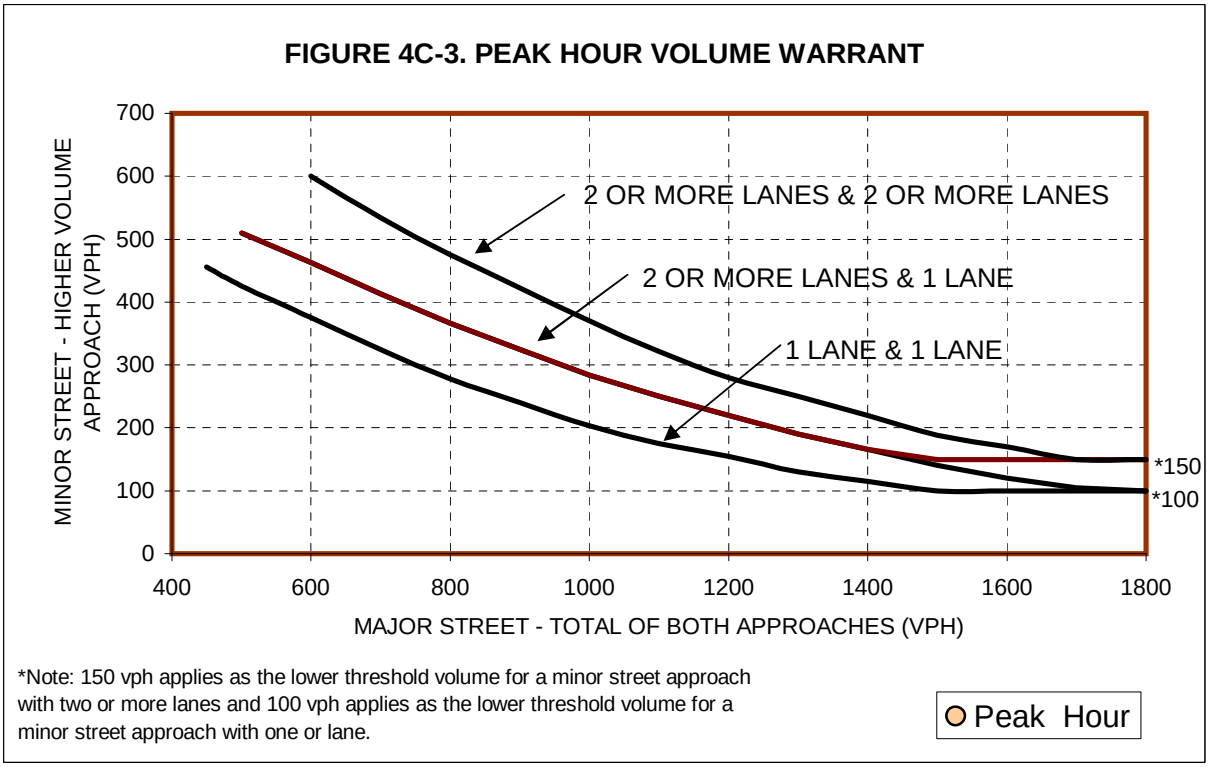
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
5:00 AM	1,889	30



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

The peak hour delay warrant is met when:

1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Cum+P PM	0.4	40	1,862
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

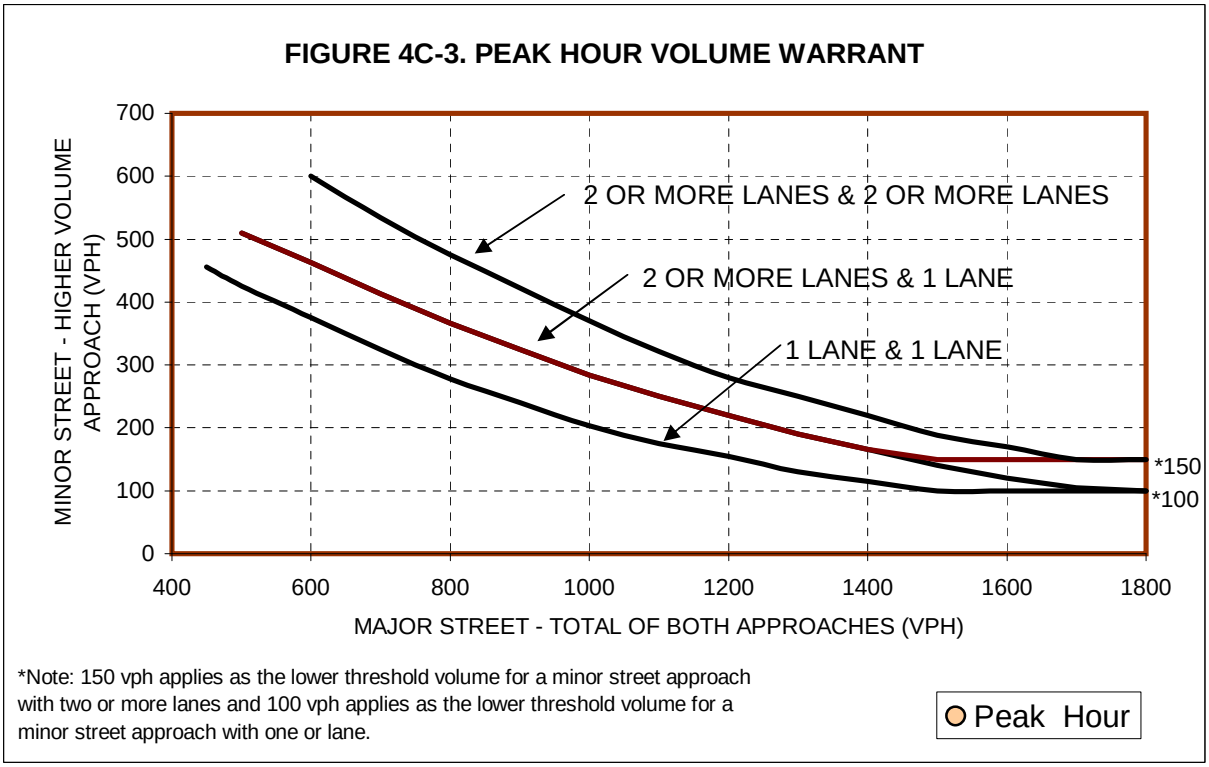
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
5:00 PM	1,822	40



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

The peak hour delay warrant is met when:

1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Cum+P Saturday	0.4	38	1,838
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

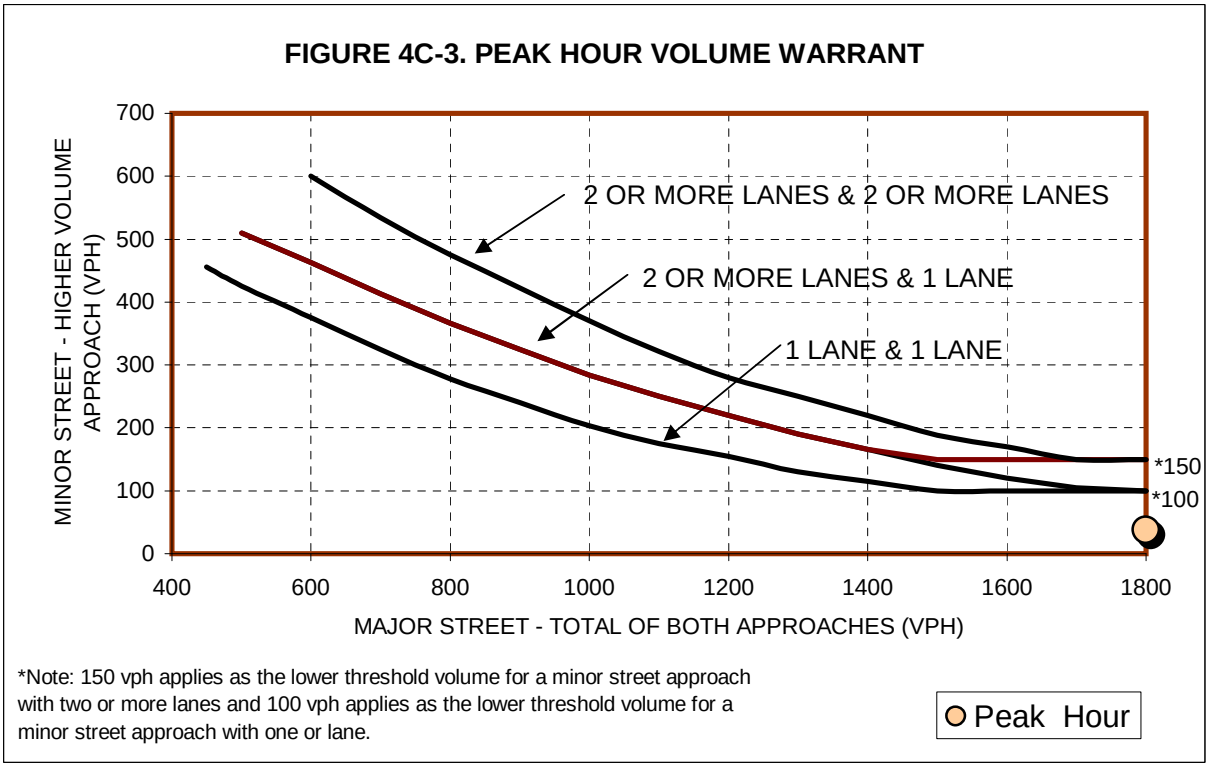
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
11:00 AM	1,800	38



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

The peak hour delay warrant is met when:

1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Mid-Town Cumulativ	0.3	40	1,462
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

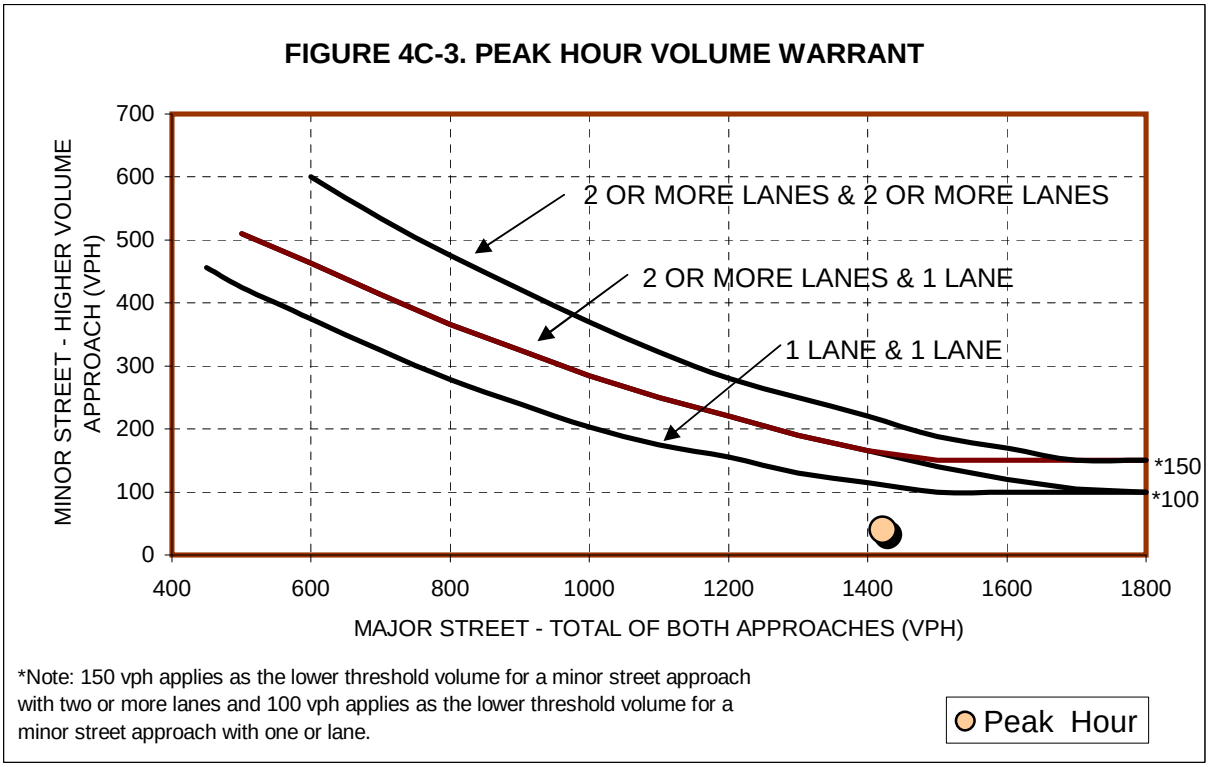
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
5:00 PM	1,422	40



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

The peak hour delay warrant is met when:

1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Mid-Town Cumulativ	0.3	38	1,382
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

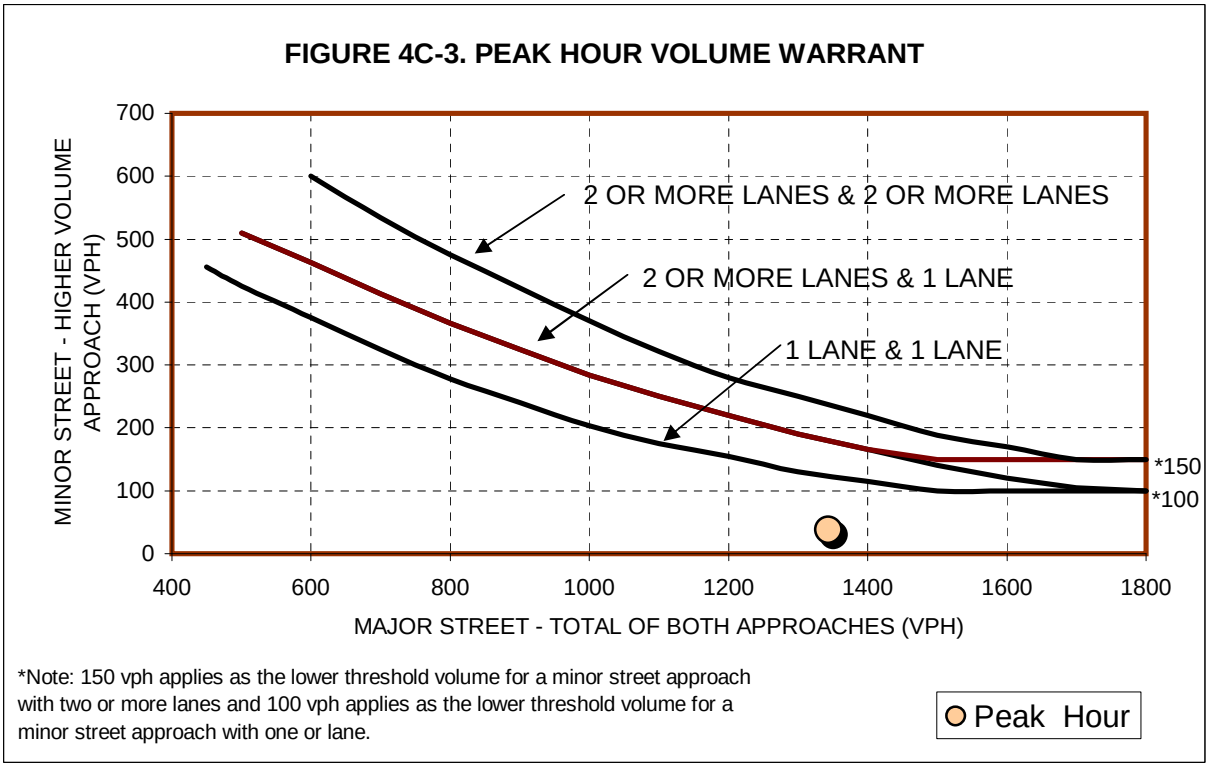
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
11:00 AM	1,344	38



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

The peak hour delay warrant is met when:

1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Mid-Town Cum+P P	0.4	40	1,618
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

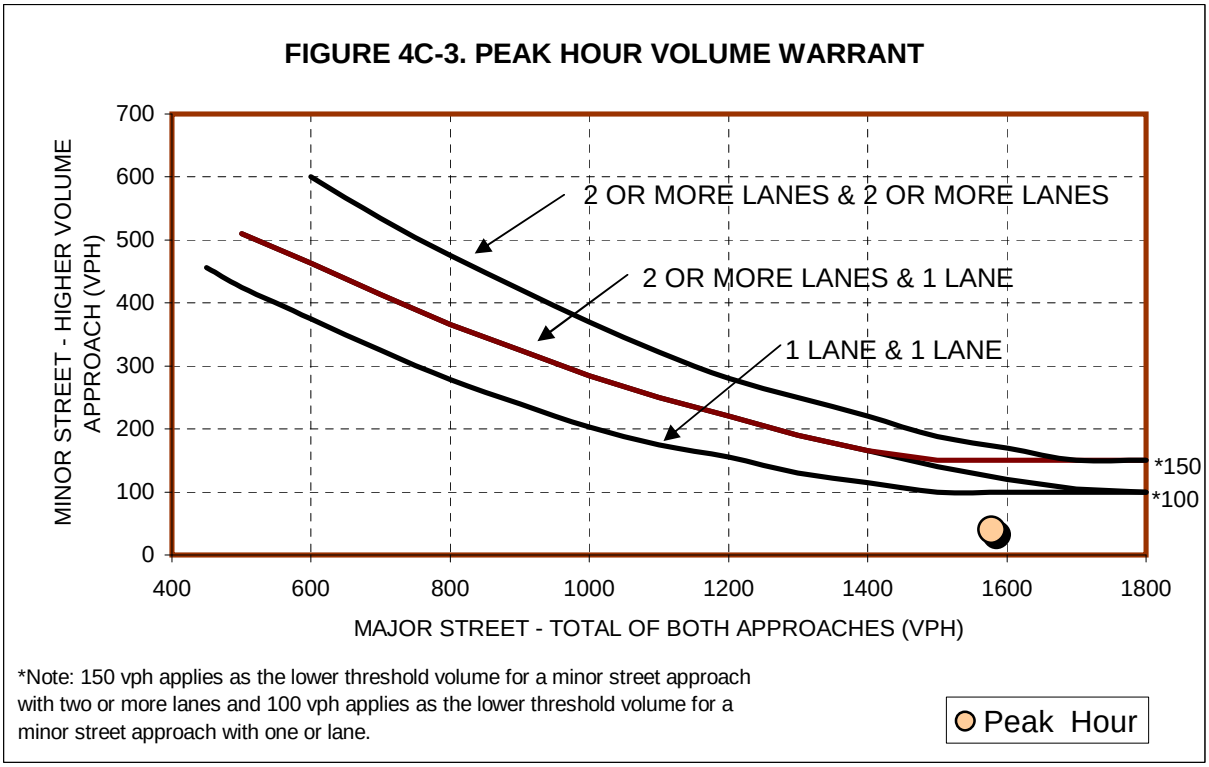
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
5:00 PM	1,578	40



Warrant	Not Met

Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

The peak hour delay warrant is met when:

1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

Analysis

Minor Street Lanes	1
Total Approaches	4

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced for the Intersection (vph)
Mid-Town Cum+P Sa	0.4	38	1,621
Limiting Value	4	100	800
Met/ Not Met	Not Met	Not Met	Met

Warrant	**Not Met**

Warrant 3B: Peak Hour Volume

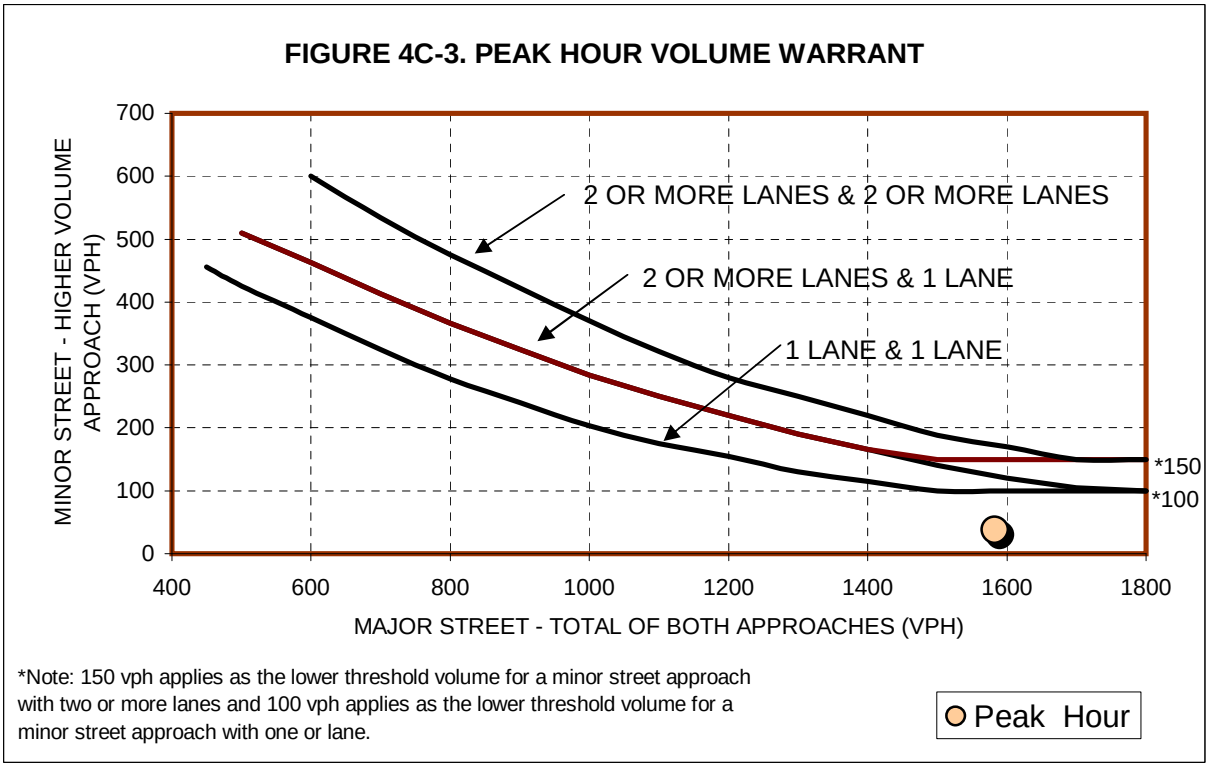
The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
11:00 AM	1,583	38



Warrant	Not Met

QUEUING ANALYSIS FOR AN ALL WAY STOP CONTROLLED INTERSECTION

	Southbound	Westbound	Northbound	Eastbound
V = Traffic Demand, VPH	68	0	109	55
c = Capacity for the Subject approach or a lane, VPH	1121	0	1686	760
V / *c* - 1 =	-0.939339875	#DIV/0!	-0.935349941	-0.927631579
L 95% (95 Percentile Queue Length)	5 feet	#DIV/0!	5 feet	6 feet
L 95% (95 Percentile Queue Length)	0.2 Cars	#DIV/0!	0.2 Cars	0.2 Cars

Assumes average length of a vehicle	25	Feet

Source: Based on the queue analysis of two way stop controlled intersection model of HCM.

QUEUING ANALYSIS FOR AN ALL WAY STOP CONTROLLED INTERSECTION

	Southbound	Westbound	Northbound	Eastbound
V = Traffic Demand, VPH	326	0	291	146
c = Capacity for the Subject approach or a lane, VPH	1121	0	1456	580
V / *c* - 1 =	-0.709188225	#DIV/0!	-0.800137363	-0.748275862
L 95% (95 Percentile Queue Length)	30 feet	#DIV/0!	19 feet	25 feet
L 95% (95 Percentile Queue Length)	1.2 Cars	#DIV/0!	0.7 Cars	1 Cars

Assumes average length of a vehicle	25	Feet

Source: Based on the queue analysis of two way stop controlled intersection model of HCM.

APPENDIX E:
APPROVED AND PENDING PROJECT LIST

Cumulative Projects Trip Generation Table

Project Number	ITE Code	Land Use	Size	Units	Daily	AM Peak			PM Peak			Saturday Midday		
				ksf[1] or d.u.		Total	In	Out	Total	In	Out	Total	In	Out
A1	210	Single Family Detached Housing	1	units	10	1	0	1	1	1	0	1	1	0
A2	814	Specialty Retail (am from 820)	1.6	ksf	71	2	1	1	4	2	2	8	4	4
A2	220	Apartment	3	units	20	2	1	1	2	1	1	2	1	1
A3	210	Single Family Detached Housing	2	units	19	2	1	1	2	1	1	2	1	1
A4	150	Warehouse	6.3	ksf	31	3	2	1	3	1	2	0	0	0
A5	220	Apartment	3	units	20	2	1	1	2	1	1	2	1	1
A6	812	Building Materials & Lumber	6	ksf	271	25	14	11	33	16	17	57	29	28
B1	210	Single Family Detached Housing	13	units	124	9	2	7	13	8	5	13	7	6
B10	210	Single Family Detached Housing	1	units	10	1	0	1	1	1	0	1	1	0
B11	210	Single Family Detached Housing	6	units	57	4	1	3	6	4	2	6	3	3
B12	230	Residential Condominium/Townhou	94	dwellings	551	41	7	34	49	33	16	44	24	20
B12	814	Specialty Retail (am from 820)	31.5	ksf	1396	33	20	13	86	38	48	156	81	75
B13	210	Single Family Detached Housing	3	units	29	3	1	2	3	2	1	3	2	1
B14	210	Single Family Detached Housing	1	units	10	1	0	1	1	1	0	1	1	0
B15	814	Specialty Retail (am from 820)	6.3	ksf	279	6	3	3	18	8	10	31	16	15
B2	220	Apartment	30	units	202	15	3	12	19	12	7	16	8	8
B3	230	Residential Condominium/Townhou	3	dwellings	18	1	0	1	2	1	1	2	1	1
B4	210	Single Family Detached Housing	4	units	38	3	1	2	4	3	1	4	2	2
B5	814	Specialty Retail (am from 820)	9.6	ksf	425	10	6	4	26	11	15	48	25	23
B6	710	(F) General Office Building (built-in form)	136	ksf	1690	240	211	29	203	35	168	56	30	26
B7	210	Single Family Detached Housing	1	units	10	1	0	1	1	1	0	1	1	0
B8	210	Single Family Detached Housing	2	units	19	2	1	1	2	1	1	2	1	1
B9	110	General Light Industrial	18.45	ksf	129	17	15	2	18	2	16	2	1	1
C1	230	Residential Condominium/Townhou	6	dwellings	35	3	1	2	3	2	1	3	2	1
C10	814	Specialty Retail (am from 820)	4.53	ksf	201	5	3	2	12	5	7	23	12	11
C10	814	Specialty Retail (am from 820)	6.687	ksf	296	7	4	3	18	8	10	33	17	16
C11	230	Residential Condominium/Townhou	6	dwellings	35	3	1	2	3	2	1	3	2	1
C12	230	Residential Condominium/Townhou	5	dwellings	29	2	0	2	3	2	1	2	1	1
C13	210	Single Family Detached Housing	1	units	10	1	0	1	1	1	0	1	1	0
C14	815	Free-Standing Discount Store	162	ksf	9075	136	92	44	614	307	307	921	470	451
C15	230	Residential Condominium/Townhou	2	dwellings	12	1	0	1	1	1	0	1	1	0
C16	210	Single Family Detached Housing	8	units	77	7	2	5	8	5	3	7	4	3
C2	230	Residential Condominium/Townhou	48	dwellings	281	22	4	18	25	17	8	22	12	10
C3	210	Single Family Detached Housing	3	units	29	3	1	2	3	2	1	3	2	1
C4	210	Single Family Detached Housing	17	units	163	13	3	10	17	11	6	16	9	7
C5	210	Single Family Detached Housing	12	units	115	9	2	7	12	8	4	11	6	5
C6	710	(F) General Office Building (built-in form)	12.225	ksf	264	35	31	4	18	3	15	5	3	2
C6	814	Specialty Retail (am from 820)	12.225	ksf	542	13	8	5	34	15	19	61	32	29
C6	230	Residential Condominium/Townhou	10	dwellings	59	5	1	4	5	3	2	5	3	2
C7	210	Single Family Detached Housing	1	units	10	1	0	1	1	1	0	1	1	0
C8	210	Single Family Detached Housing	13	units	124	9	2	7	13	8	5	13	7	6
C8	230	Residential Condominium/Townhou	8	dwellings	47	4	1	3	4	3	1	4	2	2
C9	210	Single Family Detached Housing	41	units	392	31	8	23	41	26	15	39	21	18
C9	230	Residential Condominium/Townhou	6	dwellings	35	3	1	2	3	2	1	3	2	1
Reoccupancy	710	(F) General Office Building (built-in form)	85	ksf	1177	165	145	20	174	30	144	0	0	0
				Total Cumulative Project Trips	**18437**	**902**	**601**	**301**	**1338**	**646**	**866**	**1635**	**851**	**784**

Source: City of Scotts Valley; ITE *Trip Generation,* 7th Edition (2003); Fehr & Peers (2007).
Notes: [1]ksf = thousand square feet

APPENDIX F:
TRUCK TURN TEMPLATES

20 ft
10 m
MB-50
Austro 2001 (US)
MB-30
Mercedes (Germany)

APPENDIX F

Alternatives (Two-Story Alternative and Off-Site Alternative)

Existing view from Mount Hermon overpass

Visual simulation of two story alternative

Visual Simulation
Target
Scotts Valley

ENVIRONMENTAL VISION
030509

Existing view from La Madrona Drive looking northwest

Visual simulation of two story alternative

Visual Simulation
Target
Scotts Valley

ENVIRONMENTAL VISION
030509

Existing view from Hwy. 17 northbound on ramp looking west

Visual simulation of two story alternative

Visual Simulation
Target
Scotts Valley

ENVIRONMENTAL VISION
030509

Approximate boundary of off-site alternative
SR 17
Image AMBAG
© 2008 Tele Atlas
©2007 Google™
Pointer 37°03'56.63" N 121°59'53.12" W elev 664 ft
Streaming 100%
Eye alt 1980 ft

Existing view from Hwy. 17 northbound at Santa's Village Road looking northeast - Alternative site

Visual simulation of two story alternative

Visual Simulation
Target
Scotts Valley

ENVIRONMENTAL VISION
030509

Existing view from Hwy. 17 southbound - Alternative site

Visual simulation of two story alternative

Visual Simulation
Target
Scotts Valley

ENVIRONMENTAL VISION
030509

Existing view from Tabor Drive looking south - Alternative site

Visual simulation of two story alternative

Visual Simulation
Target
Scotts Valley

ENVIRONMENTAL VISION
030509

Assessment of Biological Resources at the Gateway South Retail Stores Alternative Site (June 2008)

A 6.77 acre property at the north end of Santa's Village Rd. at the northern end of Scotts Valley has been identified as the alternative site for the Gateway South Retail Stores project. The Gateway South Retail Stores project is currently undergoing environmental review, and a Supplemental EIR is in preparation for a site located along La Madrona Rd., north of Silverwood Drive.

The alternative site is directly adjacent to Highway 17 to the northwest, and Carbonera creek to the east and southeast. The southwestern edge of the property is bordered by an office building for a software company called Borland. The site is currently undeveloped, but the central portion was dug up and leveled at some point in the past. The lowest part of this area is about 8-10ft below grade. The southwest and west margins of the property are landscaped. The majority of the property is annual grassland, and is regularly mowed.

ESA prepared an EIR for this property along with the adjacent property in 1991, for the construction of the Enterprise Technology Center. The assessment of biological resources at the site as described in that document is still mostly valid since the site itself and the area surrounding the site have not changed significantly since the document was written. However, the regulatory framework surrounding environmental regulations has changed significantly since the previous EIR, and special status listings have also changed significantly.

Vegetation

Development of the entire 6.77 acre property would most likely result in permanent but minor impacts to vegetation. There are likely no protected plant communities present at the site, and very few trees. Trees are restricted to the margins of the property, and could be avoided or trimmed rather than removed. Potential for rare plants is low due to the disturbed nature of the site, however a series of rare plant surveys may be necessary for two reasons; 1.) there has not been a floristic survey of the site since 1991, and 2.) Santa Cruz tarplant (*Holocarpha macradenia*), a federally endangered plant that is known from the Scotts Valley area, is a disturbance tolerant species that grows in grasslands with sandy soils. Suitable habitat for this species is potentially present at the site. There are also populations of Scotts Valley spineflower (*Chorizanthe robust* var. *hartwegii*), and Scotts Valley polygonum (*Polygonum hickmanii*) in the vicinity.

Wildlife

The grassland area at the site is situated adjacent to the active riparian corridor of Carbonera Creek. This riparian corridor provides nesting and forage habitat for wildlife species and birds. Therefore, any direct or indirect impacts to the riparian habitat would be considered potentially significant. California red- legged frogs may be present in the creek corridor, and may use adjacent grasslands as aestivation habitat. No mammal burrows were observed in the grassland

area during a reconnaissance visit on 06/20/2008, however the grassland may none the less provide valuable forage habitat for raptors.

Wetlands

The rectangular area in the middle of the property that exists several feet below grade is level, and does not have an outlet. This potentially causes water from precipitation to pond in the winter months. Some of the grassland is in fact dominated by facultative plant species such as; Mediterranean barley (*Hordeum marinum* ssp. *gussonianum*), Italian rye grass (*Lolium multiflorum*), and brome fescue (*Vulpia bromoides*). A formal wetland delineation would have to be carried out to determine the presence of wetlands at the site.

APPENDIX G

Cumulative Project List

Cumulative Projects Trip Generation Table

Project Number	ITE Code	Land Use	Size	Units	Daily	AM Peak			PM Peak			Saturday Midday		
				ksf[1] or d.u.		Total	In	Out	Total	In	Out	Total	In	Out
A1	210	Single Family Detached Housing	1	units	10	1	0	1	1	1	0	1	1	0
A2	814	Specialty Retail (am from 820)	1.6	ksf	71	2	1	1	4	2	2	8	4	4
A2	220	Apartment	3	units	20	2	1	1	2	1	1	2	1	1
A3	210	Single Family Detached Housing	2	units	19	2	1	1	2	1	1	2	1	1
A4	150	Warehouse	6.3	ksf	31	3	2	1	3	1	2	0	0	0
A5	220	Apartment	3	units	20	2	1	1	2	1	1	2	1	1
A6	812	Building Materials & Lumber	6	ksf	271	25	14	11	33	16	17	57	29	28
B1	210	Single Family Detached Housing	13	units	124	9	2	7	13	8	5	13	7	6
B10	210	Single Family Detached Housing	1	units	10	1	0	1	1	1	0	1	1	0
B11	210	Single Family Detached Housing	6	units	57	4	1	3	6	4	2	6	3	3
B12	230	Residential Condominium/Townhou	94	dwellings	551	41	7	34	49	33	16	44	24	20
B12	814	Specialty Retail (am from 820)	31.5	ksf	1396	33	20	13	86	38	48	156	81	75
B13	210	Single Family Detached Housing	3	units	29	3	1	2	3	2	1	3	2	1
B14	210	Single Family Detached Housing	1	units	10	1	0	1	1	1	0	1	1	0
B15	814	Specialty Retail (am from 820)	6.3	ksf	279	6	3	3	18	8	10	31	16	15
B2	220	Apartment	30	units	202	15	3	12	19	12	7	16	8	8
B3	230	Residential Condominium/Townhou	3	dwellings	18	1	0	1	2	1	1	2	1	1
B4	210	Single Family Detached Housing	4	units	38	3	1	2	4	3	1	4	2	2
B5	814	Specialty Retail (am from 820)	9.6	ksf	425	10	6	4	26	11	15	48	25	23
B6	710	(F) General Office Building (built-in form)	136	ksf	1690	240	211	29	203	35	168	56	30	26
B7	210	Single Family Detached Housing	1	units	10	1	0	1	1	1	0	1	1	0
B8	210	Single Family Detached Housing	2	units	19	2	1	1	2	1	1	2	1	1
B9	110	General Light Industrial	18.45	ksf	129	17	15	2	18	2	16	2	1	1
C1	230	Residential Condominium/Townhou	6	dwellings	35	3	1	2	3	2	1	3	2	1
C10	814	Specialty Retail (am from 820)	4.53	ksf	201	5	3	2	12	5	7	23	12	11
C10	814	Specialty Retail (am from 820)	6.687	ksf	296	7	4	3	18	8	10	33	17	16
C11	230	Residential Condominium/Townhou	6	dwellings	35	3	1	2	3	2	1	3	2	1
C12	230	Residential Condominium/Townhou	5	dwellings	29	2	0	2	3	2	1	2	1	1
C13	210	Single Family Detached Housing	1	units	10	1	0	1	1	1	0	1	1	0
C14	815	Free-Standing Discount Store	162	ksf	9075	136	92	44	614	307	307	921	470	451
C15	230	Residential Condominium/Townhou	2	dwellings	12	1	0	1	1	1	0	1	1	0
C16	210	Single Family Detached Housing	8	units	77	7	2	5	8	5	3	7	4	3
C2	230	Residential Condominium/Townhou	48	dwellings	281	22	4	18	25	17	8	22	12	10
C3	210	Single Family Detached Housing	3	units	29	3	1	2	3	2	1	3	2	1
C4	210	Single Family Detached Housing	17	units	163	13	3	10	17	11	6	16	9	7
C5	210	Single Family Detached Housing	12	units	115	9	2	7	12	8	4	11	6	5
C6	710	(F) General Office Building (built-in form)	12.225	ksf	264	35	31	4	18	3	15	5	3	2
C6	814	Specialty Retail (am from 820)	12.225	ksf	542	13	8	5	34	15	19	61	32	29
C6	230	Residential Condominium/Townhou	10	dwellings	59	5	1	4	5	3	2	5	3	2
C7	210	Single Family Detached Housing	1	units	10	1	0	1	1	1	0	1	1	0
C8	210	Single Family Detached Housing	13	units	124	9	2	7	13	8	5	13	7	6
C8	230	Residential Condominium/Townhou	8	dwellings	47	4	1	3	4	3	1	4	2	2
C9	210	Single Family Detached Housing	41	units	392	31	8	23	41	26	15	39	21	18
C9	230	Residential Condominium/Townhou	6	dwellings	35	3	1	2	3	2	1	3	2	1
Reoccupancy	710	(F) General Office Building (built-in form)	85	ksf	1177	165	145	20	174	30	144	0	0	0
				Total Cumulative Project Trips	**18437**	**902**	**601**	**301**	**1338**	**646**	**866**	**1635**	**851**	**784**

Source: City of Scotts Valley; ITE *Trip Generation,* 7th Edition (2003); Fehr & Peers (2007).
Notes: [1]ksf = thousand square feet