El Dorado County
Community Development Agency
Transportation Division

Silver Springs Parkway to
Bass Lake Road (South Segment)
Draft Subsequent Environmental Impact Report

Volume II: Appendices

State Clearinghouse No. ***SCH# 1991122014***

Lead Agency:
Community Development Agency
Transportation Division

Prepared with Assistance from:
Benchmark Resources

November 2015

EL DORADO COUNTY
COMMUNITY DEVELOPMENT AGENCY
TRANSPORTATION DIVISION

SILVER SPRINGS PARKWAY TO
BASS LAKE ROAD (SOUTH SEGMENT)
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

VOLUME II: APPENDICES

STATE CLEARINGHOUSE NO. ***SCH# 1991122014***

LEAD AGENCY:
Community Development Agency
Transportation Division

CONTACT PERSON:
Ms. Janet Postlewait
2850 Fairlane Court
Placerville, CA 95667
Phone: (530) 621-5900
Email: janet.postlewait@edcgov.us

PREPARED WITH ASSISTANCE FROM:
Benchmark Resources

NOVEMBER 2015

TABLE OF CONTENTS

TABLE OF CONTENTS

VOLUME I

LIST OF TABLES

LIST OF FIGURES

VOLUME II: APPENDICES

ABBREVIATIONS AND ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
ACM	asbestos-containing materials
amsl	above mean sea level
APN	Assessor's Parcel Numbers
APS	Alternative Planning Strategy
AQAP	Air Quality Attainment Plan
ATCM	Airborne Toxic Control Measure
BMPs	best management practices
CAA	federal Clean Air Act
CAAQS	California ambient air quality standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Occupational Safety and Health Administrations
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CIP	Capital Improvement Program
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent
County	El Dorado County
CRLF	California red-legged frog
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DOC	California Department of Conservation
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control

EDCAQMD	El Dorado County Air Quality Management District
EDCTC	El Dorado County Transportation Commission
EDHCSD	El Dorado Hills Community Services District
EID	El Dorado Irrigation District
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
ESA	federal Endangered Species Act
FCAAA	Federal Clean Air Act Amendments of 1990
FEMA	Federal Emergency Management Agency
FIP	Federal Implementation Plan
GHG	greenhouse gases
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
IBC	Important Biological Corridors
INRMP	Integrated Natural Resources Management Plan
ISA	International Society of Arboriculture
LOS	level of service
MCAB	Mountain Counties Air Basin
MMRP	Mitigation Monitoring and Reporting Plan
MMT	million metric tons
NAAQS	national ambient air quality standards
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NOP	Notice of Preparation
NO_x	oxides of nitrogen
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
OWMP	Oak Woodland Management Plan
PCAPCD	Placer County Air Pollution Control District
PCBs	polychlorinated biphenyls
PG&E	Pacific Gas and Electric Company
Phase 1 ESA	Phase 1 Environmental Site Assessment
PHF	peak hour factor
PM_{10}	particulate matter less than 10 microns in mean diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in mean diameter
ppm	parts per million
PRC	California Public Resource Code

Project	Silver Springs Parkway to Bass Lake Road (South Segment) Project
RCRA	Resource Conservation and Recovery Act
Regional Board	Sacramento Valley Regional Water Quality Control Board
RMP	Risk Management Plan
ROG	reactive organic gas
RTP	Regional Transportation Plan
RTP	Regional Transportation Plan
RTPA	Regional Transportation Planning Agency
Scoping Plan	Climate Change Scoping Plan
SCS	Sustainable Communities Strategy
SEIR	Subsequent EIR
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SR	State Route
SRA	State Responsibility Areas
SWMP	Storm Water Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TAC	toxic air contaminant
TPZ	tree protection zone
Transportation	El Dorado County Community Development Agency, Transportation Division
U.S. 50	U.S. Highway 50
UBC	Uniform Building Code
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VMT	vehicle miles traveled
YSAQMD	Yolo-Solano Air Quality Management District

APPENDIX A
SEIR SCOPING RECORDS

COMMUNITY DEVELOPMENT AGENCY
TRANSPORTATION DIVISION
http://www.edcgov.us/DOT/

PLACERVILLE OFFICES:
MAIN OFFICE:
2850 Fairlane Court, Placerville, CA 95667
(530) 621-5900 / (530) 626-0387 Fax

MAINTENANCE:
2441 Headington Road, Placerville, CA 95667
(530) 642-4909 / (530) 642-0508 Fax

LAKE TAHOE OFFICES:
ENGINEERING:
924 B Emerald Bay Road, South Lake Tahoe, CA 96150
(530) 573-7900 / (530) 541-7049 Fax

MAINTENANCE:
1121 Shakori Drive, South Lake Tahoe, CA 96150
(530) 573-3180 / (530) 577-8402 Fax

NOTICE OF PREPARATION
OF A
SUBSEQUENT ENVIRONMENTAL IMPACT REPORT
FOR THE
SILVER SPRINGS PARKWAY TO BASS LAKE ROAD (SOUTH SEGMENT) PROJECT

DATE: April 21, 2014

TO: Interested Agencies and Individuals

FROM: El Dorado County Community Development Agency, Transportation Division

The El Dorado County Community Development Agency, Transportation Division (Transportation) is preparing a Subsequent Environmental Impact Report (SEIR) for the proposed Silver Springs Parkway to Bass Lake Road (South Segment) Project. Transportation is soliciting the views of interested persons and agencies on the scope and content of the information to be included in the SEIR. Agencies should comment with regard to information that is relevant to the agencies' statutory responsibilities, as required by Section 15082 of the California Environmental Quality Act (CEQA) Guidelines. DOT will also accept written comments regarding the scope and content of the SEIR from interested persons and organizations concerned with the project, in accordance with State CEQA Guidelines Section 15083.

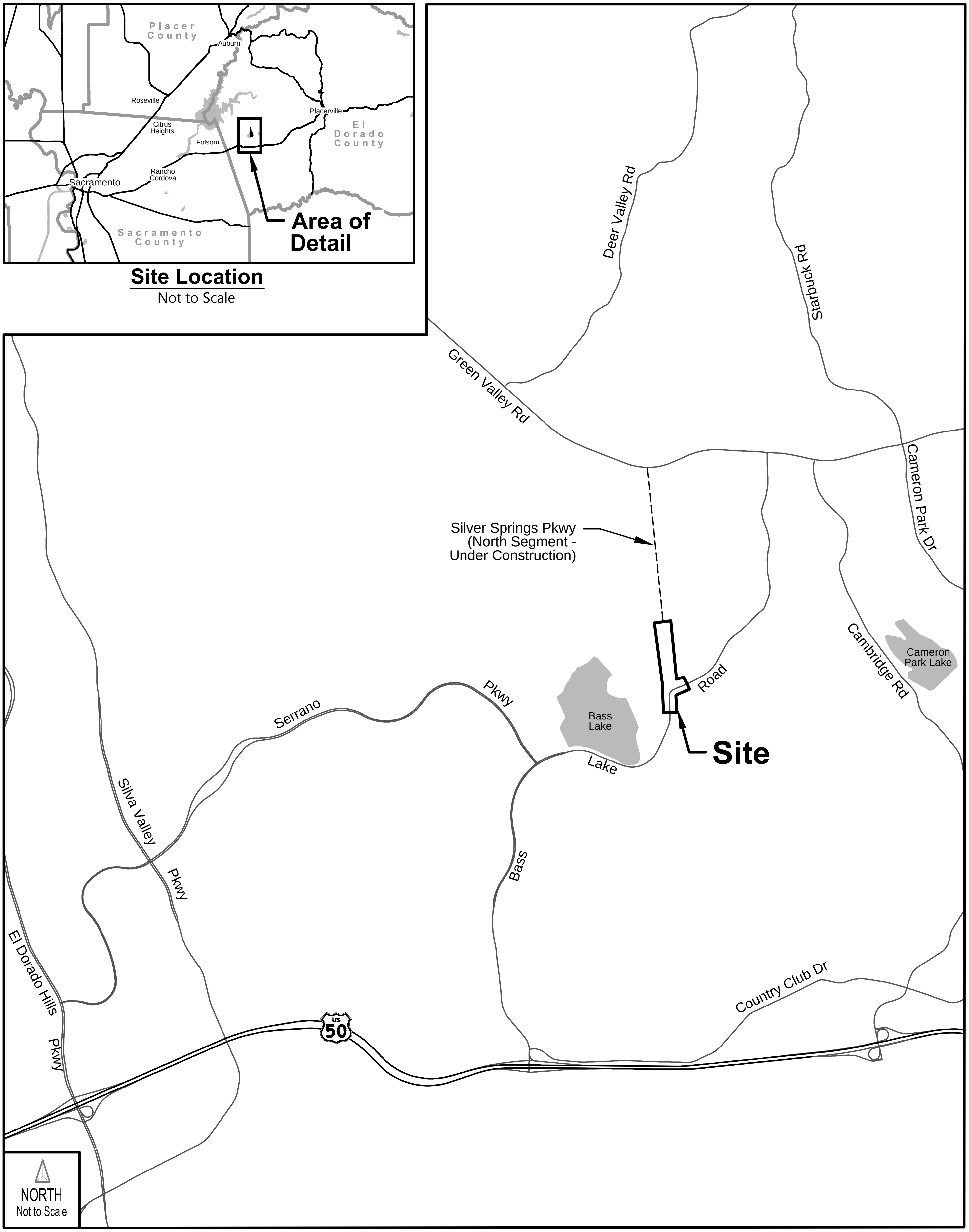
The SEIR scoping comment period begins April 23, 2014 and ends May 23, 2014. All written comments should be directed to: El Dorado County Community Development Agency, Transportation Division, Attention: Ms. Janet Postlewait, 2850 Fairlane Court, Placerville, CA 95667. **Individuals and organization/agency representatives are invited to provide oral comments at a scoping meeting that will be held on May 13 beginning at 5:30 p.m. at the El Dorado Hills Library located at 7455 Silva Valley Parkway, El Dorado Hills, California.** Persons with disabilities that may require special accommodations at the scoping meeting should contact Janet Postlewait at the above address or by phone at: (530) 621-5900. This notice can also be found on the El Dorado County Transportation website at http://www.edcgov.us/Government/DOT/CEQA.

PROJECT LOCATION: The project is located in western El Dorado County between Bass Lake Road east of Bass Lake and Green Valley Road. The project includes portions of Assessor's Parcel Numbers (APNs) 115-003-003, 115-003-004, 115-003-015, 115-003-016, 115-031-003, and 115-031-023, and certain County road rights of way (Bass Lake Road). Figure 1 shows the general project location.

PROJECT DESCRIPTION: The project would construct the southern segment of Silver Springs Parkway as a two-lane road connecting Bass Lake Road to the southern terminus of the northern segment of Silver Springs Parkway currently under construction. The project would also construct an intersection at the southern end of the proposed Silver Springs Parkway at Bass Lake Road. The project segment of Silver Springs Parkway is approximately 0.25 miles in length. The project would also realign and reconstruct Bass Lake Road for a distance of approximately 800 feet south and approximately 500 feet east of the Silver Springs Parkway intersection. The project includes installation of Class II bicycle lanes and concrete sidewalks on both sides of the parkway, and a landscaped center median. The project would require the County's acquisition of property for right-of-way through negotiated payment and/or condemnation through eminent domain, and would require that the County obtain temporary construction easements for access or construction activities within adjacent properties. The project is identified in the El Dorado County Capital Improvement Program (CIP) as "Silver Springs Parkway to Bass Lake Road (south segment)" (CIP Project #76108).

ENVIRONMENTAL REVIEW: In 1993, the County certified a Final EIR and approved the Bass Lake Road Realignment Project. The Project currently under consideration is similar to the southern portion of the Bass Lake Road Realignment Project. The northern portion of the previously approved Bass Lake Road Realignment Project is under construction as a component of the Silver Springs development on-site improvements. The SEIR will provide supplemental and updated environmental impact evaluations as necessary to document environmental impacts of the Project. Environmental impacts that will be addressed in the SEIR include: land use, geology and soils; air quality; water resources; biological resources; noise; aesthetics; human health and safety; motorized and non-motorized transportation/circulation; public services and utilities; and cultural resources. Studies conducted for the previously certified Bass Lake Road Realignment Project EIR (SCH# 90021120) and addenda will be revisited and updated as necessary.

EIR PROCESS AND PUBLIC INPUT: Following the receipt of input during the NOP comment period, the County will prepare a Draft SEIR that will describe the Project and alternatives (including a *no project* alternative as required by CEQA) and will identify the potential environmental effects and mitigation measures that may be necessary to minimize or avoid such effects. The Draft SEIR will be made available for public review and input for a 45-day review period. The County will consider all comments received and will prepare a Final SEIR which identifies any necessary changes to the Draft EIR and provides responses to all comments on the Draft EIR. The County Board of Supervisors will consider certification of the Final SEIR prior to approval of actions required for undertaking the Project.



SOURCE: Benchmark Resources 2014
BASE MAP: SACOG 2013

Project Location - Figure 1

Silver Springs Parkway to Bass Lake Road (South Segment)
El Dorado County, California

Silver Springs Parkway to Bass Lake Road (South Segment)
Notes from May 13, 2014, Subsequent EIR Scoping Meeting
Prepared by Benchmark Resources—May 14, 2014

The El Dorado County Transportation Division hosted a public meeting on May 13, 2014, at the El Dorado County Library in El Dorado Hills to provide information and receive public comments on the scope of the subsequent environmental impact report (SEIR) to be prepared for the Silver Springs Parkway to Bass Lake Road (South Segment) project (project). County staff and consultants present are listed below. A list of attendees and the sign-in sheets are included as Attachment A.

County Transportation Staff:
John Kahling, Deputy Director of Engineering
Janet Postlewait, Environmental Planner
Monika Pedigo, P.E., Project Engineer
Kyle Lassner, Right-of-Way

County Consultants:
Benchmark Resources
Bob Delp, Project Manager
Christy Seifert, Project Analyst

Meeting Summary

Mr. Kahling introduced County staff and consultants attending the meeting and provided an overview of the meeting agenda. The meeting agenda is included with these notes as Attachment B and the presentation slides are included as Attachment C. Mr. Kahling discussed the history of the Bass Lake Road Realignment project and previous environmental review. Mr. Kahling then discussed the proposed design elements of the Silver Springs Parkway to Bass Lake Road project and concluded with discussion of adjacent road improvement projects. During Mr. Kahling's portion of the presentation, several questions were asked regarding project design, traffic, and other considerations. Issues raised in questions during Mr. Kahling's presentation are included in the "Public Comments" section, below. Following Mr. Kahling's portion of the presentation, he introduced Mr. Bob Delp to provide an overview of the environmental review process.

Mr. Delp discussed the general requirements of the California Environmental Quality Act (CEQA) and the County's decision to prepare the SEIR. Mr. Delp reviewed some of the key circumstances that have changed since the previous environmental document was certified and discussed the general resource issues that will be evaluated and presented in the SEIR. Several questions were also asked during Mr. Delp's portion of the presentation, and issues raised in those questions listed in the "Public Comments" section, below.

Public Comments

The following text summarizes the questions and comments received at the meeting. Italicized text summarizes responses provided by County staff and consultants during the meeting.

Commenter asked whether signals or stop signs are planned for the Silver Springs Parkway/Bass Lake Road intersection.

Commenter asked if the County will use rubberized asphalt to reduce traffic noise when implementing the overlay project on Bass Lake Road.

Commenter stated that maps should include local streets adjacent to the project area so the community can see where their homes are in relation to the project.

Commenter asked if landscaping would be included with the project and expressed concern about weeds and unkempt areas. Landscaping is important to consider.

Commenter (Woodridge resident) noted that drivers increase speed on straight roads. It is challenging and dangerous to exit Woodridge and the County should consider that. There is a 40 mph speed limit, but most cars go 60 mph.

Commenter (Lindell Price) asked if the County has considered "self-enforcing roads," which is designing roads to make drivers feel uncomfortable going fast. She noted that this is done elsewhere and can be advantageous to controlling speeds without needing CHP enforcement.

Commenter (Lindell Price) continued inquiring regarding road design asking if the County has considered roundabouts, speed bumps, and/or narrowed roads.

Commenter (Steve Setoodeh) opined that the project is a small portion of a bigger project and the County should consider improvements needed along the full length of Bass Lake Road as a whole. He questioned how the environmental analysis and document can focus only on one small portion.

Commenter (Lindell Price) asked if the recently adopted County traffic model would be used.

Commenter (Marlene Ruff) noted that she felt the road would be beneficial in terms of safety by providing an additional option for evacuating the area in case of fire. She also noted her concerns about potential effects on Bass Lake and asked the County to please not drain Bass Lake.

Commenter (Wayne Mills, Woodridge resident) observed that the new traffic signal at the north end of Silver Springs Parkway at Green Valley Road and other nearby signals, combined with traffic at the school, create traffic problems now and that it is going to be a mess when through traffic begins to use Silver Springs Parkway. Also asked how the County can predict and address traffic problems.

Commenter (Wayne Mills) opined that turn lanes are needed for cars trying to get to school. Said the County should work with the school district to help schools figure out how to eliminate that problem.

Commenter (Dave Schratz) expressed concerns as the owner/resident of 1019 Jasmine Circle, adjacent to the inside turn of Bass Lake Road. He is concerned with the planned 4-foot increase in elevation on Bass Lake Road adjacent to his property, with the visual effects of seeing vehicles over the existing sound wall, and with increases in traffic noise and the sound wall becoming ineffective with the elevated road. He also noted concern with noise associated with vehicles stopping and starting at stop signs ("screeching"). When asked by Mr. Delp, he said that he would welcome noise monitoring at his property. He also noted that the proposed bike lanes do not connect to anywhere on the south end of the project. He noted that he felt the project design would preclude the option of adding a turn lane later because of the approach angle coming in on northbound Bass Lake Road approaching the new intersection. He asked if the County owned land to the east near Bass Lake and suggested that the County consider moving the approach alignment and intersection to the west.

Commenter (Steve Setoodeh) suggested that the road alignment design include consideration of the potential for future additional widening and lanes in the southern portion so that future construction on the southern part of property aligns.

Commenter opined that the property on the west side of Bass Lake Road across Madera Way is owned by the County and was considered for a regional park and that the park entrance was at one time discussed for that area.

Commenter (Sally Buckley) expressed concern that the road will be closer and higher to houses. She noted that she never eats outside because of the noise and asked if it will be worse with the project. She also asked about the construction schedule and noted the presentation slide that presented construction in 2019–2021.

Commenter (Kathy Prevost) noted that there are streams, a pond, and an intermittent spring that are part of Bass Lake and discussed in the 1993 final environmental impact report (FEIR). She asked if the analysis would revisit the 1993 analysis of those areas. She noted that the project would fill in the pond and asked if there would be bridges over the streams. She observed that there is flora and fauna that needs to be considered and asked if the California Department of Fish and Wildlife (DFW) would be consulted. She noted that the 1993 FEIR noted that eagles were in the area that had been there for 40 years, which would now be 60 years, as discussed in a 1991 letter from a professor at Sacramento State University who took his students there. She would like us to consider the project's effects on ospreys.

Commenter (Chuck Buckley) asked if the exact elevations, widths, lanes, and other project design details would be provided because it is difficult to comment specifically without that information.

Commenter (Dave Schratz) noted that an 18-inch storm drain goes to Bass Lake Road from his property and the existing drainage under Bass Lake Road is insufficient. He frequently unplugs it to alleviate flooding. He is also concerned about sight distance and visibility at the new intersection, especially considering sound walls.

Commenter (Wayne Mills) asked about the location of the median and how far to the south it would extend.

Commenter (Lindell Price) suggested that County staff collaborate with the school and expressed concerns about traffic related to the school.

Commenter asked about bus turnouts along Bass Lake Road and suggested they would be a benefit.

Commenter (Sally Buckley) asked if sidewalks would be constructed on Bass Lake Road or if they would end at the Silver Springs Parkway intersection.

Commenter asked if the additional future segment (western leg) would be considered in the traffic study.

Commenter (Wayne Mills) noted that buses of the El Dorado Union School District hold up traffic when they stop and turnouts are needed.

Commenter asked if asbestos would be addressed in the SEIR.

Following the comment session, attendees were reminded that the County will accept comments through May 23 and that those comments will be considered during preparation of the draft SEIR.

Attachment A
May 13, 2014, Scoping Meeting Attendees and Sign-in Sheets

Silver Springs Parkway Project - Subsequent EIR
May 13, 2014 Scoping Meeting Attendees per Sign-In Sheets

Name	Affiliation (if applicable)	Address	Phone Number and E-mail
Christina Bowers		3456 Tea Rose Drive El Dorado Hills, CA 95762	530-672-8465 tinab9@comcast.net
Kevin A. *Loewer*	El Dorado Hills CSD	1021 Harvard Way El Dorado Hills, CA 95762	kloewen@edhcsd.org
Marlene Ruff	Neighbor	3392 Tea Rose Drive El Dorado Hills, CA 95762	530-672-0524 lionsgate@sbcglobal.net
Herb and Kathy Prevost	Neighbor	1080 Jasmin Circle El Dorado Hills, CA 95762	530-672-6836 hpkp@aol.com
Martin Szegedy	None	2880 Bass Lake El Dorado Hills, CA 95762	
John Raslear	4Seasons Civic League	3124 Four Seasons Drive	4scivicleague@sbcglobal.net
Chuck and Sally Buckley		1007 Jasmine Circle El Dorado Hills, CA 95762	530-676-4482 s_buckley@sbcglobal.net
Dave Schratz		1019 Jasmine Circle El Dorado Hills, CA 95762	925-980-3133 david.schratz@emerson.com
Tom *Sin*		3456 Tea Rose Drive El Dorado Hills, CA 95762	530-672-*8465*
Corlus Mills		1000 Jasmine Circle El Dorado Hills, CA 95762	530-672-0746
Steve Setoodeh		1015 Jasmine Circle El Dorado Hills, CA 95762	steve.setoodeh@yahoo.com

Name	Affiliation (if applicable)	Address	Phone Number and E-mail
Lindell Price		3672 Millbrae Road Cameron Park, CA 95682	916-804-7316 lindellprice@gmail.com
Wayne Mills		1000 Jasmine Circle El Dorado Hills, CA 95762	530-672-0746
John Thomson	Bass Lake Action Committee	501 Kirkwood Court El Dorado Hills, CA 95762	530-677-3039
Joanne *Cisneaos*	4 Seasons	7523 Doe Spring Way El Dorado Hills, CA 95762	916-934-3285

Note: *Italicized* text may have been illegible on sign-in sheet.

Silver Springs Parkway Project - Subsequent EIR
May 13, 2014 Scoping Meeting
Sign-In Sheet

Name	Affiliation (if applicable)	Address	Phone Number and E-mail
Christina Bowers		3456 Tea Rose Dr., EDH	tinab9@comcast.net 530-672-8465
Kevin A. Loewen	EDH CSD	1021 Harvard Way, EDH	kloewen@edhcsd.org
Marlene Ruff	Neighbor	3392 Tea Rose Dr. EDH 95762	lionsgate@sbcglobal.net 530-672-0524
HERB & KATHY PREVOST	NEIGHBOR	1080 JASMINE CIR EDH 95762	HPRP@AOL.com 530 672-6836
MARTIN SZEGEDY	NONE	2880 BASS LAKE 95672	
John RASLEAR	4 SEASONS CIVIC LEAGUE	3124 FOUR SEASONS DR	~~4SCivic~~ 4SCIVICLEAGUE@SBCGLOBAL.NET
Chuck & Sally BUCKLEY	—	1007 Jasmine Cir EDH	530 676 4482 s_buckley@sbcglobal.net
DAVE SCHRATZ	—	1019 JASMINE Circle EDH	925-980-3133 David.Schratz@Emerson.Com

Silver Springs Parkway Project - Subsequent EIR
May 13, 2014 Scoping Meeting
Sign-In Sheet

Name	Affiliation (if applicable)	Address	Phone Number and E-mail
Tony Sin		3456 Ten Rue Dr	530 6728415
Carlos Nies		1000 Jasmine Circle	530-672-0746
steve Sedoodeh		1015 Jasmine Cir EDH	steve.Sedoodeh@yahoo.com
Lindell Price		3672 Millbrae Rd.	LindellPrice@gmail.com (916) 804-7316

Silver Springs Parkway Project - Subsequent EIR
May 13, 2014 Scoping Meeting
Sign-In Sheet

Name	Affiliation (if applicable)	Address	Phone Number and E-mail
WAYNE MILLS		1000 JASMINE CIRCLE	530-672-0746
JOHN THOMSON	BASS LAKE ACTION COMMITTEE	501 KIRKWOOD CT EDH	530-677-3039
JOANNE CISNEROS	4 SEASONS	7523 Doe Spring Way	916-934-5285

Attachment B
May 13, 2014, Scoping Meeting Agenda

MEETING AGENDA

Silver Springs Parkway Project - Subsequent EIR
Scoping Meeting

El Dorado Hills Library
7455 Silva Valley Parkway, El Dorado Hills, California
May 13, 2014 -- 5:30 PM

I. **Welcome and Introductions**

II. **Project Background**

III. **Project Overview**

IV. **Environmental Review Process**

V. **Public Comments on Scope of Environmental Review**

VI. **Adjourn**

Attachment C
May 13, 2014, Scoping Meeting Presentation Slides

Note that the following slides were prepared for display during an oral presentation that provided context for the graphics and text; the slides are not intended as a stand-alone document.

SILVER SPRINGS PARKWAY TO BASS LAKE ROAD (South Segment)

Scoping Meeting for Subsequent EIR, Tuesday, May 13, 2014

El Dorado County Library – El Dorado Hills

County of El Dorado
Community Development Agency
Transportation Division

John Kahling, P.E.
Deputy Director of Engineering

Janet Postlewait
Environmental Planner

Monika Pedigo, P.E.
Associate Civil Engineer

Benchmark Resources

Bob Delp
SEIR Project Manager

Christy Seifert
Project Analyst

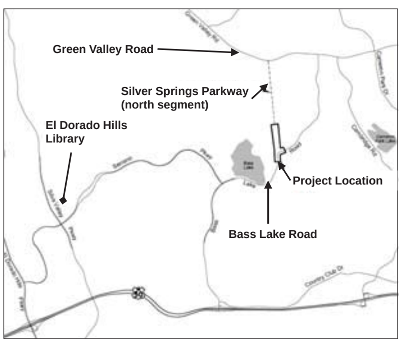
1

Meeting Agenda

- **Welcome and Introductions**
- **Project Background**
- **Project Overview**
- **Environmental Review Process**
- **Public Comments on Scope of Environmental Review**
- **Adjourn**

Silver Springs Parkway to Bass Lake Road (South Segment), Subsequent EIR Scoping Meeting 2

Project Location



Silver Springs Parkway to Bass Lake Road (South Segment), Subsequent EIR Scoping Meeting 3

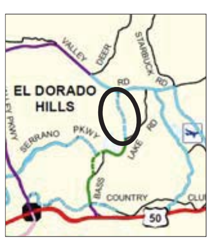
Project Background

- Previously Approved Project
- 1987 Bass Lake Road Realignment Study and Negative Declaration
- 1993 Bass Lake Road Realignment Final EIR
- 1998 Silver Springs Subdivision Approval
- Subsequent Agreements

Silver Springs Parkway to Bass Lake Road (South Segment), Subsequent EIR Scoping Meeting 4

Project Background (cont.)

Identified in the El Dorado County General Plan

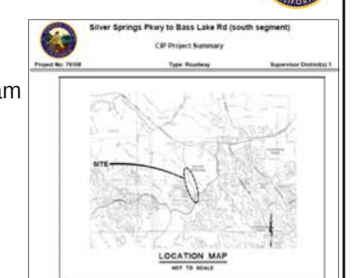


Silver Springs Parkway to Bass Lake Road (South Segment), Subsequent EIR Scoping Meeting 5

Project Background (cont.)

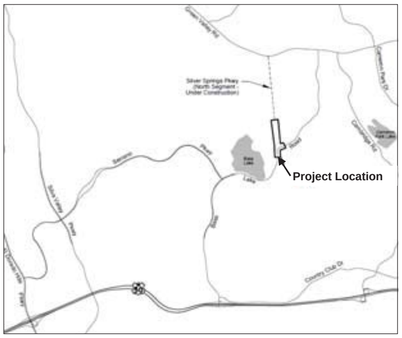
Included in the County's Capital Improvement Program

Project #76108



Silver Springs Parkway to Bass Lake Road (South Segment), Subsequent EIR Scoping Meeting 6

Project Overview



Project Overview (cont.)

Project Overview (cont.)

- 1,400-ft new segment of Silver Springs Parkway
- 100-ft cross-section
- Two traffic lanes; raised center median
- Turn pockets for driveway access
- Sidewalks and Class II bicycle lanes (providing continuous bicycle and pedestrian facilities to Green Valley Road)
- Reconstruct driveway access to existing residences
- Utilities and stormwater drainage

Project Overview (cont.)

- Intersection improvements at Bass Lake Road
- Four-way intersection with stop signs on all segments
- Improvements on Bass Lake Road east and south of intersection
  - 500 feet east on Bass Lake Road
  - 800 feet south on Bass Lake Road

Project Overview (cont.)

- Acquisition of approximately 3.4 acres of permanent right-of-way
- Temporary easements for construction activities and staging areas

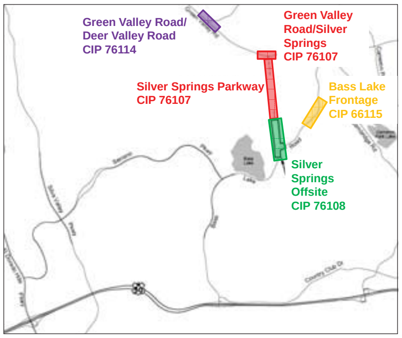
Project Overview (cont.)

Preliminary Schedule

- Completion of Pre-Construction Activities*
  - Environmental Review: Spring 2015
  - Environmental Permits: June 2016
  - Final Design: June 2017
  - Right-of-Way Acquisition: December 2018
- Begin Construction: July 2019
- End Construction: March 2021

* Some activities will occur concurrently

Adjacent Projects



Environmental Review

California Environmental Quality Act (CEQA)
- Environmental review of discretionary approvals
- Establishes framework to evaluate and document environmental effects
- Avoid significant environmental effects, when feasible
  - Mitigation measures
  - Alternatives

Environmental Review (cont.)

- Final EIR certified in 1993
- Additional decisions to proceed with project, including acquisition of rights-of-way
- Decision to prepare a *Subsequent* EIR
- Scoping is not required
  - Notice of Preparation
  - Scoping meeting

Environmental Review (cont.)

Subsequent EIR will consider changes in circumstances:
- Community growth
- 2004 County General Plan
- Changes in CEQA requirements
- Refined project limited to southern segment

Environmental Review (cont.)

Content of Subsequent EIR
- Project Description
- Environmental Setting
- Environmental Impacts
- Mitigation Measures
- Alternatives

Environmental Review (cont.)

Issues to be considered include:
- Visual impacts
- Air quality
- Greenhouse gases
- Hydrology/water quality
- Biological resources
- Cultural resources
- Traffic and circulation
- Noise
- Land use

Environmental Review (cont.)

Subsequent EIR Process
- Consider scoping comments
- Conduct resource impact evaluations
- Prepare Draft Subsequent EIR
- 45-day review of Draft Subsequent EIR
- Prepare Final Subsequent EIR
- Board of Supervisors certify Final Subsequent EIR

Silver Springs Parkway to Bass Lake Road (South Segment), Subsequent EIR Scoping Meeting 19

Public Comments

- Comments regarding environmental issues to consider in Subsequent EIR
- Comments and questions will be considered in preparing the Draft Subsequent EIR – not for discussion tonight
- Please limit comments to requested time period to allow others opportunity to comment
- Written comments accepted through May 23rd

Silver Springs Parkway to Bass Lake Road (South Segment), Subsequent EIR Scoping Meeting 20

Written Comments

Fill out a Comment Card Tonight or
Submit Comments to the County by May 23rd

Visit the project website:
http://www.edcgov.us/Government/DOT/CEQA

Email: **janet.postlewait@edcgov.us**

Mail: **El Dorado County Transportation Div.**
Attn: Janet Postlewait
2850 Fairlane Court
Placerville, CA 95667

Phone: (530) 621-5900

Silver Springs Parkway to Bass Lake Road (South Segment), Subsequent EIR Scoping Meeting 21

Comments

Silver Springs Parkway to Bass Lake Road (South Segment), Subsequent EIR Scoping Meeting 22

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DOT
2014 MAY -8 AM 11:40

Lambert D. Ruff and Marlene D. Ruff
3392 Tea Rose Drive
El Dorado Hills, CA 95762-6569
Telephone: 530-672-0524
E-Mail: lionsgate2@sbcglobal.net

May 7, 2014

Community Development Agency
Transportation Division
Main Office
2850 Fairlane Court
Placerville, CA 95667

Attention: Ms. Janet Postlewait

Dear Madams and Sirs:

Re: "Notice of Preparation of a Subsequent Environmental Impact Report for the Silver Springs Parkway to Bass Lake Road (South Segment) Project"

Thank you for the opportunity to address the above-mentioned subject.

Bass Lake is our concern. We built our home 16 years ago a few blocks from Bass Lake Road and were told at that time, "Someday, they're going to straighten out Bass Lake Road." However, there was no mention of Bass Lake itself deliberately being dried up. Right now, with the drought, you would think we would want to save water.

We understand that builders want to build homes and, realistically, they need ingress and egress and they need schools. However, please do not "Throw the baby out with the bath-water," as they used to say, "Back in the day!"

Bass Lake now has become "A Project;" whereas, Bass Lake was the symbol of "Coming Home". Driving Highway 50, turning off the freeway and then coming upon Bass Lake meant "We're home!"

"Coming home from work," to us was commuting from the Bay Area and, believe me, Bass Lake meant the world to us. It still does! Quite frankly, it was high on our list of "Why We Want to Leave the Bay Area and Live in El Dorado Hills." The Canada Geese decided they liked it too and stayed; the Tundra Swans and Egrets call it home and so many other birds and animals seem to like it as well!

We cannot think of how to answer the children when they ask, "Where did all the birds go?"

Please do not drain Bass Lake; please do not build a road too close to it; please do not build a school too near it (we would think that the earth beneath the lake would not be stable enough for a nearby school) and most important, please do not take away "Home" for our Wildlife.

We can all make this work. Allow the water to accumulate in the lake and allow the water to continue to be recycled. You can have your road away from the lake and your school near the road, but neither should be too close to the lake nor take the place of the lake.

We all need to protect our shore birds; flight birds; insects; plants and wildlife as they need water and housing just as we need water and housing. We know we cannot swim in Bass Lake and we know we cannot boat on Bass Lake nor fish in Bass Lake. However, we can walk by and drive by Bass Lake and appreciate the wildlife and realize – we're home!

Thank you.

Respectfully submitted,

Marlene D. Ruff

(Mrs.) Marlene D. Ruff
/mr

c: The Honorable Edmund G. Brown, Jr., Governor of the State of California,
State Capitol, Suite 1173, Sacramento, CA 95814
California Environmental Protection Agency, 555 Capitol Mall, Sacramento, CA 95814
California Air Resources Board, 1001 I Street, Sacramento, CA 95814
California Department of Fish and Wildlife Commission, 1416-9th Street, 12th Fl.,
Sacramento, CA 95814

El Dorado County Agriculture Department, 311 Fairlane Court, Placerville, CA 95667
El Dorado County Assessor, 360 Fairlane Court, Placerville, CA 95667
El Dorado County Auditor, Controller, 360 Fairlane Court, Placerville, CA 95667
El Dorado County Board of Supervisors, 330 Fairlane Court, Placerville, CA 95667
El Dorado County Chamber of Commerce, 542 Main Street, Placerville, CA 95667
El Dorado County Irrigation District, 2800 Mosquito Road, Placerville, CA 95667
El Dorado County Tax Collector, 360 Fairlane Court, Placerville, CA 95667
El Dorado Hills Community Services District, 1021 Harvard Way, El Dorado Hills, CA 95762
Rescue School District, 2390 Bass Lake Road, Rescue, CA 95672

Janet Postlewait <janet.postlewait@edcgov.us>

Silver Springs Pkway South Segment Project

1 message

Chuck Buckley <chuckb1812@sbcglobal.net> Fri, May 23, 2014 at 4:07 PM
To: janet.postlewait@edcgov.us
Cc: Dave Schratz <davidsch@sbcglobal.net>, joel.madrigal@intel.com

Janet -

We attended the meeting last week re this project.

We are concerned with safety involved in the project. As a matter of fact there was an accident behind our house 1/2 hour ago.
With Bass Lake Rd possibly being moved closer to our homes the resulting noise will be even worse than it already it. Also, the traffic in and out of Madera is quite high, and there would be no room for a turn lane if the road is moved closer to homes.

Along with our neighbors Joel, Dave, Steve we are very concerned about how this plan will impact our lives, and property values.

Thant you for hearing our concerns.

Regards,

Charles & Sally Buckley
1007 Jasmine Cir
EDH
530-676-4482

Janet Postlewait <janet.postlewait@edcgov.us>

SILVER SPRINGS PARKWAY TO BASS LAKE ROAD (SOUTH SEGMENT) PROJECT

1 message

Dave S <davidsch@sbcglobal.net> Fri, May 23, 2014 at 12:19 PM
To: janet.postlewait@edcgov.us
Cc: steve.setoodeh@yahoo.com, Chuck Buck <chuckb1812@sbcglobal.net>, "Madrigal, Joel" <joel.madrigal@intel.com>, Ginger Schratz <ginger.schratz@gmail.com>, kathyp@basslakeaction.org, blacinfo@aol.com, john.kahling@edcgov.us, monika.pedigo@edcgov.us, tbecker@3qcinc.com

Hello Janet,

Below are my comments regarding the Silver Springs Parkway to Bass lake Road Project. I appreciate your acceptance of feedback and comments.

Back in 2008 I met with Dori Floyd and Monika Pedigo of Dot and they explained the current design for the new Silver Springs Parkway. Below is an email I sent to Dori after the meeting.

I have the same concerns today 6 years later. Currently there is a 6 foot sound wall that was required of the builder when our development was built. That wall was not done correct as it start 2' below the road level. I was told by Dori and Monika that the road would be moved closer to my property and raised 4 feet so that they could have visibility over the existing sound wall. That was extremely unacceptable to me and makes no sense. The sound wall is there for a reason. Also, there is plenty of room to the North to move the road farther from the houses. I would believe that a sound study is needed which would result in a new proper sound wall. One other issue with bringing the road closer to the houses is that it would affect future projects. Woodridge has over 500 hundred houses that are accessed through Madera which is less than a 100 yards from this project. Madera currently is a safety hazard as we have no turn lane in or out of the development. With the current design, the road comes closer to the houses and would not leave room to put in the turn lane at a future date with another project. Therefore, creating future safety issues.

Please feel free to contact me for any questions or input. During the meeting at the library a few weeks back I was asked if I would be willing to have sound sensors put in my yard for the sound study and yes I would be willing to cooperate.

Thanks for your time.

Best Regards,
Dave Schratz
1019 Jasmine Circle
925-980-3133

-------- Original Message --------

Subject: Safety Improvement on Bass Lake Road

Date: Tue, 30 Sep 2008 14:29:33 -0700

From: Dave S <davidsch@sbcglobal.net>

To:dfloyd@co.el-dorado.ca.us, anstiveson@aol.com, kathyp@basslakeaction.org

CC:rnygaard@co.el-dorado.ca.us, BLACinfo@aol.com, "Madrigal, Joel" <joel.madrigal@intel.com>, Dave S <davidsch@sbcglobal.net>, rshepard@co.el-dorado.ca.us, t.becker@wcsca.com, steve.setoodeh@yahoo.com, chuckb1812@sbcglobal.net, jstiveson@aol.com, russellweiss@comcast.net, tag@greenmanconstruction.com, Ginger Schratz <ginger.schratz@gmail.com>

Dori,

I Received your Certified Mail regarding Safety Improvements on Bass Lake Road. Your letter states that the County is currently in the process of finalizing construction plans. This surprised me as I was given the impression that my neighbors and I would be involved with the plans before they are finalized. I have talked to you and Russ Nygaard at Bass Lake Action Committee meetings and you both said that you would get input by the people affected by this project and let us see the plans before they are finalized.

My concerns are the negative impact towards my neighbors and myself. During our initial discussion you raised a lot of issues that will affect us. First off there is currently a 6 foot sound wall that was required to be put in by the builder of this development. You mentioned that the new road would be 4 feet higher than the existing road. I don't understand this or see a need for this. By raising the road the sound wall becomes useless. A new 6 foot sound wall would need to be built at street level. This would help with the added noise, but would aesthetically look terrible. When we met, I was told that the reason for raising the road was for visibility to see around the corner. This makes no practical sense to raise the road higher than existing fences in order to look around a corner when DOT is putting in a 3 way stop. When we first discussed this with Russ Nygaard a year ago we requested mature trees between the wall and the houses. This leads to problem number 2.

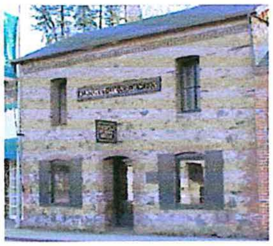
When we met you mentioned that the new design calls for the road to be 4 feet closer to the houses than existing. This again is a huge negative impact to the existing houses. This is being called a safety project yet by raising the road 4 feet and bringing it 4 feet closer to the houses then you are affecting our safety as the road would be much higher than the back yards and could lead to a car accidentally landing in our backyard and injuring us. If this would happen then DOT would be responsible. I don't understand why the road would be moved South towards the existing houses when on the North side of the road there are no houses and plenty of open space. This is not in the best interest of anyone other than it is the easiest way to do it. You mentioned that DOT would like to buy the easement in the back of my property to build a

drainage area. Again, this would not need to be on my property if the road is moved North. Also, you stated that a walking path will be on the South side of the road 4 feet off of the back fence of my property and at the same height as my existing Sound wall. This will affect my privacy and safety as people will be looking into my backyard and house. You also mentioned that between the existing sound wall and the walking path there will be a concrete drainage. This will make it impossible for planting any kind of trees. Currently, the area has mature trees and full landscaping that would need to be removed. Removing the existing mature trees would greatly affect our privacy and safety.

I was surprised when you told me that over 10 Thousand vehicles drive on Bass Lake Road every day and that DOT estimates 15 Thousand will be using it per day in five years. Since we have moved in we have noticed a big increase in vehicle noise. With the new Safety Improvements on The Bass Lake Road Project we can expect much more noise than we currently have. My neighbors and I are extremely concerned and would like to cooperate and have the opportunity to sit down and discuss the current design and possible other options. We feel that our current way of life and property values will be negatively affected by this project. We would like to meet with someone in charge or possible the Board of Supervisors to discuss these issues.

Best Regards,

David Schratz
1019 Jasmine Circle



Fountain Tallman Museum

EL DORADO COUNTY HISTORICAL SOCIETY
524 Main Street
Placerville, CA 95667

Community Development Agency, Transportation Division
Attn: Janet Postlewait
2441 Fair Lane Court
Placerville, CA 95667

May 16, 2014

Re: Response to Invitation to Comment
Silver Springs Pkwy (south)

Dear Janet:

Thank you for the opportunity to comment on the cultural resource impact of your proposed project. As with any project in this part of El Dorado County, extreme care should be taken to research the background of the site, and to examine its surface features, due to the extensive history of intense use in the immediate area.

On this south portion of the Silver Springs Parkway proposed alignment, our membership was queried at the last meeting and no one was aware of any cultural resources located near the south portion of the proposed alignment other than Bass Lake itself (former American Reservoir from 1800s), which should be well outside of the area of impact. When the north half of the project is proposed for construction, there are several important areas of historic sensitivity to be noted and avoided.

To aid in your research, please feel free to avail yourself of the resources available in the El Dorado County Library on Fair Lane, in Placerville and of the El Dorado County Historical Museum, on the Fairgrounds at Placerville Drive, also in Placerville, which has an extensive map file and photo collection.

Douglas A. Walker
Resource Coordinator, EDCHS
dougawalker@gmail.com

Our mission is to honor the people who came before us by rescuing, preserving, researching and displaying the county's rich history to ensure that its significance will be appreciated for generations to come.

RECEIVED
DOT

2014 MAY 23 AM 11:36

Janet Palm
3405 Thornhill Court
El Dorado Hills, California 95762

Community Development Agency
Transportation Division
2850 Fairlane Court
Placerville, California 95667

RE: Silver springs Parkway to Bass Lake Road (South Segment) Project

To whom it may concern:

I received you letter dated April 21, 2014 regarding the above mentioned project. In addition to the parkway work I have noticed you have also approved for utility lines to be installed for the new construction taking place between Bass Lake Road and Green Valley Parkway. Since we are now in the 21st Century, is it too much to ask that utility companies be required to bury their lines rather than install utility poles? I understand the soil is rocky, but the subdivisions were able to install their lines underground. If subdivisions can bury their utility lines there is no reason for utility companies to be given permission to install crooked poles and sagging wires along county roads. Their work is sloppy and unsightly!

I am aware and support the need for services to be made available to new areas in the county. However, when a request is made for a utility company to install new lines, can the county please require them to bury their lines in the future?

Thank you for your consideration.

Sincerely

Janet L. Palm

Janet L. Palm

Janet Postlewait <janet.postlewait@edcgov.us>

Re: SILVER SPRINGS PARKWAY TO BASS LAKE ROAD (SOUTH SEGMENT) PROJECT

1 message

Madrigal, Joel <joel.madrigal@intel.com> Fri, May 23, 2014 at 12:46 PM
To: Dave S <davidsch@sbcglobal.net>
Cc: "janet.postlewait@edcgov.us" <janet.postlewait@edcgov.us>, "steve.setoodeh@yahoo.com" <steve.setoodeh@yahoo.com>, Chuck Buck <chuckb1812@sbcglobal.net>, Ginger Schratz <ginger.schratz@gmail.com>, "kathyp@basslakeaction.org" <kathyp@basslakeaction.org>, "blacinfo@aol.com" <blacinfo@aol.com>, "john.kahling@edcgov.us" <john.kahling@edcgov.us>, "monika.pedigo@edcgov.us" <monika.pedigo@edcgov.us>, "tbecker@3qcinc.com" <tbecker@3qcinc.com>

Janet,
I live right next door to Dave, and I completely agree with his feedback. Too many accidents have occurred right outside my back fence and I assure you that a road that is raised 4 feet and moved closer to my fence would have impacted my home and the safety of my family significantly more. I can't understand how this decision could be made without considering the effect on our neighbors. Please consider a more careful review of the impact and take our pleas seriously.

Thank you

Joel Madrigal

Sent from my iPhone

On May 23, 2014, at 12:20 PM, "Dave S" <davidsch@sbcglobal.net< mailto:davidsch@sbcglobal.net>> wrote:

Hello Janet,

Below are my comments regarding the Silver Springs Parkway to Bass lake Road Project. I appreciate your acceptance of feedback and comments.

Back in 2008 I met with Dori Floyd and Monika Pedigo of Dot and they explained the current design for the new Silver Springs Parkway. Below is an email I sent to Dori after the meeting.

I have the same concerns today 6 years later. Currently there is a 6 foot sound wall that was required of the builder when our development was built. That wall was not done correct as it start 2' below the road level. I was told by Dori and Monika that the road would be moved closer to my property and raised 4 feet so that they could have visibility over the existing sound wall. That was extremely unacceptable to me and makes no sense. The sound wall is there for a reason. Also, there is plenty of room to the North to move the road farther from the houses. I would believe that a sound study is needed which would result in a new proper sound wall. One other issue with bringing the road closer to the houses is that it would affect future projects. Woodridge has over 500 hundred houses that are accessed through Madera which is less than a 100 yards from this project. Madera currently is a safety hazard as we have no turn lane in or out of the development. With the current design, the road comes closer to the houses and would not leave room to put in the turn lane at a future date with another project. Therefore, creating future safety issues.

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Thanks for your time.

Best Regards,
Dave Schratz
1019 Jasmine Circle
925-980-3133

------ Original Message -------
Subject:

Safety Improvement on Bass Lake Road

Date:

Tue, 30 Sep 2008 14:29:33 -0700

From:

Dave S <davidsch@sbcglobal.net<mailto:davidsch@sbcglobal.net>>

To:

dfloyd@co.el-dorado.ca.us<mailto:dfloyd@co.el-dorado.ca.us>, anstiveson@aol.com<mailto:anstiveson@aol.com>, kathyp@basslakeaction.org<
mailto:kathyp@basslakeaction.org>

CC:

rnygaard@co.el-dorado.ca.us<mailto:rnygaard@co.el-dorado.ca.us>, BLACinfo@aol.com<mailto:BLACinfo@aol.com>, "Madrigal, Joel" <joel.madrigal@intel.com<
mailto:joel.madrigal@intel.com>>, Dave S <davidsch@sbcglobal.net<
mailto:davidsch@sbcglobal.net>>, rshepard@co.el-dorado.ca.us<mailto:rshepard@co.el-dorado.ca.us>, t.becker@wcsca.com<mailto:t.becker@wcsca.com>, steve.setoodeh@yahoo.com<mailto:steve.setoodeh@yahoo.com>, chuckb1812@sbcglobal.net<mailto:chuckb1812@sbcglobal.net>,

jstiveson@aol.com<mailto:jstiveson@aol.com>, russellweiss@comcast.net<
mailto:russellweiss@comcast.net>, tag@greenmanconstruction.com<mailto:tag@
greenmanconstruction.com>, Ginger Schratz <ginger.schratz@gmail.com<
mailto:ginger.schratz@gmail.com>>

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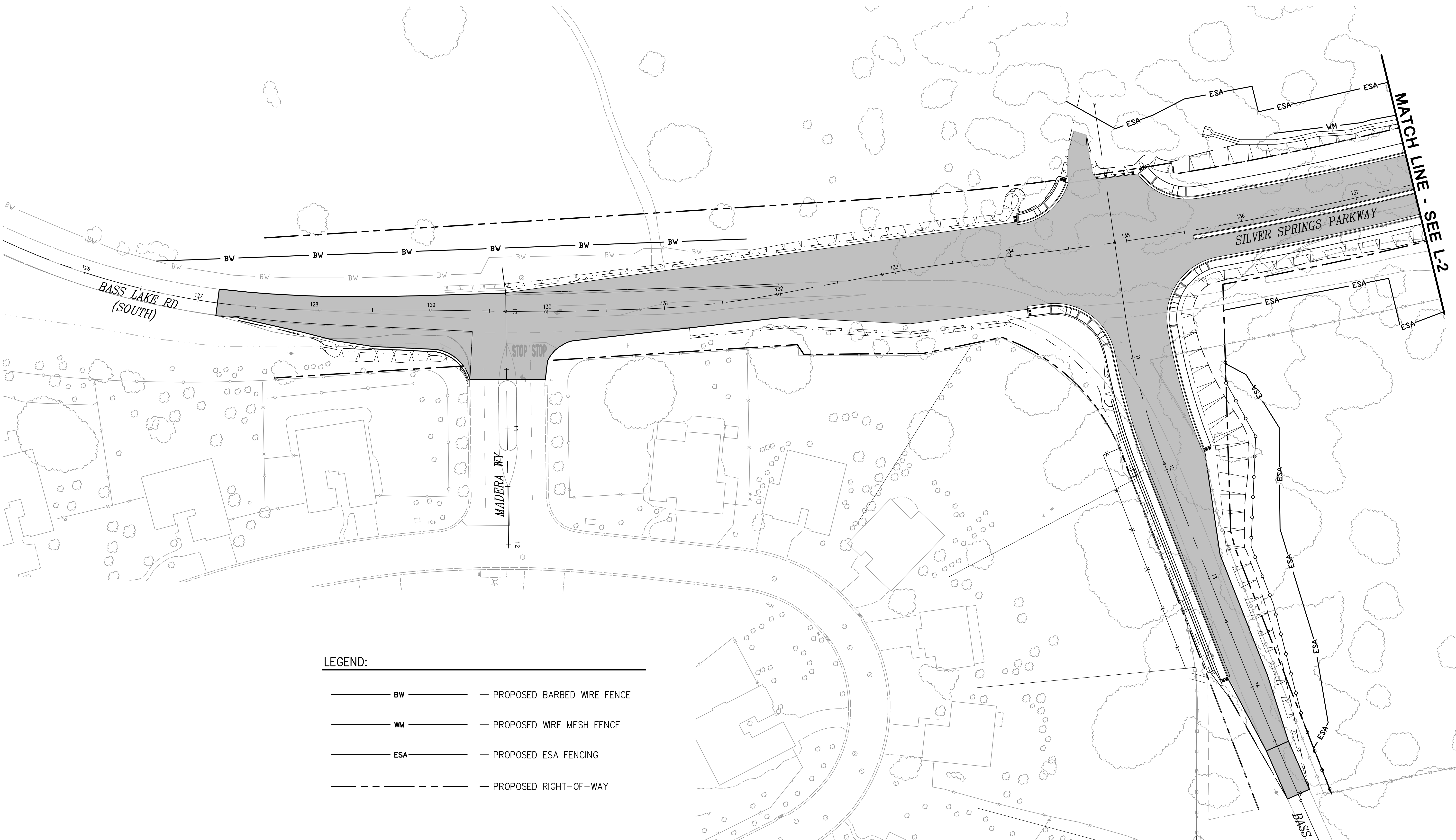
Best Regards,

David Schratz
1019 Jasmine Circle

APPENDIX B
PROPOSED PROJECT DESIGN DRAWINGS AND RIGHT-OF-WAY EXHIBITS



LEGEND:

BW	PROPOSED BARBED WIRE FENCE
WM	PROPOSED WIRE MESH FENCE
ESA	PROPOSED ESA FENCING
— — —	PROPOSED RIGHT-OF-WAY

GEOMETRIC LAYOUT
SCALE : 1" = 40'

PRELIMNARY

COUNTY OF EL DORADO
COMMUNITY DEVELOPMENT AGENCY
TRANSPORTATION DIVISION

SILVER SPRINGS PARKWAY OFFSITE
BASS LAKE ROAD, OFFSITE (SOUTH AND EAST)

SHEET L-1
1 OF 2
W.O. No. 76108

Layout Tab: L-1 Apr 06,2015 - 1:21pm smcvey
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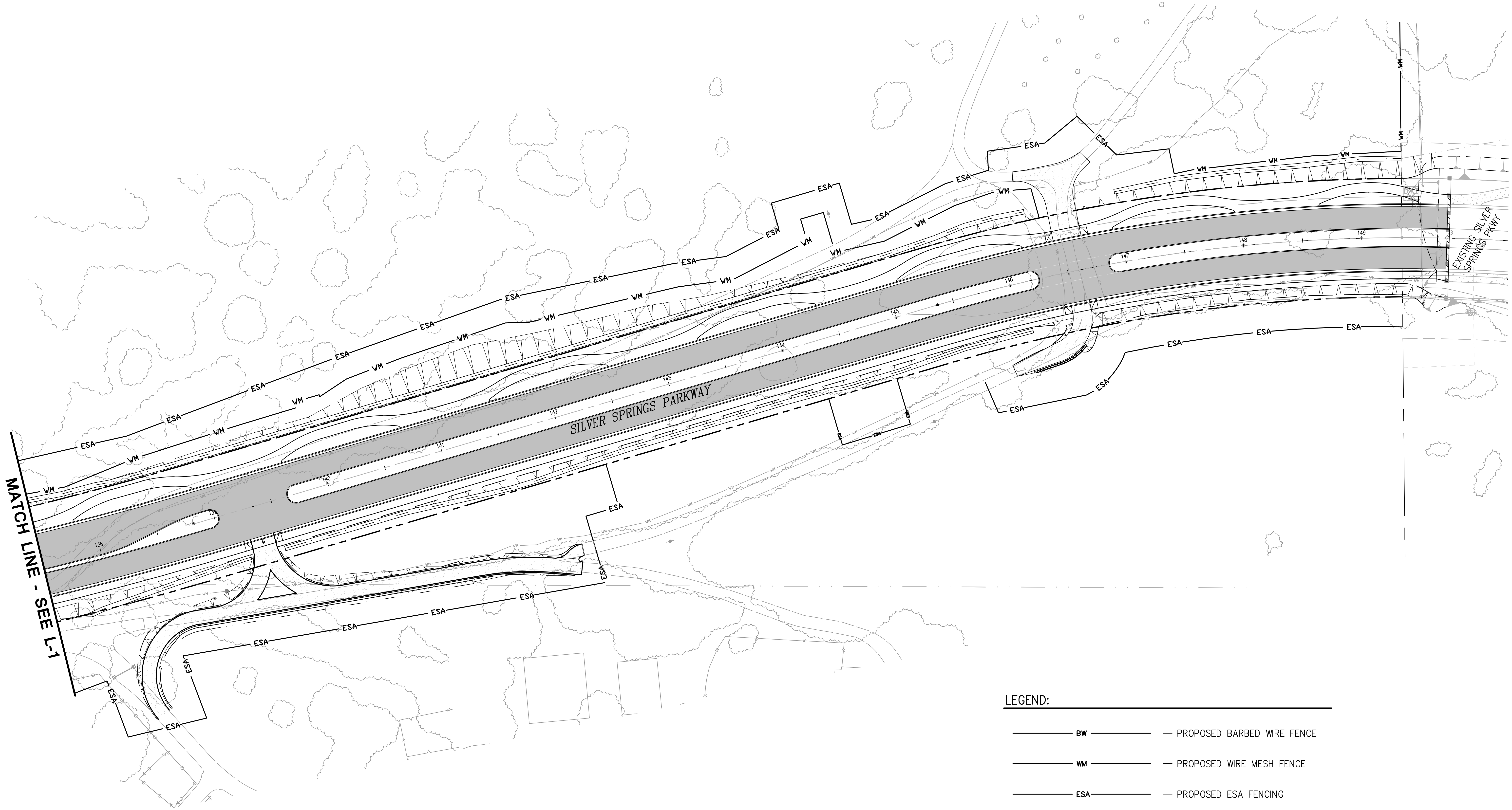
FOR REDUCED PLANS



LEGEND:

- BW — PROPOSED BARBED WIRE FENCE
- WM — PROPOSED WIRE MESH FENCE
- ESA — PROPOSED ESA FENCING
- — PROPOSED RIGHT-OF-WAY

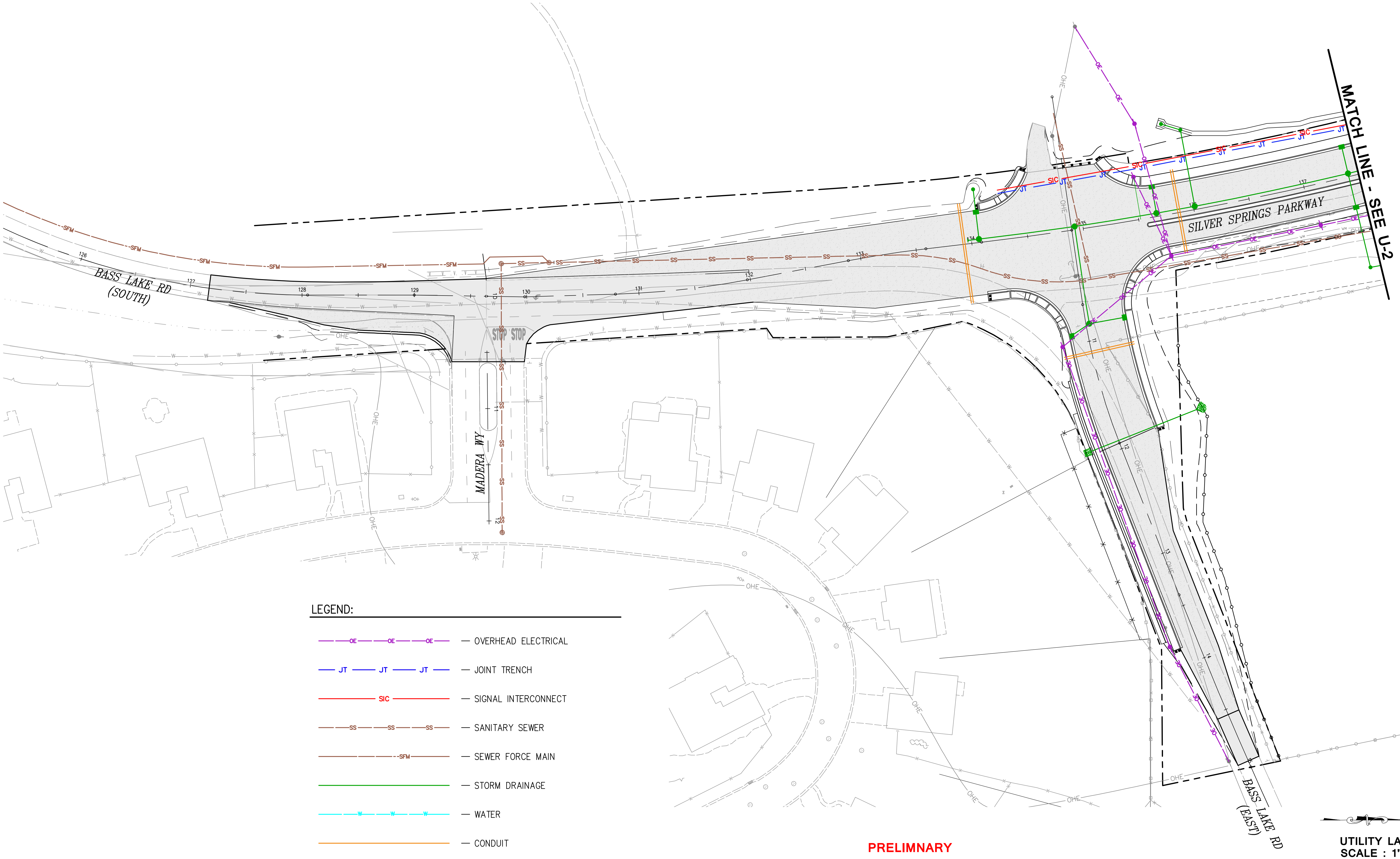
GEOMETRIC LAYOUT
SCALE : 1" = 40'

PRELIMINARY

COUNTY OF EL DORADO COMMUNITY DEVELOPMENT AGENCY TRANSPORTATION DIVISION	SILVER SPRINGS PARKWAY OFFSITE BASS LAKE ROAD, OFFSITE (SOUTH AND EAST)	SHEET L-2 2 OF 2 W.O. No. 76108

ORIGINAL SCALE IS IN INCHES
Drawing name: C:\Civil 3D Projects\76108 Silver Springs Pkwy\CADD Files\Exhibits\EIR\SSP South-Layout.dwg Layout Tab: L-2 Apr 06,2015 - 1:21pm smcvey

FOR REDUCED PLANS



PRELIMNARY

UTILITY LAYOUT
SCALE : 1" = 40'

COUNTY OF EL DORADO COMMUNITY DEVELOPMENT AGENCY TRANSPORTATION DIVISION	SILVER SPRINGS PARKWAY OFFSITE BASS LAKE ROAD, OFFSITE (SOUTH AND EAST)	SHEET U-1 1 OF 2 W.O. No. 76108

ORIGINAL SCALE IS IN INCHES FOR REDUCED PLANS 0 1 2

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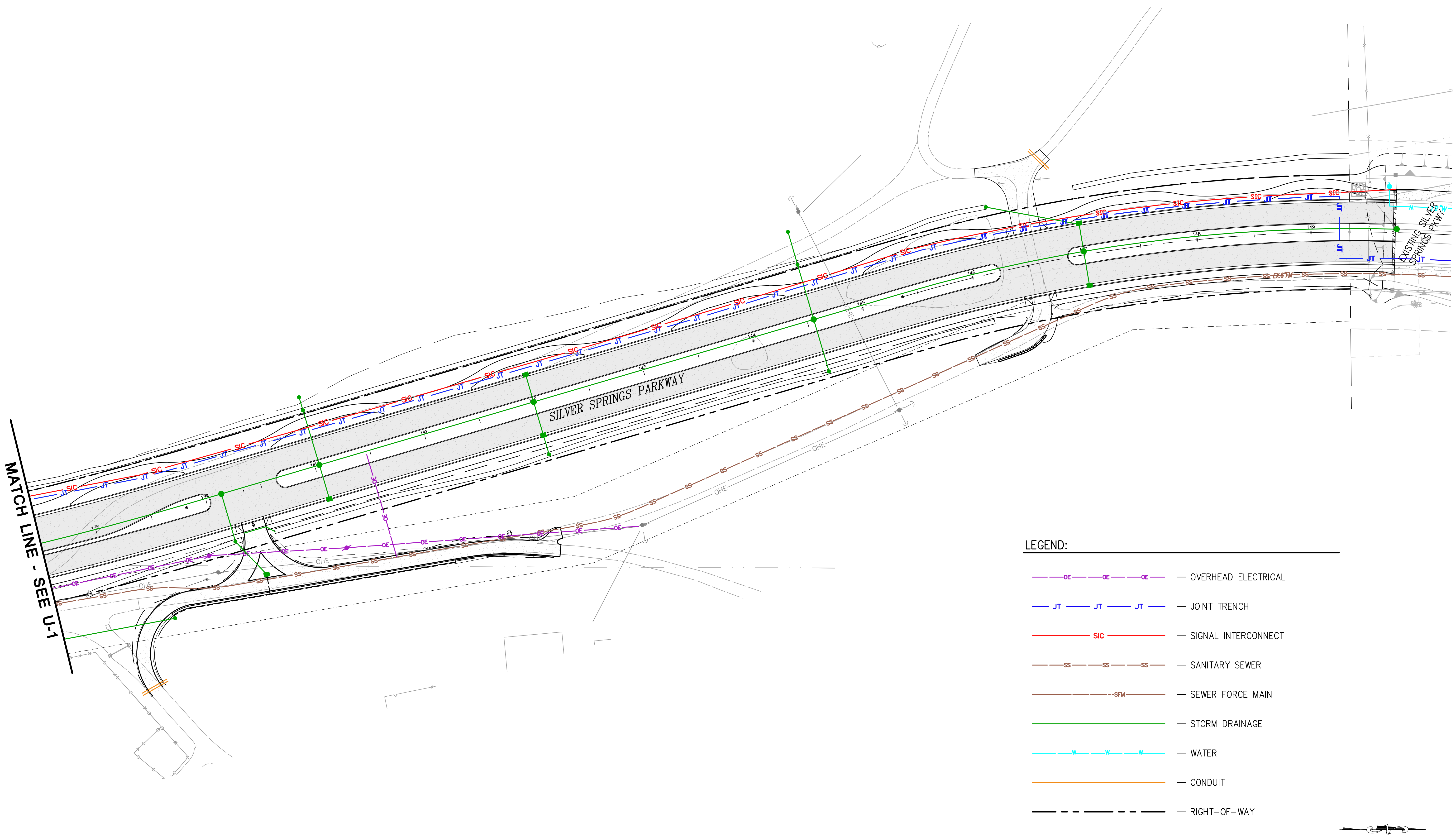


PRELIMINARY

UTILITY LAYOUT
SCALE : 1" = 40'

COUNTY OF EL DORADO COMMUNITY DEVELOPMENT AGENCY TRANSPORTATION DIVISION	SILVER SPRINGS PARKWAY OFFSITE BASS LAKE ROAD, OFFSITE (SOUTH AND EAST)	SHEET U-2 2 OF 2 W.O. No. 76108

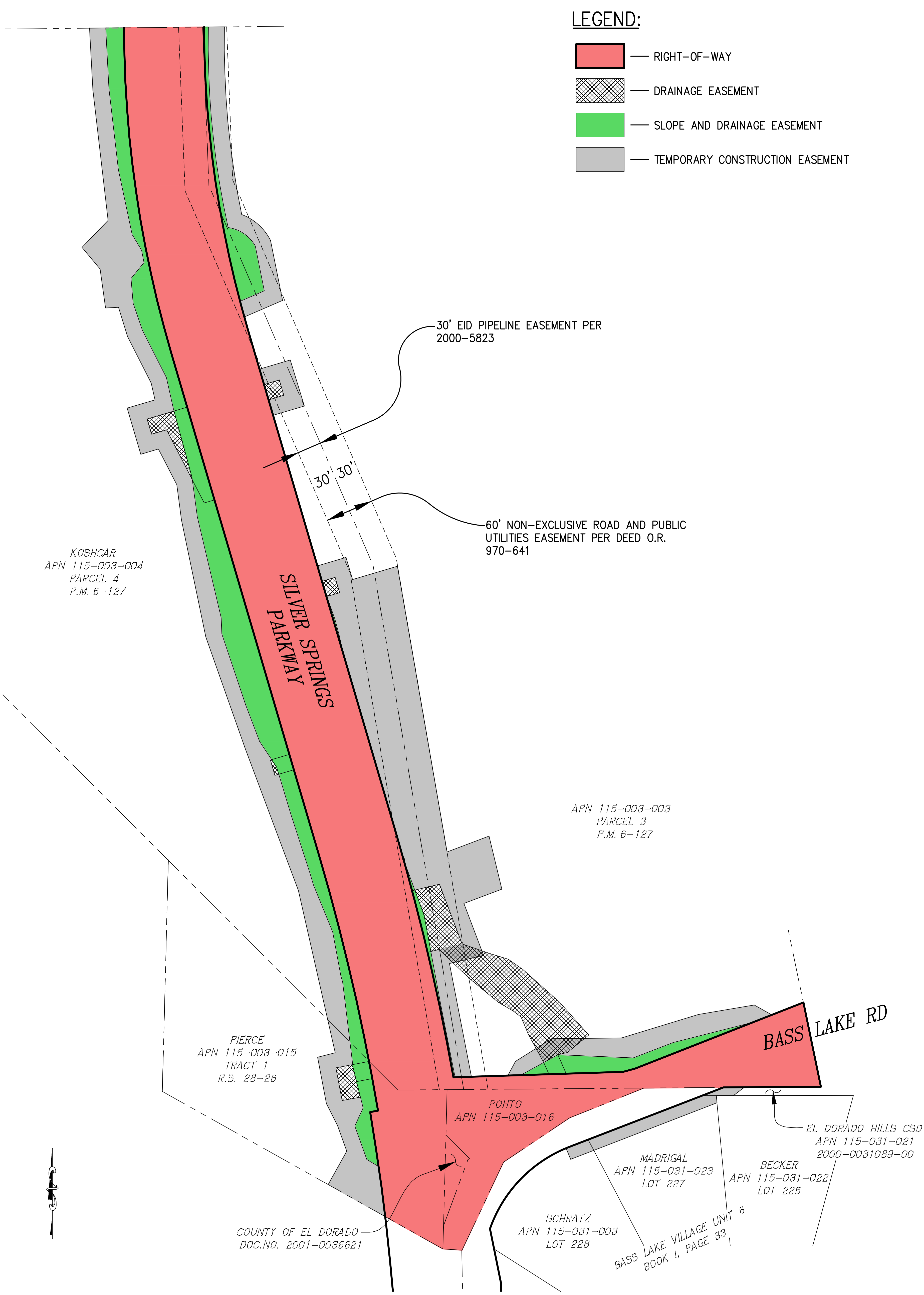
ORIGINAL SCALE IS IN INCHES FOR REDUCED PLANS

Drawing name: C:\Civil 3D Projects\76108 Silver Springs Pkwy\CADD Files\Exhibits\EIR\SSP South-Utilities.dwg Layout Tab: U-2 Apr 08,2015 – 11:38am smcvey

SILVER SPRINGS PARKWAY, OFFSITE
BASS LAKE ROAD, OFFSITE (SOUTH & EAST)

RIGHT-OF-WAY, SLOPE AND DRAINAGE EASEMENTS, AND TEMPORARY CONSTRUCTION EASEMENTS

PRELIMINARY



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APPENDIX C

SILVER SPRINGS PARKWAY TO BASS LAKE ROAD (SOUTH SEGMENT) PROJECT AIR QUALITY STUDY

SILVER SPRINGS PARKWAY TO BASS LAKE ROAD (SOUTH SEGMENT) PROJECT AIR QUALITY STUDY

Prepared for:

Benchmark Resources

Prepared by:

KD Anderson & Associates
3853 Taylor Road, Suite G
Loomis, CA 95650
916/660-1555

April 27, 2015

Project #0898-05

KD Anderson & Associates, Inc.
Transportation Engineers

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLES

FIGURES

TECHNICAL APPENDIX

EXECUTIVE SUMMARY

This *Executive Summary* is a brief overview of the analysis presented in this Air Quality Study. It is not intended to be a comprehensive description of the analysis. For more details, the reader is referred to the full description presented in the Air Quality Study.

The Project is the Silver Springs Parkway to Bass Lake Road (South Segment) Project, referred to in this Air Quality Study as the Project. The Project would involve the extension of Silver Springs Parkway from its current southern terminus to an intersection with Bass Lake Road. The California Environmental Quality Act (CEQA) Lead Agency for the Project is the County of El Dorado.

This Air Quality Study presents an evaluation of the construction-related and operational impacts of the Project on the air quality environment.

The Project is located within the Mountain Counties Air Basin (MCAB). The Project site is in an area designated as a state and federal nonattainment area for ozone. The area is a state nonattainment area for inhalable particulate matter smaller than 10 microns in diameter (PM_{10}), and a federal unclassified/attainment area for PM_{10}. The Project site is in a nonattainment area for the federal standard for fine particulate matter smaller than 2.5 microns in diameter ($PM_{2.5}$), and an unclassified area for the state $PM_{2.5}$ standard. The area is designated attainment or unclassified for carbon monoxide (CO).

Implementation of the Project would result in the generation of short-term construction-related criteria air pollutant emissions. Mitigation measures are required to reduce this impact to a less-than-significant level.

The Project is in an area that may contain naturally occurring asbestos (NOA). Mitigation measures are required to reduce this impact to a less-than-significant level.

The Project would result in the generation of long-term operational emissions. The Project is considered to have a less-than-significant operational impact on ozone and PM_{10}.

Screening-level analyses were performed to assess the Project-related effect on CO concentrations. These analyses concluded the Project would not result in violations of the federal and state CO standards and would have a less-than-significant impact on CO levels.

An assessment of the effects of the Project on global climate change and greenhouse gas (GHG) emissions was conducted. The Project-related change in GHG emissions was quantified. The Project is determined to have a less-than-significant long-term operational impact on global climate change. The Project is determined to have a significant short-term construction-related impact on global climate change. Mitigation measures are required to reduce the short-term construction-related impact. The short-term construction-related impact would not be reduced to a less-than-significant level, and is therefore considered to be significant and unavoidable.

SECTION 1
INTRODUCTION

This Air Quality Study has been prepared to assess the air quality impacts of the Project. The County of El Dorado is the CEQA Lead Agency for the Project. This study contains information that will be used by the County of El Dorado in the preparation of the CEQA environmental document for this Project.

The purpose of this Air Quality Study is to provide documentation of the air quality resources in the Project area, and an assessment of the impacts of the Project on the air quality environment.

This study assesses the localized air quality impacts of the Project, the impacts of the Project on regional air quality, and construction-related impacts of the Project.

Following this *Introduction* section, this Air Quality Study presents a description of:

- the Project,
- air quality standards and existing air quality conditions,
- short-term construction-related impacts,
- long-term operational impacts,
- local CO impacts, and
- impacts on global climate change and GHG emissions.

SECTION 2
PROJECT DESCRIPTION

The following is a summary of the Project.

2.1 PROJECT LOCATION

As shown on **Figure 1**, the Project site is located in unincorporated El Dorado County between the communities of El Dorado Hills and Cameron Park, and about 10 miles west of Placerville. The southern end of the Project segment is about 2.5 miles north of Highway 50 by way of Bass Lake Road and the northern end of the segment is about 1 mile south of Green Valley Road. The alignment is generally located along or adjacent to an existing private road north from Bass Lake Road. This road is an unpaved one-lane road that intersects with Bass Lake Road and provides access to the driveways of two rural residential properties. The topography of the immediate area ranges from nearly flat to gently rolling grasslands and oak woodlands.

2.2 PROJECT OBJECTIVES

The construction of Silver Springs Parkway south to Bass Lake Road is required as a component of the Silver Springs subdivision to provide for a new connection between Bass Lake Road and Green Valley Road. Under the conditions of approval for the Silver Springs subdivision, the Silver Springs Subdivision Project developer ("Developer") was required to construct the northern segment of Silver Springs Parkway. Construction of the northern segment was completed in 2014. The Developer was also conditioned by the County to construct the remaining southern segment of Silver Springs Parkway from Bass Lake Road, north to the connection with the southern end of the northern segment of Silver Springs Parkway.

The Circulation Element Map of the 2004 El Dorado County General Plan Circulation Map identifies Silver Springs Parkway between Bass Lake Road and Green Valley Road as a future two-lane major road. The new connection between Bass Lake Road and Green Valley Road would provide for improved and additional connectivity between Green Valley Road in the north and Bass Lake Road (which connects to U.S. Highway 50) to the south. The Project would also provide continuous pedestrian and bicycle facilities where no such facilities are presently available.

2.3 PROJECT DESIGN

As shown on **Figure 2**, the Project would construct a new segment of Silver Springs Parkway north of Bass Lake Road, and reconstruct portions of Bass Lake Road south and east of Silver Springs Parkway.

The Project would extend Silver Springs Parkway as a two-lane road south from the southern terminus of the recently constructed northern segment of Silver Springs Parkway to Bass Lake Road. The Project would also realign Bass Lake Road from south of the Bass Lake Road/Madera Way intersection north to the new intersection that would be constructed at Bass Lake Road/Silver Springs Parkway. The Project includes installation of Class II bicycle lanes and concrete sidewalks on both sides of the parkway, and a landscaped center median with turn pockets for driveway access. The Project would reconstruct the existing intersection of Bass Lake Road and Hill Road, to become a new four-way intersection with Bass Lake Road forming the east and south legs, Silver Springs Parkway forming the north leg, and a western leg that would terminate immediately west of the intersection where access would be provided to an existing private driveway.

The Project segment of Silver Springs Parkway is approximately 1,400 feet in length, and the reconstructed segments of Bass Lake Road south and east of the new intersections are approximately 800 and 500 feet in length, respectively.

The total area of disturbance required for construction of the Project would be approximately 13.5 acres. The maximum area of active soil disturbance on any one day would be approximately 7.8 acres. Soil fill material would be necessary during construction at various locations, and it is assumed that fill material would be obtained from a currently unidentified off-site local or regional source. An estimated 26,000 cubic yards of imported fill would be required for construction.

Active construction of the Project is estimated to last for nine months.

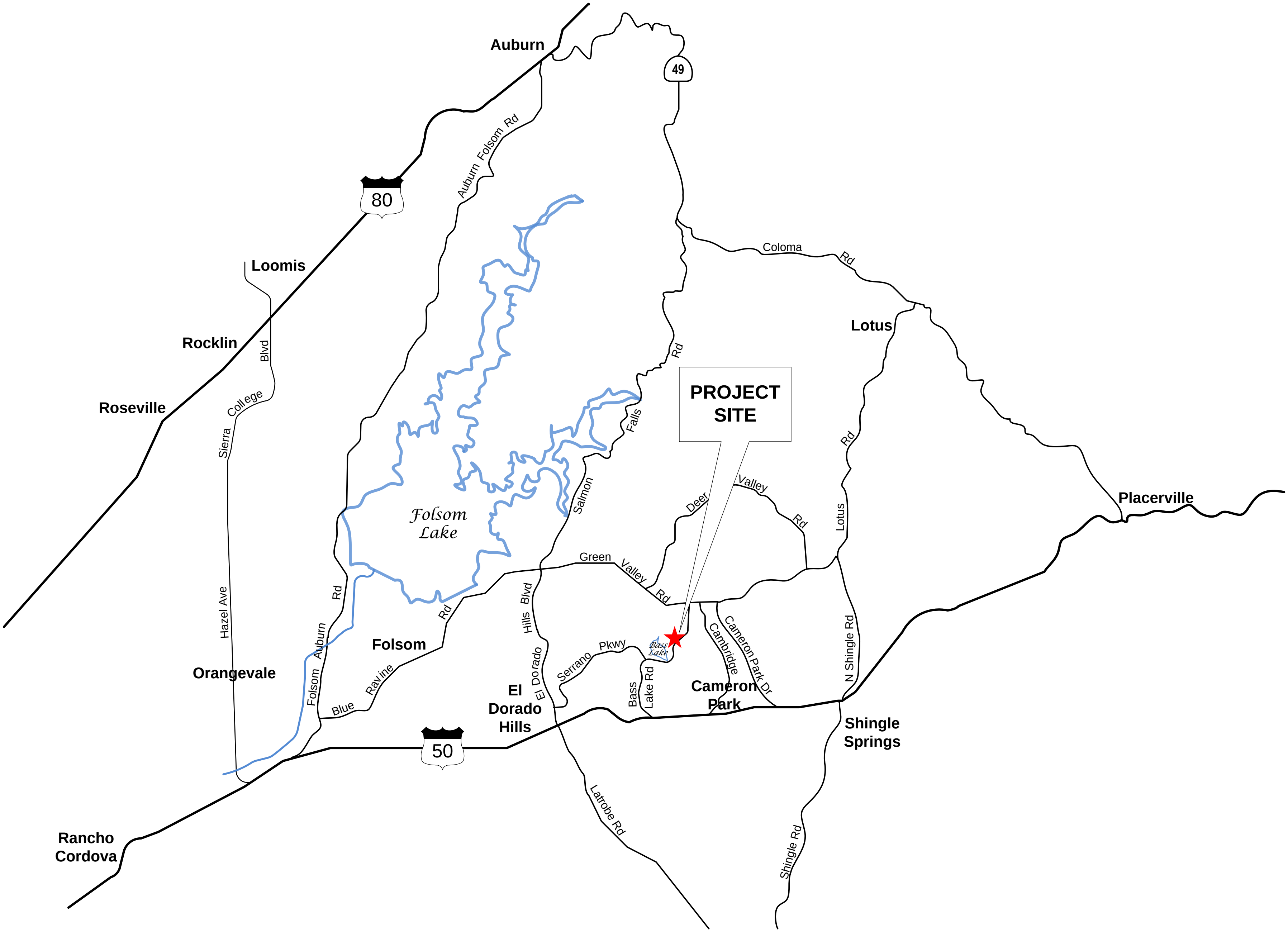
2.4 GENERAL CONSTRUCTION PROVISIONS

The County would retain a contractor to construct the proposed improvements, and the contractor would be responsible for compliance with all applicable rules, regulations and ordinances associated with construction activities and for implementation of any construction-related mitigation measures adopted for the Project. The County would provide construction contractor oversight and management and would be responsible for verifying the successful implementation of any applicable mitigation measures and any other requirements applicable to Project construction.

There would be several Project-specific procedures and requirements applicable to construction, including the following related to controlling air pollutant emissions:

- Contract special provisions will require compliance with EDCAQMD Rules 223, 223-1, and 223-2 to minimize fugitive dust emissions and the potential for risk of disturbance to naturally occurring asbestos.

- Contract special provisions will require compliance with the California Air Resources Board Airborne Toxic Control Measure (ATCM) at Title 17 Section 93105 addressing Construction, Grading, Quarrying, and Surface Mining activities and with the Asbestos ATCM for Surfacing Applications (California Code of Regulations, Title 17, Section 93106.



VICINITY MAP

KD Anderson & Associates, Inc.
Transportation Engineers

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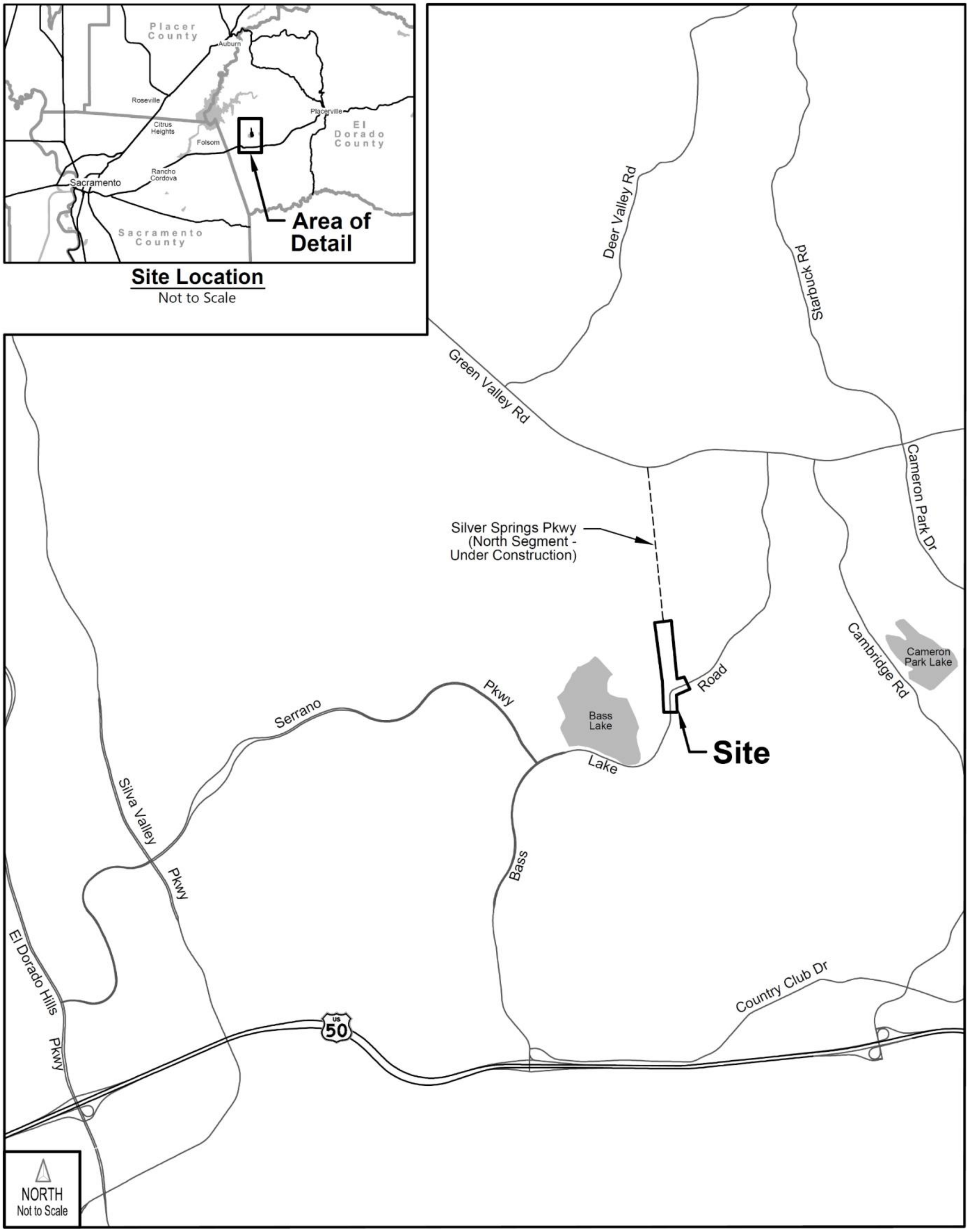
Silver Springs Parkway to Bass Lake Road (South Segment) Project
Air Quality Study

figure 1



PROJECT LOCATION

KD Anderson & Associates, Inc.
Transportation Engineers

SECTION 3
AIR QUALITY STANDARDS AND EXISTING CONDITIONS

The following is a description of ambient air quality standards and existing air quality conditions in the Project study area.

3.1 AIR POLLUTANTS AND AMBIENT STANDARDS

Both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB or ARB) have established ambient air quality standards for common pollutants. These ambient air quality standards indicate levels of contaminants that represent safe levels, to avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called “criteria” pollutants because the health and other effects of each pollutant are described in criteria documents. The federal and state ambient air quality standards are presented in **Table 1**. The federal and state ambient standards were developed independently with differing purposes and methods, although both processes attempted to establish standards to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the California state standards are more stringent, including those for ozone, PM_{10}, and $PM_{2.5}$.

There are three basic designation categories: nonattainment, attainment, and unclassified. A “nonattainment” designation indicates the air quality violates an ambient air quality standard. Although a number of areas may be designated as nonattainment for a particular pollutant, the severity of the problem can vary greatly. To identify the severity of the problem and the extent of planning required, nonattainment areas are assigned a classification that is commensurate with the severity of their air quality problem (e.g., moderate, serious, severe). In contrast to nonattainment, an “attainment” designation indicates the air quality does not violate the established standard. Finally, an “unclassified” designation indicates there are insufficient data for determining attainment or nonattainment. EPA combines unclassified and attainment into one designation for ozone, CO, PM_{10} and $PM_{2.5}$.

3.2 POLLUTANTS OF CONCERN

Criteria pollutants that are of greatest concern for the Project based on the attainment status in the region are CO, ozone, and particulate matter. Ozone is a pollutant created in the atmosphere through the combination of two “precursors”, reactive organic gases (ROG) and nitrogen oxides (NO_x), in the presence of sunlight.

Table 1. Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM10)[8]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[8]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[9]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[10]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[10]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[10]	—	
Lead[11,12]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[13]	8 Hour	See footnote 13	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[11]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page …

For more information please call ARB-PIO at (916) 322-2990

California Air Resources Board (6/4/13)

Table 1. Ambient Air Quality Standards (Continued)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

9. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

10. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

11. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

12. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

13. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (6/4/13)**

In addition, this Air Quality Study addresses potential asbestos and diesel particulate matter emissions in terms of health effects, and GHG emissions in terms of potential to contribute to global climate change.

3.2.1 Carbon Monoxide

State and federal CO ambient air quality standards have been set for both one-hour and eight-hour averaging times. The state one-hour standard is 20 parts per million (ppm) by volume, while the federal one-hour standard is 35 ppm. Both state and federal standards are 9 ppm for the eight-hour averaging period. CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

3.2.2 Ozone

Prior to 2005, both state and federal standards for ozone were set for a one-hour averaging time. The state ozone standard is 0.09 ppm, not to be exceeded. The federal one-hour standard was 0.12 ppm and was not to be exceeded more than three times in any three-year period. A federal eight-hour standard for ozone was issued in July 1997 by Executive Order of the President. The eight-hour ozone standard has been set at a concentration of 0.075 ppm ozone measured over eight hours.

As of June 15, 2005, the federal one-hour ozone standard was revoked. In setting the eight-hour ozone standard, EPA concluded that replacing the existing one-hour standard with an eight-hour standard was appropriate to provide adequate and more uniform protection of public health from both short-term (one to three hours) and prolonged (six to eight hours) exposures to ozone.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include ROG and NO_x, react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Once formed, ozone remains in the atmosphere for one or two days. It is then eliminated through chemical reaction with plants and by rainout and washout.

3.2.3 Particulate Matter

State and federal standards for particulate matter are based on micrograms per cubic meter ($\mu g/m^3$) for a 24-hour average and as an annual geometric mean.

PM_{10} is sometimes referred to as "inhalable particulate matter" or "respirable particulate matter". The state standards for PM_{10} are 50 μg/m^3 24-hour average, and 20 μg/m^3 annual geometric mean. The federal PM_{10} standard is a 24-hour average of 150 μg/m^3.

A federal standard for particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) was issued in July 1997 by Executive Order of the President. $PM_{2.5}$ is sometimes referred to as "fine particulate matter". The $PM_{2.5}$ standard has been set at a concentration of 15 μg/m^3 annually and 35 μg/m^3 daily. The federal standards for PM_{10} are being maintained so that relatively larger, courser particulate matter continues to be regulated.

The state $PM_{2.5}$ standard is an annual average of 12 μg/m^3.

PM_{10} and $PM_{2.5}$ can reach the lungs when inhaled, resulting in health concerns related to respiratory disease. Suspended particulate matter can also affect vision or contribute to eye irritation. PM_{10} can remain in the atmosphere for up to seven days before removal by gravitational settling, rainout and washout.

3.2.4 Asbestos

In addition to criteria pollutants, a pollutant of concern for the Project is asbestos. Asbestos is a term used for several types of naturally occurring fibrous minerals. Naturally occurring asbestos (NOA) is found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California.

When rock containing asbestos is broken or crushed, asbestos fibers may be released and become airborne. Exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest and abdominal cavity), and asbestosis (a non-cancerous lung disease which causes scarring of the lungs). Sources of asbestos emissions include: unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits, or rock quarrying activities where ultramafic rock is present.

3.2.5 Greenhouse Gases

Relatively recently, global climate change, also known as global warming, has been recognized as an important environmental issue. Documented impacts of climate change include rising sea levels, glacier retreat, shortening of frost seasons, and increases in precipitation, among other events. Climate change is considered to be heavily influenced by the rising concentration of greenhouse gases (GHG), primarily atmospheric carbon dioxide (CO_2). Burning of fossil fuels, including oil, natural gas, gasoline and coal, is a major contributor to rising GHG levels.

3.3 AIR QUALITY MONITORING

The following tables present air quality monitoring data for four pollutants: ozone, CO, PM_{10}, and $PM_{2.5}$. **Table 2** presents monitoring data for ozone and CO. **Table 3** presents monitoring data for PM_{10} and $PM_{2.5}$. Data for the latest three-year period (2011 through 2013) are presented for the monitoring stations closest to the Project site.

3.4 ATTAINMENT DESIGNATIONS

The current air quality attainment designations for El Dorado County are summarized in **Table 4**. As shown in **Table 4**, the portion of El Dorado County that includes the Project site is designated nonattainment for the federal and state ozone standards. The Project site portion of the County is designated attainment or unclassified for the federal and state CO and nitrogen dioxide (NO_2) standards.

The Project site portion of El Dorado County is designated nonattainment for the state PM_{10} standard, and designated unclassifed for the national PM_{10} standard. The area is designated nonattainment for the federal $PM_{2.5}$ standard and unclassified for the state $PM_{2.5}$ standard.

3.5 EMISSIONS INVENTORY

Table 5 presents estimates of emissions currently generated in El Dorado County. The information presented in **Table 5** is divided into emission source categories. **Table 6** presents a forecast of emissions expected to be generated in El Dorado County in the year 2035. Like **Table 5**, the information presented in **Table 6** is divided into emission source categories.

For both current and 2035 emissions, the major source category that generates the largest amounts of ROG emissions in El Dorado County is Other Mobile Sources. For current emissions, the largest subcategory within this category is Recreational Boats. For 2035 emissions, the largest subcategory within this category is Off-Road Recreational Vehicles.

For current emissions, the major source category that generates the largest amounts of CO and NO_x emissions in El Dorado County is On-Road Motor Vehicles. For 2035 emissions, the major source category that generates the largest amounts of CO and NO_x emissions in El Dorado County is Other Mobile Sources. The largest subcategory within this category is Recreational Boats.

For both current and 2035 emissions, the major source category that generates the largest amounts of PM_{10} and $PM_{2.5}$ emissions in El Dorado County is Miscellaneous Processes. For PM_{10}, the largest subcategory within this category is Unpaved Road Dust. For $PM_{2.5}$, the largest subcategory within this category is Residential Fuel Combustion.

Table 2. Ozone and Carbon Monoxide Air Quality Monitoring Results

Pollutant Type, Station and Measurement	Air Quality Standard	Pollutant Concentration by Year 2011	2012	2013
Ozone at Placerville - Gold Nugget Way				
Highest 1-Hour Average (parts per million)	0.09	0.103	0.108	0.097
Second Highest 1-Hour Average (parts per million)	(State)	0.095	0.107	0.093
Highest 8-Hour Average (parts per million)	0.070	0.086	0.096	0.084
Second Highest 8-Hour Average (parts per million)	(State)	0.079	0.094	0.083
Carbon Monoxide at Sacramento - Del Paso Manor				
Highest 8-Hour Average (parts per million)	9.0	1.60	2.27	1.51
Second Highest 8-Hour Average (parts per million)	(State)	1.45	2.23	1.50

Source: California Air Resources Board website: http://www.arb.ca.gov/

Note: Data are not available for carbon monoxide monitoring in El Dorado County.

Table 3. Particulate Matter Air Quality Monitoring Results

Pollutant Type, Station and Measurement	Air Quality Standard	2011	2012	2013
	Pollutant Concentration by Year			
Inhalable Particulate Matter (PM_{10}) at Colfax - City Hall				
Highest 24-Hour Average (micrograms/cubic meter)	50	- -	31.7	57.5
Second Highest 24-Hour Average (micrograms/cubic meter)	(State)	- -	29.4	56.1
Annual Average (micrograms/cubic meter)	20 (State)	- -	13.7	17.3
Fine Particulate Matter ($PM_{2.5}$) at Auburn - 11645 Atwood Road				
Highest 24-Hour Average (micrograms/cubic meter)	35	- -	83.3	75.6
Second Highest 24-Hour Average (micrograms/cubic meter)	(Federal)	- -	77.5	73.4
Annual Average (micrograms/cubic meter)	12 (State)	- -	5.5	6.8

Source: California Air Resources Board website: http://www.arb.ca.gov/
Note: Dashes (" - - ") indicate insufficient data or no data are available.
Data are not available for particulate monitoring in El Dorado County.

Table 4. Air Quality Attainment Status Designations
Mountain Counties Air Basin portion of El Dorado County

Pollutant	Federal Standard	State Standard
Ozone	Nonattainment	Nonattainment
Carbon Monoxide	Unclassified / Attainment	Unclassified
Nitrogen Dioxide	Unclassified / Attainment	Attainment
Inhalable Particulate Matter (PM_{10})	Unclassified	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment (Western Portion)	Unclassified

Source: California Air Resources Board (http://www.arb.ca.gov)

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Table 5. El Dorado County Emissions Inventory for 2012

Emission Category	Reactive Organic Gases	Carbon Monoxide	Nitrogen Oxides	Inhalable Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Fuel Combustion					
Manufacturing and Industrial	0.00	0.01	0.02	0.00	0.00
Food and Agricultural Processing	0.00	0.01	0.01	0.00	0.00
Service and Commercial	0.00	0.02	0.09	0.01	0.01
Other (Fuel Combustion)	0.00	0.01	0.05	0.00	0.00
Subtotal	**0.00**	**0.05**	**0.17**	**0.01**	**0.01**
Waste Disposal					
Landfills	0.03	- -	0.01	- -	- -
Other (Waste Disposal)	0.02	- -	- -	- -	- -
Subtotal	**0.05**	**0.00**	**0.01**	**0.00**	**0.00**
Cleaning and Surface Coatings					
Laundering	0.01	- -	- -	- -	- -
Degreasing	0.11	- -	- -	- -	- -
Coatings and Related Process Solvents	0.31	- -	- -	- -	- -
Printing	0.05	- -	- -	- -	- -
Adhesives and Sealants	0.06	- -	- -	- -	- -
Subtotal	**0.54**	**0.00**	**0.00**	**0.00**	**0.00**
Petroleum Production and Marketing					
Petroleum Marketing	0.34	- -	- -	- -	- -
Subtotal	**0.34**	**0.00**	**0.00**	**0.00**	**0.00**
Industrial Processes					
Chemical	0.00	- -	- -	0.06	0.05
Food and Agriculture	0.02	- -	- -	0.00	0.00
Mineral Processes	- -	0.05	0.01	0.17	0.06
Wood and Paper	- -	- -	- -	0.11	0.06
Subtotal	**0.02**	**0.05**	**0.01**	**0.34**	**0.17**
Solvent Evaporation					
Consumer Products	0.99	- -	- -	- -	- -
Architectural Coatings & Related Process Solvents	0.60	- -	- -	- -	- -
Pesticides/Fertilizers	0.03	- -	- -	- -	- -
Asphalt Paving / Roofing	0.51	- -	- -	- -	- -
Subtotal	**2.13**	**0.00**	**0.00**	**0.00**	**0.00**

Table 5. El Dorado County Emissions Inventory for 2012 (Continued)

Emission Category	Reactive Organic Gases	Carbon Monoxide	Nitrogen Oxides	Inhalable Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Miscellaneous Processes					
Residential Fuel Combustion	1.53	8.60	0.34	1.17	1.13
Farming Operations	0.16	- -	- -	0.01	0.00
Construction and Demolition	- -	- -	- -	1.18	0.12
Paved Road Dust	- -	- -	- -	1.14	0.17
Unpaved Road Dust	- -	- -	- -	4.99	0.50
Fugitive Windblown Dust	- -	- -	- -	0.12	0.02
Fires	0.00	0.03	0.00	0.00	0.00
Managed Burning and Disposal	0.14	1.96	0.01	0.18	0.16
Cooking	0.02	- -	- -	0.08	0.08
Other (Miscellaneous Processes)	- -	- -	- -	- -	- -
Subtotal	**1.85**	**10.59**	**0.35**	**8.87**	**2.18**
On-Road Motor Vehicles					
Light Duty Vehicles	1.63	15.27	1.35	0.21	0.08
Medium Duty Trucks	0.50	5.60	0.68	0.05	0.02
Heavy Duty Trucks	0.45	3.57	2.44	0.09	0.05
Motorcycles	0.24	1.58	0.07	0.00	0.00
Buses	0.02	0.24	0.17	0.00	0.00
Motor Homes	0.01	0.30	0.08	0.00	0.00
Subtotal	**2.85**	**26.56**	**4.79**	**0.35**	**0.15**
Other Mobile Sources					
Aircraft	0.33	3.37	0.22	0.10	0.09
Commercial Harbor Craft	0.02	0.09	0.24	0.01	0.01
Recreational Boats	1.66	5.67	0.33	0.10	0.08
Off-Road Recreational Vehicles	0.97	3.27	0.05	0.01	0.01
Off-Road Equipment	0.59	6.41	0.72	0.05	0.05
Farm Equipment	0.07	0.50	0.39	0.02	0.02
Fuel Storage and Handling	0.09	- -	- -	- -	- -
Subtotal	**3.73**	**19.31**	**1.95**	**0.29**	**0.26**
COUNTY TOTAL	**11.53**	**56.58**	**7.31**	**9.89**	**2.81**

Notes: All values are in tons per day. Dashes ("- -") indicate no data are available.
The sum of values may not equal total shown due to rounding.

Source: California Air Resources Board (CARB) website: http://arb.ca.gov

Table 6. El Dorado County Emissions Forecast for 2035

Emission Category	Reactive Organic Gases	Carbon Monoxide	Nitrogen Oxides	Inhalable Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Fuel Combustion					
Manufacturing and Industrial	0.00	0.01	0.02	0.00	0.00
Food and Agricultural Processing	0.00	0.01	0.00	0.00	0.00
Service and Commercial	0.01	0.03	0.10	0.01	0.01
Other (Fuel Combustion)	0.00	0.01	0.04	0.00	0.00
Subtotal	**0.01**	**0.06**	**0.16**	**0.01**	**0.01**
Waste Disposal					
Sewage Treatment	- -	- -	- -	- -	- -
Landfills	0.04	0.00	0.01	0.00	0.00
Other (Waste Disposal)	0.02	- -	- -	- -	- -
Subtotal	**0.06**	**0.00**	**0.01**	**0.00**	**0.00**
Cleaning and Surface Coatings					
Laundering	0.01	- -	- -	- -	- -
Degreasing	0.12	- -	- -	- -	- -
Coatings and Related Process Solvents	0.40	- -	- -	- -	- -
Printing	0.05	- -	- -	- -	- -
Adhesives and Sealants	0.05	- -	- -	- -	- -
Subtotal	**0.63**	**- -**	**- -**	**- -**	**- -**
Petroleum Production and Marketing					
Petroleum Marketing	0.38	- -	- -	- -	- -
Subtotal	**0.38**	**- -**	**- -**	**- -**	**- -**
Industrial Processes					
Chemical	0.01	- -	- -	0.11	0.11
Food and Agriculture	0.02	- -	- -	0.00	0.00
Mineral Processes	- -	0.08	0.02	0.29	0.11
Wood and Paper	- -	- -	- -	0.13	0.08
Subtotal	**0.03**	**0.08**	**0.02**	**0.53**	**0.30**
Solvent Evaporation					
Consumer Products	1.14	- -	- -	- -	- -
Architectural Coatings & Related Process Solvents	0.75	- -	- -	- -	- -
Pesticides/Fertilizers	0.04	- -	- -	- -	- -
Asphalt Paving / Roofing	0.53	- -	- -	- -	- -
Subtotal	**2.46**	**- -**	**- -**	**- -**	**- -**

Table 6. El Dorado County Emissions Forecast for 2035 (Continued)

Emission Category	Reactive Organic Gases	Carbon Monoxide	Nitrogen Oxides	Inhalable Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Miscellaneous Processes					
Residential Fuel Combustion	1.83	10.30	0.34	1.40	1.35
Farming Operations	0.16	- -	- -	0.01	0.00
Construction and Demolition	- -	- -	- -	1.28	0.13
Paved Road Dust	- -	- -	- -	1.26	0.19
Unpaved Road Dust	- -	- -	- -	4.99	0.50
Fugitive Windblown Dust	- -	- -	- -	0.12	0.02
Fires	0.00	0.04	0.00	0.00	0.00
Managed Burning and Disposal	0.14	1.96	0.01	0.18	0.16
Cooking	0.02	- -	- -	0.11	0.11
Other (Miscellaneous Processes)	- -	- -	- -	- -	- -
Subtotal	**2.15**	**12.30**	**0.35**	**9.35**	**2.46**
On-Road Motor Vehicles					
Light Duty Vehicles	0.25	2.81	0.19	0.24	0.10
Medium Duty Trucks	0.18	1.25	0.11	0.05	0.02
Heavy Duty Trucks	0.14	1.21	0.58	0.07	0.02
Motorcycles	0.23	1.46	0.08	0.00	0.00
Buses	0.00	0.07	0.05	0.00	0.00
Motor Homes	0.00	0.01	0.03	0.00	0.00
Subtotal	**0.80**	**6.81**	**1.04**	**0.36**	**0.14**
Other Mobile Sources					
Aircraft	0.38	3.78	0.25	0.11	0.11
Commercial Harbor Craft	0.02	0.12	0.13	0.00	0.00
Recreational Boats	0.79	7.29	0.34	0.05	0.04
Off-Road Recreational Vehicles	0.88	4.53	0.10	0.01	0.01
Off-Road Equipment	0.55	7.85	0.28	0.03	0.03
Farm Equipment	0.02	0.48	0.06	0.00	0.00
Fuel Storage and Handling	0.03	- -	- -	- -	- -
Subtotal	**2.67**	**24.05**	**1.16**	**0.20**	**0.19**
COUNTY TOTAL	**9.19**	**43.29**	**2.75**	**10.50**	**3.12**

Notes: Emissions from Natural Sources not shown.
All values are in tons per day. Dashes ("- -") indicate no data are available.
The sum of values may not equal total shown due to rounding.
Source: California Air Resources Board (CARB) website: http://arb.ca.gov

Table 7 presents estimates of GHG emissions generated in California during the years 2000 through 2012. **Table 8** presents estimates of GHG emissions generated in California during the years 2009 through 2020. The data in **Table 7** are expressed as "million tonnes of CO_2 equivalent" per year. One tonne is sometimes referred to as a "metric ton", and is equal to 2,204.6 pounds. The data in **Table 8** are expressed as million metric tons of CO_2 equivalent (MMTCO2e) per year.

While CO_2 is the most common component of GHG, several different compounds are components of overall GHG. The different compounds contribute to climate change with varying intensities. The term "CO_2 equivalent" (CO_2e) refers to a weighted composite of these several compounds, expressed as the equivalent amount of CO_2.

Both **Table 7** and **Table 8** present estimates of GHG emissions disaggregated into the following seven major source categories:

- Transportation,
- Electric Power,
- Commercial and Residential,
- Industrial,
- Recycling and Waste,
- High GWP (global warming potential), and
- Agriculture.

Each major source category is further disaggregated into minor source categories.

As shown in both **Table 7** and **Table 8**, Transportation, Electric Power, and Industrial are the larger major source categories of GHG emissions in California. Other activities are relatively smaller sources of GHG emissions.

Table 7. California Greenhouse Gas Emissions Inventory for 2000 - 2012

California Environmental Protection Agency

Air Resources Board

California Greenhouse Gas Inventory for 2000-2012
— by Category as Defined in the 2008 Scoping Plan

million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessement Report's Global Warming Potentials)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Transportation	176.21	176.62	183.80	183.52	186.88	189.08	189.18	189.27	178.02	171.47	170.46	168.13	167.38
On Road	162.88	163.46	169.64	168.81	171.48	172.68	172.37	172.41	163.00	158.46	157.38	154.91	154.06
Passenger Vehicles	130.10	129.97	134.46	132.91	133.34	132.75	131.79	130.80	124.27	122.41	121.39	118.85	118.28
Heavy Duty Trucks	32.78	33.50	35.19	35.90	38.13	39.92	40.58	41.61	38.73	36.04	36.00	36.06	35.78
Ships & Commercial Boats	3.39	3.21	3.56	3.78	3.84	4.12	4.20	4.31	4.04	3.68	3.71	3.72	3.83
Aviation (Intrastate)	4.15	4.07	4.12	4.25	4.50	4.50	4.57	4.98	4.51	4.04	3.85	3.75	3.72
Rail	1.88	1.89	2.50	2.70	2.91	3.34	3.53	3.17	2.38	1.94	2.33	2.49	2.48
Off Road [1]	2.63	2.79	2.77	2.84	3.03	3.22	3.32	3.18	2.82	2.25	2.03	2.13	2.23
Unspecified	1.28	1.19	1.21	1.13	1.13	1.22	1.20	1.22	1.27	1.10	1.16	1.14	1.06
Electric Power	104.86	122.01	108.65	112.62	115.20	107.86	104.54	113.94	120.15	101.32	90.30	88.04	95.09
In-State Generation	58.96	62.99	49.69	48.06	49.16	45.06	49.86	54.13	54.32	53.28	46.71	41.18	51.02
Natural Gas	50.92	55.46	42.17	40.92	42.40	38.11	43.07	47.12	48.02	46.08	40.59	35.92	45.77
Other Fuels	6.85	6.36	6.37	5.99	5.60	5.78	5.64	5.86	5.16	5.85	5.02	4.01	4.44
Fugitive and Process Emissions	1.18	1.16	1.15	1.15	1.16	1.16	1.15	1.16	1.14	1.34	1.10	1.25	0.82
Imported Electricity	45.90	59.02	58.96	64.56	66.04	62.80	54.68	59.81	65.82	48.04	43.59	46.86	44.07
Unspecified Imports	14.27	25.42	26.92	32.05	32.92	30.01	27.95	32.73	37.92	14.99	13.45	15.52	17.48
Specified Imports	31.64	33.59	32.04	32.51	33.13	32.79	26.73	27.08	27.90	33.05	30.14	31.34	26.59
Commercial and Residential	42.33	41.20	43.17	41.54	42.90	41.24	41.89	42.11	42.44	42.65	43.82	44.32	42.28
Residential Fuel Use	29.70	28.77	28.93	28.47	29.51	28.22	28.58	28.73	29.07	28.69	29.42	29.89	28.09
Natural Gas	28.03	27.43	27.54	26.67	27.38	25.98	26.60	26.73	26.67	26.31	27.04	27.51	25.76
Other Fuels	1.67	1.34	1.39	1.80	2.12	2.25	1.98	2.01	2.40	2.38	2.39	2.38	2.33
Commercial Fuel Use	11.54	11.37	13.18	12.82	12.77	12.61	12.89	12.88	13.00	13.04	13.48	13.65	13.44
Natural Gas	10.07	10.10	11.90	11.38	11.16	10.94	11.62	11.49	11.16	11.02	11.19	11.33	11.24
Other Fuels	1.47	1.27	1.28	1.43	1.61	1.67	1.27	1.40	1.83	2.02	2.29	2.32	2.19
Commercial Cogeneration Heat Output	1.09	1.05	1.06	0.26	0.62	0.40	0.42	0.49	0.37	0.92	0.92	0.78	0.76
Industrial	95.01	93.16	93.14	92.47	94.48	92.29	90.28	87.10	87.54	84.95	88.51	88.34	89.16
Refineries	28.47	29.04	29.20	29.83	29.08	29.75	29.65	29.21	28.42	28.34	30.39	30.12	29.88
General Fuel Use	20.20	19.04	20.28	16.49	17.03	16.01	15.96	14.77	16.00	15.56	17.98	19.14	18.87
Natural Gas	16.82	14.62	15.18	11.97	12.80	12.72	12.38	11.56	12.37	11.46	13.46	14.48	14.30
Other Fuels	3.38	4.42	5.09	4.52	4.23	3.28	3.58	3.20	3.63	4.10	4.52	4.66	4.56
Oil & Gas Extraction [2]	18.71	19.08	17.65	20.21	19.90	18.59	16.94	17.00	18.22	17.12	16.18	16.22	16.86
Fuel Use	17.53	17.76	16.51	19.03	19.20	17.91	15.75	15.78	17.03	15.92	15.01	14.91	15.50
Fugitive Emissions	1.18	1.32	1.14	1.17	0.71	0.69	1.19	1.21	1.20	1.20	1.17	1.31	1.36
Cement Plants	9.41	9.52	9.62	9.71	9.81	9.91	9.74	9.14	8.63	5.72	5.56	6.14	6.92
Clinker Production	5.43	5.52	5.60	5.68	5.77	5.85	5.80	5.55	5.28	3.60	3.46	4.08	4.65
Fuel Use	3.98	4.00	4.01	4.03	4.05	4.06	3.95	3.59	3.34	2.12	2.10	2.06	2.26
Cogeneration Heat Output	11.73	10.48	10.65	10.60	12.92	12.41	12.17	11.16	10.40	12.55	12.60	11.14	10.82
Other Fugitive and Process Emissions	6.49	6.00	5.74	5.62	5.74	5.62	5.83	5.83	5.87	5.65	5.80	5.59	5.82

Last Updated: Monday, March 24, 2014 *Page 1*

Table 7. California Greenhouse Gas Emissions Inventory for 2000 – 2012 (Continued)

California Environmental Protection Agency

Air Resources Board

California Greenhouse Gas Inventory for 2000-2012 — by Category as Defined in the 2008 Scoping Plan

million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessement Report's Global Warming Potentials)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Recycling and Waste	**7.35**	**7.49**	**7.43**	**7.57**	**7.57**	**7.75**	**7.80**	**7.93**	**8.09**	**8.23**	**8.34**	**8.42**	**8.49**
Landfills [3]	***7.11***	***7.23***	***7.14***	***7.26***	***7.24***	***7.40***	***7.42***	***7.53***	***7.66***	***7.78***	***7.86***	***7.92***	***7.97***
Composting	***0.24***	***0.26***	***0.29***	***0.31***	***0.33***	***0.36***	***0.38***	***0.40***	***0.43***	***0.45***	***0.47***	***0.50***	***0.52***
High GWP	**8.03**	**7.99**	**8.14**	**8.83**	**9.56**	**10.36**	**11.08**	**11.78**	**12.87**	**13.99**	**15.89**	**17.35**	**18.41**
Ozone Depleting Substance (ODS) Substitutes	***7.00***	***7.17***	***7.37***	***8.06***	***8.87***	***9.71***	***10.41***	***11.16***	***12.24***	***13.49***	***15.36***	***16.58***	***17.73***
Electricity Grid SF6 Losses [4]	***0.33***	***0.32***	***0.30***	***0.29***	***0.30***	***0.29***	***0.28***	***0.26***	***0.27***	***0.26***	***0.24***	***0.24***	***0.23***
Semiconductor Manufacturing [3]	***0.70***	***0.50***	***0.47***	***0.48***	***0.40***	***0.36***	***0.39***	***0.36***	***0.36***	***0.23***	***0.29***	***0.53***	***0.45***
Agriculture	**32.52**	**32.75**	**35.99**	**36.50**	**36.26**	**36.54**	**37.75**	**37.03**	**37.99**	**35.84**	**35.73**	**36.34**	**37.86**
Livestock	***19.66***	***20.44***	***21.06***	***21.63***	***21.06***	***21.81***	***22.22***	***23.73***	***24.09***	***23.88***	***23.35***	***23.38***	***23.92***
Enteric Fermentation (Digestive Process)	10.26	10.45	10.74	10.89	10.78	11.14	11.24	11.93	11.89	11.71	11.51	11.49	11.78
Manure Management	9.40	10.00	10.32	10.75	10.28	10.67	10.98	11.80	12.20	12.17	11.84	11.89	12.14
Crop Growing & Harvesting	***9.05***	***8.48***	***10.54***	***10.49***	***10.67***	***10.11***	***10.20***	***9.50***	***9.98***	***9.31***	***9.57***	***9.30***	***10.22***
Fertilizers	7.01	6.73	8.56	8.57	8.49	8.09	8.01	7.49	8.04	7.32	7.58	7.25	8.16
Soil Preparation and Disturbances	1.96	1.69	1.91	1.86	2.11	1.95	2.12	1.94	1.87	1.92	1.91	1.98	1.98
Crop Residue Burning	0.08	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08
General Fuel Use	***3.82***	***3.83***	***4.39***	***4.38***	***4.53***	***4.63***	***5.33***	***3.80***	***3.92***	***2.65***	***2.81***	***3.66***	***3.72***
Diesel	2.52	2.70	3.05	3.11	3.18	3.41	3.87	2.68	3.00	1.79	1.99	2.37	2.47
Natural Gas	0.98	0.75	0.94	0.85	0.82	0.70	0.88	0.79	0.75	0.69	0.65	0.66	0.70
Gasoline	0.31	0.38	0.41	0.41	0.52	0.52	0.57	0.32	0.17	0.17	0.17	0.63	0.55
Other Fuels	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions	***466.32***	***481.23***	***480.32***	***483.05***	***492.86***	***485.13***	***482.52***	***489.16***	***487.10***	***458.44***	***453.06***	***450.94***	***458.68***

[1] Includes equipment used in construction, mining, oil drilling, industrial and airport ground operations
[2] Reflects emissions from combustion of natural gas, diesel, and lease fuel plus fugitive emissions
[3] These categories are listed in the Industrial sector of ARB's GHG Emission Inventory sectors
[4] This category is listed in the Electric Power sector of ARB's GHG Emission Inventory sectors

Source: California Air Resources Board website http://www.arb.ca.gov

Table 8. California Greenhouse Gas Emissions Forecast for 2009 – 2020

(Mid Case) Forecast for Updated Scoping Plan - MMTCO2e (AR4)												
Scoping Plan Category	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Transportation	**171.5**	**170.6**	**168.4**	**172.7**	**174.4**	**176.4**	**178.1**	**179.7**	**181.4**	**182.8**	**183.9**	**185.3**
On Road	***158.6***	***157.5***	***155.1***	***159.2***	***160.5***	***162.1***	***163.4***	***164.6***	***165.9***	***166.9***	***167.6***	***168.7***
Passenger Vehicles	122.5	121.5	119.0	122.1	122.9	123.5	123.9	124.5	125.2	125.6	125.7	126.2
Heavy Duty Trucks	36.1	36.0	36.1	37.0	37.7	38.7	39.5	40.1	40.7	41.3	41.9	42.5
Ships & Commercial Boats	***3.7***	***3.7***	***3.8***	***4.0***	***4.0***	***4.2***	***4.3***	***4.5***	***4.7***	***4.8***	***5.0***	***5.1***
Aviation (Intrastate)	***4.0***	***3.8***	***3.7***	***3.9***	***4.0***	***4.1***	***4.2***	***4.3***	***4.3***	***4.4***	***4.5***	***4.6***
Rail	***1.9***	***2.3***	***2.5***	***2.3***	***2.4***	***2.5***	***2.5***	***2.6***	***2.6***	***2.7***	***2.7***	***2.8***
Off Road [1]	***2.2***	***2.0***	***2.1***	***2.2***	***2.3***	***2.4***	***2.5***	***2.6***	***2.7***	***2.8***	***2.9***	***3.0***
Unspecified	***1.1***	***1.2***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***
Electric Power	**103.6**	**90.1**	**86.6**	**93.4**	**94.6**	**95.9**	**97.2**	**98.6**	**99.8**	**100.9**	**102.3**	**103.8**
In-State Generation	***55.5***	***46.5***	***39.7***	***46.9***	***48.1***	***49.4***	***50.7***	***52.1***	***53.3***	***54.4***	***55.8***	***57.3***
Natural Gas	48.9	40.6	34.5	41.0	42.2	43.5	44.8	46.2	47.3	48.5	49.9	51.4
Other Fuels	5.3	4.8	3.9	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Fugitive and Process Emissions	1.3	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Imported Electricity	***48.0***	***43.6***	***46.9***	***46.5***	***46.5***	***46.5***	***46.5***	***46.5***	***46.5***	***46.5***	***46.5***	***46.5***
Unspecified Imports	15.0	13.5	15.5	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
Specified Imports	33.1	30.1	31.3	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
Commercial and Residential	**44.2**	**45.2**	**45.5**	**45.5**	**45.9**	**46.4**	**46.8**	**47.3**	**47.9**	**48.4**	**49.0**	**49.5**
Residential Fuel Use	***28.7***	***29.4***	***29.9***	***29.9***	***30.1***	***30.2***	***30.3***	***30.6***	***30.8***	***31.1***	***31.4***	***31.7***
Natural Gas	26.3	27.0	27.5	27.5	27.7	27.9	28.0	28.2	28.4	28.7	29.0	29.3
Other Fuels	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Commercial Fuel Use	***14.6***	***14.8***	***14.9***	***14.7***	***14.9***	***15.2***	***15.6***	***15.9***	***16.2***	***16.5***	***16.7***	***17.0***
Natural Gas	12.6	12.5	12.6	12.5	12.7	13.0	13.4	13.7	14.0	14.3	14.5	14.8
Other Fuels	2.0	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Commercial Cogeneration Heat Output	***0.9***	***0.9***	***0.8***	***0.9***	***0.9***	***0.9***	***0.9***	***0.9***	***0.9***	***0.9***	***0.9***	***0.9***
Industrial	**85.3**	**92.0**	**94.4**	**91.5**	**92.0**	**92.6**	**93.0**	**93.2**	**93.3**	**93.5**	**93.6**	**93.7**
Refineries	***28.3***	***30.4***	***30.1***	***29.7***	***29.7***	***29.7***	***29.7***	***29.7***	***29.7***	***29.7***	***29.7***	***29.7***
General Fuel Use	***17.6***	***20.2***	***21.6***	***21.2***	***21.7***	***22.1***	***22.4***	***22.7***	***23.0***	***23.3***	***23.6***	***23.9***
Natural Gas	11.5	13.5	14.5	14.6	15.0	15.4	15.7	16.0	16.3	16.6	16.9	17.2
Other Fuels	6.1	6.8	7.1	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Oil & Gas Extraction [2]	***17.1***	***16.2***	***16.2***	***15.7***	***15.6***	***15.7***	***15.7***	***15.5***	***15.2***	***15.0***	***14.7***	***14.5***
Fuel Use	15.9	15.0	14.9	14.6	14.5	14.6	14.6	14.4	14.2	13.9	13.7	13.5
Fugitive Emissions	1.2	1.2	1.3	1.2	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0
Cement Plants	***5.7***	***5.6***	***6.1***	***5.8***	***5.8***	***5.8***	***5.8***	***5.8***	***5.8***	***5.8***	***5.8***	***5.8***
Clinker Production	3.6	3.5	4.1	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Fuel Use	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Cogeneration Heat Output	***10.3***	***12.5***	***12.6***	***11.8***	***11.8***	***11.8***	***11.8***	***11.8***	***11.8***	***11.8***	***11.8***	***11.8***
Other Fugitive and Process Emissions	***6.3***	***7.2***	***7.7***	***7.2***	***7.3***	***7.4***	***7.5***	***7.7***	***7.8***	***7.9***	***8.0***	***8.1***
Recycling and Waste	**8.1**	**8.2**	**8.3**	**8.3**	**8.4**	**8.5**	**8.6**	**8.7**	**8.9**	**9.0**	**9.2**	**9.4**
Landfills [3]	***7.8***	***7.9***	***8.0***	***8.0***	***8.1***	***8.2***	***8.3***	***8.4***	***8.6***	***8.7***	***8.9***	***9.1***
Composting	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***
High GWP	**14.1**	**16.1**	**17.3**	**19.1**	**20.6**	**22.2**	**23.7**	**25.3**	**26.9**	**28.5**	**30.1**	**31.5**
Ozone Depleting Substance (ODS) Substitutes	***13.5***	***15.4***	***16.6***	***18.4***	***20.0***	***21.5***	***23.1***	***24.7***	***26.3***	***27.9***	***29.4***	***30.9***
Electricity Grid SF6 Losses [4]	***0.3***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***
Semiconductor Manufacturing [3]	***0.3***	***0.5***	***0.4***	***0.4***	***0.4***	***0.4***	***0.4***	***0.4***	***0.4***	***0.4***	***0.4***	***0.4***
Agriculture	**35.0**	**34.9**	**35.4**	**34.8**	**34.9**	**35.0**	**35.1**	**35.2**	**35.4**	**35.6**	**35.8**	**36.2**
Livestock	***23.5***	***23.0***	***23.0***	***22.9***	***23.0***	***23.1***	***23.2***	***23.4***	***23.6***	***23.8***	***24.0***	***24.4***
Enteric Fermentation (Digestive Process)	11.3	11.1	11.1	11.1	11.1	11.2	11.2	11.3	11.4	11.4	11.5	11.7
Manure Management	12.2	11.8	11.9	11.8	11.9	11.9	12.0	12.1	12.2	12.3	12.5	12.7
Crop Growing & Harvesting	***8.8***	***9.1***	***8.8***	***8.9***	***8.9***	***8.9***	***8.9***	***8.9***	***8.9***	***8.9***	***8.9***	***8.9***
Fertilizers	7.3	7.6	7.2	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Soil Preparation and Disturbances	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Crop Residue Burning	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
General Fuel Use	***2.7***	***2.8***	***3.7***	***3.0***	***3.0***	***3.0***	***3.0***	***3.0***	***3.0***	***3.0***	***3.0***	***3.0***
Diesel	1.8	2.0	2.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Natural Gas	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Gasoline	0.2	0.2	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Other Fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL GROSS EMISSIONS	**461.8**	**457.0**	**455.9**	**465.4**	**470.8**	**476.9**	**482.4**	**488.0**	**493.5**	**498.7**	**503.9**	**509.4**
		2020 BAU Forecast Version: May 27, 2014										

Source: California Air Resources Board internet website http://www.arb.ca.gov
Note: Because of differences in methodology, values for 2009 through 2012 differ from the GHG emissions inventory values.

3.6 REGULATORY SETTING

Air quality within the MCAB is regulated by such agencies as the El Dorado County Air Quality Management District (EDCAQMD), ARB, and EPA. Each of these agencies develops rules, regulations, policies, and/or goals to attain the goals or directives imposed through legislation. Although the EPA regulations may not be superseded, both state and local regulations may be more stringent.

3.6.1 Federal Air Quality Regulations

At the federal level, EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA), which was enacted in 1963. The FCAA was amended in 1970, 1977, and 1990.

The FCAA required EPA to establish primary and secondary NAAQS, which are shown in **Table 1**. The FCAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The Federal Clean Air Act Amendments of 1990 (FCAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA has responsibility to review all state SIPs to determine conformation to the mandates of the FCAAA and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

3.6.2 State Air Quality Regulations

ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), which was adopted in 1988. The CCAA requires that all air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

ARB is primarily responsible for developing and implementing air pollution control plans to achieve and maintain the NAAQS. The ARB is primarily responsibility for statewide pollution sources and produces a major part of the SIP. Local air districts are still relied upon to provide additional strategies for sources under their jurisdiction. The ARB combines these data and submits the completed SIP to EPA.

Other ARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control and air quality management districts), establishing CAAQS (which in many cases are more stringent than the NAAQS), determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, and off-road vehicles.

Section 39610(a) of the CCAA directs the ARB to "identify each district in which transported air pollutants from upwind areas outside the district cause or contribute to a violation of the ozone standard and to identify the district of origin of transported pollutants." The information regarding the transport of air pollutants from one basin to another was to be quantified to assist interrelated basins in the preparation of plans for the attainment of CAAQS. Numerous studies conducted by the ARB have identified air basins that are impacted by pollutants transported from other air basins (as of 1993). Among the air basins affected by air pollution transport from the San Francisco Bay Area Air Basin (SFBAAB) are the MCAB, the San Joaquin Valley Air Basin, and the Sacramento Valley Air Basin.

3.6.3 Local Air Quality Management

The EDCAQMD is the primary local agency responsible for protecting human health and property from the harmful effects of air pollution in the County. EDCAQMD is required to adopt an *Air Quality Attainment Plan* and establish and enforce air pollution control rules and regulations in order to attain and maintain all state and federal ambient air quality standards. The EDCAQMD regulates, permits, and inspects stationary sources of air pollution. Among these sources are industrial facilities, gasoline stations, auto body shops, and dry cleaners.

While the state is responsible for emission standards and controlling actual tailpipe emissions from motor vehicles, the EDCAQMD is required to regulate agricultural burning and industrial emissions, implement transportation control measures and recommend mitigation measures for new growth and development designed to reduce the number of cars on the road, and promote the use of cleaner fuels.

The Project site is located in the Sacramento region's non-attainment area for federal ozone standards. The EDCAQMD, along with other local air districts in the Sacramento region, are required to comply with and implement the State Implementation Plan (SIP) to demonstrate when and how the region can attain the federal ozone standards. Accordingly, the Sacramento Metropolitan Air Quality Management District (SMAQMD) prepared the *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* in December 2008, with input from the other air districts in the region. The SMAQMD adopted the Plan on January 22, 2009; followed by the Feather River Air Quality Management District (FRAQMD) on February 2, 2009; the EDCAQMD on February 10, 2009; the Yolo-Solano Air Quality Management District (YSAQMD) on February 11, 2009; and the Placer County Air Pollution Control District (PCAPCD) on February 19, 2009. CARB determined that the Plan meets Clean Air Act requirements and approved the Plan on March 26, 2009 as a revision to the SIP.

The *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* demonstrates how existing and new control strategies would provide the future emission reductions needed to meet the federal Clean Air Act requirements. Adoption of all reasonably available control measures is required for attainment. Measures could include, but are not limited to the following: regional mobile incentive programs; urban forest development programs; and local regulatory measures for emission reductions related to indirect source rules, architectural coating, automotive refinishing, natural gas production and processing, asphalt concrete, and various others.

The SMAQMD held a public hearing on the 2013 Revisions to the *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan*. This hearing was conducted on behalf of the air districts in the Sacramento Federal Ozone Nonattainment Area, including the YSAQMD, the FRAQMD, the PCAPCD, and the EDCAQMD. The *2013 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* was adopted on September 26, 2013 and submitted to the CARB. CARB approved the plan on November 21, 2013, and submitted it to the EPA to be included in or revise the SIP.

3.6.4 Global Climate Change and Greenhouse Gas Emissions

Federal Regulations. The following describes Federal regulations related to global climate change and GHG emissions.

> Supreme Court Ruling. The EPA is the Federal agency responsible for implementing the FCAA. The U.S. Supreme Court ruled in its decision in Massachusetts et al. v. Environmental Protection Agency et al. ([2007] 549 U.S. 05-1120), issued on April 2, 2007, that CO_2 is an air pollutant as defined under the FCAA, and that EPA has the authority to regulate emissions of GHGs.
>
> In response to the mounting issue of climate change, EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.
>
> Mandatory Greenhouse Gas Reporting Rule. On September 22, 2009, EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement will provide EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year. This publicly available data will allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial greenhouse gases along with vehicle and engine manufacturers will report at the corporate level. An estimated 85 percent of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.
>
> Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act. On April 23, 2009, EPA published their Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the FCAA (Endangerment Finding) in the Federal Register. The Endangerment Finding is based on Section 202(a) of the FCAA, which states that the Administrator of EPA should regulate and develop standards for “emission[s] of air pollution from any class of classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.” The

proposed rule addresses Section 202(a) in two distinct findings. The first addresses whether or not the concentrations of the six key GHGs (i.e., CO_2, methane [CH_4], nitrous oxide [N_2O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]) in the atmosphere threaten the public health and welfare of current and future generations. The second addresses whether or not the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and to the threat of climate change.

The Administrator proposed the finding that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the FCAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are very likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The Administrator also proposed the finding that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. The proposed finding cites that in 2006, motor vehicles were the second largest contributor to domestic GHG emissions (24 percent of total) behind electricity generation. Furthermore, in 2005, the U.S. was responsible for 18 percent of global GHG emissions. Therefore, GHG emissions from motor vehicles and motor vehicle engines were found to contribute to air pollution that endangers public health and welfare.

State Greenhouse Gas Regulations. The following describes State regulations related to global climate change and GHG emissions.

<u>Assembly Bill 1493 (2002).</u> In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493. AB 1493 requires that ARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, in 2004 ARB approved amendments to the California Code of Regulations (CCR) adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1) require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily for the transportation of persons), beginning with the

2009 model year. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for the 2016 model year are approximately 37 percent lower than the limits for the first year of the regulations, the 2009 model year. For light-duty trucks with LVW of 3,751 pounds to gross vehicle weight (GVW) of 8,500 pounds, as well as medium-duty passenger vehicles, GHG emissions would be reduced approximately 24 percent between 2009 and 2016.

In December 2004, a group of car dealerships, automobile manufacturers, and trade groups representing automobile manufacturers filed suit against ARB to prevent enforcement of 13 CCR Sections 1900 and 1961 as amended by AB 1493 and 13 CCR 1961.1 (Central Valley Chrysler-Jeep et al. v. Catherine E. Witherspoon, in Her Official Capacity as Executive Director of the California Air Resources Board, et al.). The auto-makers' suit in the U.S. District Court for the Eastern District of California, contended California's implementation of regulations that, in effect, regulate vehicle fuel economy violates various federal laws, regulations, and policies.

On December 12, 2007, the Court found that if California receives appropriate authorization from EPA (the last remaining factor in enforcing the standard), these regulations would be consistent with and have the force of federal law, thus, rejecting the automakers' claim. This authorization to implement more stringent standards in California was requested in the form of a FCAA Section 209, subsection (b) waiver in 2005. Since that time, EPA failed to act on granting California authorization to implement the standards. Governor Schwarzenegger and Attorney General Edmund G. Brown filed suit against EPA for the delay. In December 2007, EPA Administrator Stephen Johnson denied California's request for the waiver to implement AB 1493. Johnson cited the need for a national approach to reducing GHG emissions, the lack of a "need to meet compelling and extraordinary conditions", and the emissions reductions that would be achieved through the Energy Independence and Security Act of 2007 as the reasoning for the denial.

The State of California filed suit against EPA for its decision to deny the FCAA waiver. A change in presidential administration directed EPA to reexamine its position for denial of California's CAA waiver and for its past opposition to GHG emissions regulation. California received the waiver, notwithstanding the previous denial by EPA, on June 30, 2009.

<u>Assembly Bill 32 (2006), California Global Warming Solutions Act.</u> In September 2006, the governor of California signed AB 32 (Chapter 488, Statutes of 2006), the California Global Warming Solutions Act of 2006, which enacted Sections 38500–38599 of the California Health and Safety Code. AB 32 requires the reduction of statewide GHG emissions to 1990 levels by 2020. This equates to an approximate 15 percent reduction compared to existing statewide GHG emission levels or a 30 percent reduction from projected 2020 "business-as-usual"

(BAU) emission levels. The required reduction will be accomplished through an enforceable statewide cap on GHG emissions beginning in 2012.

To effectively implement the statewide cap on GHG emissions, AB 32 directs ARB to develop and implement regulations that reduce statewide GHG emissions generated by stationary sources. Specific actions required of ARB under AB 32 include adoption of a quantified cap on GHG emissions that represent 1990 emissions levels along with disclosing how the cap was quantified, institution of a schedule to meet the emissions cap, and development of tracking, reporting, and enforcement mechanisms to ensure that the state achieves the reductions in GHG emissions needed to meet the cap.

In addition, AB 32 states that if any regulations established under AB 1493 (2002) cannot be implemented then ARB is required to develop additional, new regulations to control GHG emissions from vehicles as part of AB 32.

AB 32 Climate Change Scoping Plan. In December 2008, ARB adopted its *Climate Change Scoping Plan* (California Air Resources Board 2008), which contains the main strategies California will implement to achieve reduction of approximately 169 million metric tons (MMT) of CO_2e, or approximately 30 percent from the state's projected 2020 emission level of 596 MMT of CO_2e under a BAU scenario (this is a reduction of 42 MMT CO_2e, or almost 10 percent from 2002-2004 average emissions). The Scoping Plan also includes ARB-recommended GHG reductions for each emissions sector of the state's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e),
- the Low-Carbon Fuel Standard (15.0 MMT CO_2e),
- energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO_2e), and
- a renewable portfolio standard for electricity production (21.3 MMT CO_2e).

ARB has not yet determined what amount of GHG reductions it recommends from local government operations; however, the Scoping Plan does state that land use planning and urban growth decisions will play an important role in the state's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions (meanwhile, ARB is also developing an additional protocol for community emissions). ARB further acknowledges that decisions on how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. The Scoping Plan states that the ultimate GHG reduction assignment to local government operations is to be determined. With regard to land use planning, the Scoping Plan expects approximately 5.0 MMT CO_2e will be achieved associated with implementation of SB 375, which is discussed further below.

Senate Bills 1078 and 107 and Executive Order S-14-08. SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008 Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Energy Standard to 33 percent renewable power by 2020.

Senate Bill 1368 (2006). SB 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (PUC) to establish a greenhouse gas emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The California Energy Commission (CEC) must establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural gas fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC.

Senate Bill 97 (2007). SB 97, signed by the Governor in August 2007 (Chapter 185, Statutes of 2007; Public Resources Code, Sections 21083.05 and 21097), acknowledges climate change is a prominent environmental issue that requires analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Resources Agency by July 1, 2009 guidelines for mitigating GHG emissions or the effects of GHG emissions, as required by CEQA. The California Resources Agency is required to certify and adopt these guidelines by January 1, 2010.

This bill also removes, both retroactively and prospectively, as legitimate causes of action in litigation any claim of inadequate CEQA analysis of effects of GHG emissions associated with environmental review for projects funded by the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006 (Proposition 1B) or the Disaster Preparedness and Flood Protection Bond Act of 2006 (Proposition 1E). This provision will be repealed by provision of law on January 1, 2010 at that time such projects, if any remain unapproved, will no longer enjoy protection against litigation claims based on failure to adequately address issues related to GHG emissions.

Senate Bill 375 (2008). SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. As part of the alignment, SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) which prescribes land use allocation in that MPO's Regional Transportation Plan (RTP). The ARB, in consultation with MPOs, is required to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. The ARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned GHG emission reduction targets. If MPOs do not meet the GHG reduction targets, transportation projects located in the MPO boundaries would not be eligible for funding programmed after January 1, 2012.

This bill also extends the minimum time period for the Regional Housing Needs Allocation (RNHA) cycle from five years to eight years for local governments located in an MPO that meets certain requirements. City or County land use policies (e.g., General Plans) are not required to be consistent with the RTP including associated SCSs or APSs. Projects consistent with an approved SCS or APS and categorized as "transit priority projects" would receive incentives under new provisions of CEQA.

<u>Executive Order S-3-05 (2005).</u> Governor Schwarzenegger signed Executive Order S-3-05 on June 1, 2005 which proclaimed California is vulnerable to the impacts of climate change. The executive order declared increased temperatures could reduce snowpack in the Sierra Nevada Mountains, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the executive order established targets for total GHG emissions which include reducing GHG emissions to the 2000 level by 2010, to the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

The executive order also directed the secretary of the California Environmental Protection Agency to coordinate a multiagency effort to reduce GHG emissions to the target levels. The secretary will submit biannual reports to the governor and legislature describing progress made toward reaching the emission targets; impacts of global warming on California's resources; and mitigation and adaptation plans to combat impacts of global warming.

To comply with the executive order, the Secretary of the California Environmental Protection Agency created the California Climate Action Team which is made up of members from various state agencies and commissions. The California Climate Action Team released its first report in March 2006 which proposed achieving the GHG emissions targets by building on voluntary actions of California businesses and actions by local governments and communities along with continued implementation of state incentive and regulatory programs.

Executive Order S-13-08. Governor Schwarzenegger signed Executive Order S-13-08 on November 14, 2008 which directs California to develop methods for adapting to climate change through preparation of a statewide plan. The executive order directs OPR, in cooperation with the California Resources Agency (CRA), to provide land use planning guidance related to sea level rise and other climate change impacts by May 30, 2009. The order also directs the CRA to develop a state Climate Adaptation Strategy by June 30, 2009 and to convene an independent panel to complete the first California Sea Level Rise Assessment Report. The assessment report is required to be completed by December 1, 2010 and required to include the following four items:

1. project the relative sea level rise specific to California by taking into account issues such as coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates;

2. identify the range of uncertainty in selected sea level rise projections;

3. synthesize existing information on projected sea level rise impacts to state infrastructure (e.g., roads, public facilities, beaches), natural areas, and coastal and marine ecosystems; and

4. discuss future research needs relating to sea level rise in California.

Executive Order S-1-07. Governor Schwarzenegger signed Executive Order S-1-07 in 2007 which proclaimed the transportation sector as the main source of GHG emissions in California. The executive order proclaims the transportation sector accounts for over 40 percent of statewide GHG emissions. The executive order also establishes a goal to reduce the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020.

In particular, the executive order established a Low-Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the CEC, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by CEC on December 24, 2007) and was submitted to ARB for consideration as an "early action" item under AB 32. The ARB adopted the LCFS on April 23, 2009.

Local Greenhouse Gas Planning. On March 25, 2008, the El Dorado County Board of Supervisors adopted the *Environmental Vision for El Dorado County* Resolution No. 29-2008, brought forward by the Youth Commission. The Resolution sets forth goals and calls for implementation of positive environmental changes to reduce global impact, improve air quality and reduce dependence on landfills, promote alternative energies, increase recycling, and encourage local governments to adopt green and sustainable practices.

3.7 TOPOGRAPHY AND METEOROLOGY

The Project site is located in El Dorado County, which is in the MCAB. The climate of the MCAB is influenced by the foothill and mountainous terrain in the MCAB. El Dorado County is bordered by the Sacramento Valley to the west and the Nevada State line to the east with the western portion of the County consisting of rolling Sierra Nevada foothills, and the central and eastern portion of the County consisting of granite peaks reaching up to 10,000 feet in elevation. The climate of El Dorado County is characterized by hot dry summers and cool moist winters. The western portion of the County is characterized by higher temperatures and lower annual rainfall, and the central and eastern portions of the County are characterized by lower temperatures and higher annual rainfall.

Air quality is affected by the rate, amount, and location of pollutant emissions and the associated meteorological conditions that influence movement and dispersal of pollutants. Atmospheric conditions including wind speed, wind direction and air temperature, in combination with local surface topography (i.e., geographic features such as mountains and valleys), determine air pollutant impacts on local air quality.

Until recently, the Project site could be characterized as a rural environment with scattered homes. However, recent urban land use development in the Folsom and El Dorado Hills areas has been extensive. U.S. Highway 50 extends in an east-west direction through the Project area.

Air quality in the Project area is influenced by pollutant transport from upwind areas, such as the Sacramento and San Francisco Bay metropolitan areas, and also by local emissions sources, such as wood burning stoves and fireplaces during the winter months and vehicles using area roadways and U.S. Highway 50.

SECTION 4
SHORT-TERM CONSTRUCTION IMPACTS

Implementation of the Project would result in construction activity, which would generate air pollutant emissions. Construction activities such as grading, excavation and travel on unpaved surfaces would generate dust, and can lead to elevated concentrations of PM_{10} and $PM_{2.5}$. The operation of construction equipment results in exhaust emissions. A substantial portion of the construction equipment is powered by diesel engines, which produce relatively high levels of NO_x emissions. Construction activity could also potentially entrain NOA, if present in the soil.

4.1 SIGNIFICANCE THRESHOLDS

Significance thresholds applied to construction-related emissions are from the EDCAQMD document *Guide to Air Quality Assessment – Determining Significance of Air Quality Impacts Under the California Environmental Quality Act* (El Dorado County Air Quality Management District 2002).

4.1.1 Ozone Precursors

The El Dorado County AQMD Guide to Air Quality Assessment contains a methodology for "Screening of Construction Equipment Exhaust Emissions Based on Incorporation of Mitigation Measures". Based on that screening method, ROG and NO_x emissions during construction are assumed to be less than significant if (a) the Project encompasses 12 acres or less of ground that is being worked at one time and at least one of the mitigation measures relating to such pollutants described in Section 4.4.1 of the AQMD Guide, or an equivalent measure, is incorporated into the Project.

4.1.2 Fugitive Dust Particulate Matter

Section 4.2.3 of the *Guide to Air Quality Assessment – Determining Significance of Air Quality Impacts Under the California Environmental Quality Act* states:

> "Mass emissions of fugitive dust PM_{10} need not be quantified, and may be assumed to be not significant, if the project includes mitigation measures that will prevent visible dust beyond the project property lines, in compliance with Rule 403 of the South Coast AQMD. See Section C.6 in Appendix C-1, where the mitigation measures in Rule 403 are set forth."

Appendix A of this Air Quality Study is an excerpt from Appendix C-1 of the EDCAQMD guide. Implementing the dust control measures described in **Appendix A** would allow the Project to be below the EDCAQMD threshold of significance for construction-related particulate matter emissions.

In this Air Quality Study, this significance threshold is applied to both PM_{10} and $PM_{2.5}$.

4.1.3 Diesel Exhaust Particulate Matter

Diesel exhaust particulate matter is a toxic air contaminant (TAC). Long-term or excessive exposure to diesel particulate matter associated with the Project would be considered to result in a potentially significant health risk.

4.1.4 Naturally Occurring Asbestos

Naturally occurring asbestos has been identified as a TAC by the CARB. No quantitative significance thresholds have been set for NOA. However, as noted earlier in this Air Quality Study, the EDCAQMD provides a map that may be used as a screening-level indicator of the likelihood of NOA being present on the Project site. The map, *Asbestos Review Areas – Western Slope – County of El Dorado – State of California* (County of El Dorado 2005) shows the location of individual parcels and areas within the following four categories considered to be subject to elevated risk of containing NOA:

- Found Area of NOA,
- Quarter Mile Buffer for Found Area of NOA,
- More Likely to Contain Asbestos (Dept of Conservation Mines & Geology OPEN-FILE REPORT 2000-002), and
- Quarter Mile Buffer for More Likely to Contain Asbestos or Fault Line.

If a project site is located outside of all four areas listed above, it may be considered to have a relatively lower probability of containing NOA and, in this Air Quality Study, will be considered to have a less-than-significant impact.

If a project site is located within one of the four areas listed above, it may be considered to have an elevated probability of containing NOA and, in this Air Quality Study, will be considered to have a significant impact.

Implementation of mitigation measures to reduce asbestos emissions during construction activities will be considered to reduce the impact to a less-than-significant level.

4.2 METHODOLOGY

The following describes methods used to assess Project-related construction impacts.

4.2.1 Ozone Precursors

The El Dorado County AQMD Guide to Air Quality Assessment establishes screening criteria for determining whether construction-period ozone precursor (ROG and NO_x) emissions could result in a significant impact. The screening criteria are based on the amount active ground disturbance at any one time. If the amount of active disturbance is less than 12 acres and if specific NO_x/ROG reduction measures are implemented as specified in the AQMD Guide, impacts associated with ozone precursors are considered less than significant.

4.2.2 Diesel Exhaust Particulate Matter

Potential health risk associated with diesel particulate matter are determined by considering the duration of Project construction activities and potential for significant long-term exposure of the public to diesel particulate matter associated with construction activities. The El Dorado County AQMD Guide to Air Quality Assessment defines screening criteria for the evaluation of potential health risk; however, due to the short duration of Project construction activities and based on review of methodology used by the County on other roadway construction projects, the screening criteria was not utilized for this evaluation.

4.2.3 Naturally-Occurring Asbestos

As noted above, the map *Asbestos Review Areas – Western Slope – County of El Dorado – State of California* is used in this Air Quality Study as a source of information on the potential for NOA to be present on the Project site.

4.3 IMPACTS

The following is a description of construction-related impacts of the Project.

4.3.1 Ozone Precursors

The El Dorado County AQMD Guide to Air Quality Assessment establishes screening criteria for determining whether construction-period ozone precursor (ROG and NO_x) emissions could result in a significant impact. The screening criteria are based on the amount active ground disturbance at any one time. If the amount of active disturbance is less than 12 acres and if specific NO_x/ROG reduction measures are implemented as specified in the AQMD Guide, impacts associated with ozone precursors are considered less than significant. As discussed in Section 2.3, the area of active soil disturbance on any one day associated with the Project is estimated to be approximately 7.8 acres, and less than the 12-acre screening criteria. Therefore, with implementation of one of three potential mitigation options identified in the AQMD Guide and listed below, the impact associated with ozone precursor emissions during Project construction would be less than significant.

Ozone Precursor Mitigation Recommendation 1. The County shall require that one of the following measures be implemented during Project construction:

a) Require the prime contractor to provide an approved plan demonstrating that heavy-duty (i.e., greater than 50 horsepower) off-road vehicles to be used in the construction project, and operated by either the prime contractor or any subcontractor, will achieve, at a minimum, a fleet-averaged 15 percent NO_x reduction compared to the most recent CARB fleet average. Successful implementation of this measure requires the prime contractor to submit a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during the construction project. Usually the inventory includes the horsepower rating, engine production year, and hours of use or fuel throughput for each piece of equipment. In addition, the inventory list is updated and submitted monthly throughout the duration of when the construction activity occurs.
b) Obligate the prime contractor to use an alternative fuel, other than Diesel, verified by the California Air Resources Board or otherwise documented through emissions testing to have the greatest NO_x and PM_{10} reduction benefit available, provided each pollutant is reduced by at least 15%.
c) Obligate the prime contractor to use aqueous emulsified fuel verified by the California Air Resources Board or otherwise documented through emissions testing to have the greatest NO_x and PM_{10} reduction benefit available, provided each pollutant is reduced by at least 15%.

4.3.2 Fugitive Dust / Particulate Matter

Project construction activities would generate fugitive dust (including PM_{10} and $PM_{2.5}$) emissions. Based on procedures presented in the *Guide to Air Quality Assessment – Determining Significance of Air Quality Impacts Under the California Environmental Quality Act*, quantification of fugitive dust emissions need not be quantified, and may be assumed to be less than significant, if the Project includes mitigation measures in compliance with Rule 403 of the South Coast AQMD. Appendix A of this Air Quality Study is an excerpt from Appendix C-1 of the EDCAQMD guide which contains the relevant excerpt of South Coast AQMD Rule 403. Implementing these dust control measures would result in a less than significant construction-related particulate matter emissions impact for both PM_{10} and $PM_{2.5}$.

4.3.3 Diesel Exhaust Particulate Matter

Construction of the Project would generate diesel exhaust particulate matter emissions, which is a carcinogen. However, the diesel particulate matter emissions associated with Project construction would be short term occurring periodically during period of less than one year. Accepted evaluation methods for determining health risk from diesel particulate matter considers exposure over a 70-year period. Considering the limited duration of construction emissions, it can be reasonably anticipated that exposure to diesel particulate matter would not result in a potential for significant health risk to the public. Furthermore, implementation of mitigation recommendations elsewhere in this report would also serve to reduce diesel particulate matter emissions, further reducing the potential for health risk impacts. This impact is therefore considered to be less than significant.

4.3.4 Naturally Occurring Asbestos

Soil disturbance during construction in areas containing soils or other materials containing naturally occurring asbestos would result in an elevated risk of entraining/releasing asbestos into the air and human exposure to inhalation. Review of the County's *Asbestos Review Areas – Western Slope – County of El Dorado – State of California*[1] shows the Project site is located in an area "More Likely to Contain Asbestos", which indicates an elevated risk of the presence of NOA. Although sampling of soil at the Project site has not been conducted to confirm the presence of NOA, this analysis determines that there is a potential for NOA to be present and considers the potential for release and human exposure to NOA during construction activities to be a potentially significant impact. Compliance with El Dorado County AQMD Rules 223, 223-1, and Rule 223-2 as described at NOA Emissions Reduction Measures 1 through 3, below, would reduce this impact to a less-than-significant level. Note that Project construction activities would also be required to comply with CARB Airborne Toxic Control Measure (ATCM) 93105, "Asbestos ATCM for Construction, Grading, Quarrying, and Surface Ming Operations" and CARB ATCM 93106, "Asbestos ATCM for Surfacing Applications".

NOA Emissions Reduction Measure 1. The County shall require construction contractors to comply with El Dorado County APCD Rules 223, 223-1, and 223-2. Compliance shall include, but is not limited to, implementation of the following measures:

- Application of water hygroscopic materials, or non-toxic chemical stabilizers or other specified covering on material stockpiles, wrecking activity, excavation, grading, sweeping, or clearing of land;
- Installation and use of hoods, fans and filters to enclose, collect, and clean the emissions of dusty materials;
- Covering or wetting at all times when in motion of open-bodied trucks, trailers or other vehicles transporting materials, which create a nuisance by generating particulate matter in areas where the general public has access;
- Application of asphalt, oil, water or suitable chemicals on dirt roads;
- Alternate means of control as approved by the Air Pollution Control Officer.
- Pursuant to Rule 223, a person shall not cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area, such that the presence of such fugitive dust remains visible, or exceed shade darker as that designated as No. 0 on the Ringelmann Chart, or exceed 0% opacity as determined in accordance with U.S. EPA Method 9, in the atmosphere beyond the boundary line of the emission source.

NOA Emissions Reduction Measure 2. Pursuant to El Dorado County APCD Rule 223-1, the County's project construction manager shall submit a Fugitive Dust Control Plan to the Air Pollution Control Officer prior to the start of construction activities.

[1] Asbestos Review Areas – Western Slope – County of El Dorado – State of California is available at http://www.co.el-dorado.ca.us/emd/apcd/PDF/Map.pdf on the EDCAQMD website.

Construction activities shall not commence until the Air Pollution Control Officer has approved or conditionally approved the Fugitive Dust Control Plan. The County's project construction manager shall provide written notification to the Air Pollution Control Officer at least 10 days prior to the initial commencement of earthmoving activities via fax, e-mail, or mail.

The Fugitive Dust Control Plan shall describe all fugitive dust control measures to be implemented before, during and after any dust generating activity. The Fugitive Dust Control Plan shall contain all the information described in Section 223-1.5.B of El Dorado County APCD Rule 223-1. The Air Pollution Control Officer shall approve, disapprove or conditionally approve the Fugitive Dust Control Plan within 30 days of plan submittal. Rule 223-1 requires that visible emissions shall not exceed the shade designated as No. 0 on the Ringelmann Chart, or 0% opacity as determined in accordance with U.S. EPA Method 9, at 50 feet from the point-of-origin and at the Project area boundary. Visible emissions shall not exceed the shade designated as No. 1 on the Ringelmann Chart, or 20% opacity as determined in accordance with U.S. EPA Method 9 at the point-of-origin. The construction contractor shall retain a copy of the approved Fugitive Dust Control Plan at the Project site. The approved Fugitive Dust Control Plan shall remain valid until the termination of all dust generating activities associated with Project construction.

NOA Emissions Reduction Measure 3. Pursuant to El Dorado County APCD Rule 223-2, the County construction manager shall submit an Asbestos Dust Mitigation Plan to the Air Pollution Control Officer prior to the start of any construction activity. Construction activities shall not commence until the Air Pollution Control Officer has approved or conditionally approved the Asbestos Dust Mitigation Plan. The County construction manager shall provide written notification to the Air Pollution Control Officer at least 10 days prior to the commencement of earthmoving activities via fax or mail.

The Asbestos Dust Mitigation Plan shall describe all dust mitigation measures to be implemented before, during and after any dust generating activity. The Asbestos Dust Mitigation Plan shall contain all the information described in Section 223-2.5.B of Rule 223-2. The Air Pollution Control Officer shall approve, disapprove, or conditionally approve the Asbestos Dust Mitigation Plan within 30 days of plan submittal.

Rule 223-2 requires that visible emissions shall not exceed the shade designated as No. 0 on the Ringelmann Chart, or 0% opacity as determined in accordance with U.S. EPA Method 9, at 25 feet from the point-of-origin and at the Project area boundary. Visible emissions shall not exceed the shade designated as No. 1 on the Ringelmann Chart, or 20% opacity as determined in accordance with U.S. EPA Method 9 at the point-of-origin. The construction contractor shall retain a copy of an approved Asbestos Dust Mitigation Plan at the Project site. The approved Asbestos Dust Mitigation Plan shall remain valid until the termination of all dust generating activities.

With implementation of emissions reduction recommendations above, the impact associated with NOA emissions during construction would be less than significant.

As noted in Section 2.4, *General Construction Provisions*, of the Air Quality Study, the mitigation measures listed above are included in the Project-specific procedures and requirements applicable to construction of the Project.

SECTION 5

OPERATIONAL IMPACTS ASSOCIATED WITH OZONE PRECURSOR EMISSIONS

Completion of the Project and opening the new Silver Springs Parkway to public travel would result in a change in vehicle travel patterns and trip distances by providing additional routing options. The "*Silver Springs Parkway to Bass Lake Road (South Segment) Transportation Impact Analysis*" was prepared for the Project by Fehr & Peers Transportation Consultants and provides a full discussion of the transportation impact analysis methods and assumptions and is not repeated here.

- Completion of the Silver Springs Parkway would be one of the conditions required for buildout of the Silver Springs Subdivision Project. Therefore, consistent with the traffic study prepared for the Silver Springs Parkway Project, this Air Quality Study includes completion of the Silver Springs Subdivision Project as a component of the travel analysis of the Silver Springs Parkway Project. Vehicle trips associated with completion of the Silver Springs Subdivision Project would generate mobile source emissions.

- The Project would result in changes to the routes drivers would choose to use. The change in vehicle routes would cause a geographical change in vehicle travel. Depending on the location of the beginning and end of the vehicle trips, the Project could shorten some trips while lengthening others. The change in vehicle travel would change the overall amount of vehicle miles traveled (VMT) in the area.

Transportation projects have the potential to affect air quality on a regional level. The regional air quality pollutant most likely to be affected by transportation projects is ozone. Because ozone is formed over time by a chemical reaction involving precursor emissions, its concentration is distributed over a geographically regional area.

5.1 SIGNIFICANCE THRESHOLDS

Significance thresholds applied to operational regional air quality impacts are from the EDCAQMD document *Guide to Air Quality Assessment – Determining Significance of Air Quality Impacts Under the California Environmental Quality Act* (El Dorado County Air Quality Management District 2002).

Operational ozone precursor emissions (ROG and NO_x) are considered a significant impact in this Air Quality Study if implementation of the Project would generate emissions exceeding:

- 82 ppd of ROG, or
- 82 ppd of NO_x.

These values are from Table 3.2 of the *Guide to Air Quality Assessment – Determining Significance of Air Quality Impacts Under the California Environmental Quality Act*. The Project is considered to have a significant impact in this Air Quality Study if implementation of the Project would generate criteria pollutant emissions exceeding the values listed above.

5.2 METHODOLOGY

The Project-related change in operational ozone precursor emissions were calculated for this Air Quality Study using the EMFAC2014 mobile source emissions model (California Air Resources Board 2014).

The Project-related change in VMT was estimated as part of the traffic analysis of the Project (Fehr & Peers, 2014). This change in VMT was entered into the EMFAC2014 model.

Using the EMFAC2014 model, emissions were estimated for conditions without the Project, and with the Project. The difference in emissions estimates is considered to be the net change in emissions due to the Project. The net change in emissions was calculated for each of two background years:

- 2010 background, and
- 2035 background.

Reports from the EMFAC2014 model are presented in the **Technical Appendix**.

5.3 IMPACTS

The following is a discussion of the net change in ozone precursor emissions associated with vehicle miles traveled both with and without the Project connection of Silver Springs Parkway for existing (2010) and future (2035) conditions. .

5.3.1 Existing Conditions

As shown in **Table 9**, the net change in ROG emissions associated with operation of the Project with 2010 background conditions would be a reduction of 11 ppd. The net change in NO_x emissions would be a reduction of 19 ppd. Because the change in the amounts of emissions is less than the significance thresholds, the generation of operational ozone precursor emissions is considered a less-than-significant impact. No mitigation measures are required.

5.3.2 Future Conditions

As shown in **Table 9**, the net change in both ROG and NO_x emissions associated with operation of the Project with 2035 background conditions would be a reduction of 3 ppd. Because the change in the amounts of emissions is less than the significance thresholds, the generation of operational ozone precursor emissions is considered a less-than-significant impact. No mitigation measures are required.

Table 9. Operational Ozone Precursor Emission in the Traffic Modeling Study Area

	Reactive Organics Gases (ROG)		Nitrogen Oxides (NO_x)	
Scenario	**Tons per Day**	**Pounds per Day**	**Tons per Day**	**Pounds per Day**
2010 No Project	5.8329	11,666	11.2187	22,437
2010 Plus Project	5.8275	11,655	11.2094	22,419
Project-Related Change in 2010	-0.0054	-11	-0.0093	-19
2035 No Project	1.9297	3,859	1.9735	3,947
2035 Plus Project	1.9282	3,856	1.9721	3,944
Project-Related Change in 2035	-0.0015	-3	-0.0014	-3

Source: KDA 2015 based on EMFAC2014 mobile source emissions model.

SECTION 6

OPERATIONAL IMPACTS ASSOCIATED WITH LOCAL CARBON MONOXIDE IMPACT ANALYSIS

This section presents an evaluation of the potential for the Project to result in increase local carbon monoxide (CO) levels associated with the change in traffic volumes and levels of service under conditions once the Silver Springs Parkway is open to motorists. Potential CO impacts were assessed by applying screening procedures described in the *Transportation Project-Level Carbon Monoxide Protocol* (University of California Davis, Institute of Transportation Studies 1996) and then, if indicated by the screening procedures, conducting detailed microscale air quality dispersion modeling.

6.1 SIGNIFICANCE THRESHOLDS

The screening procedure applied in this Air Quality Study focuses on the effects of the Project on traffic operations. Since elevated CO concentrations are associated with traffic congestion, a project is considered to have no potential for significant impacts on CO concentrations if it does not substantially contribute to excessive traffic congestion.

According to Section 4.7.4 of the *Transportation Project-Level Carbon Monoxide Protocol*, projects that would result in operation of a signalized intersection worsening from level of service (LOS) D or better to LOS E or F are considered to have the potential for resulting in a significant CO air quality impact. In addition, according to Section 4.7.3 of the protocol document, projects that would result in the worsening of a signalized intersection already operating at LOS E or F are considered to have the potential for resulting in a significant CO air quality impact.

According to Section 4.7.1 of the *Transportation Project-Level Carbon Monoxide Protocol*, “The following criteria should be used to determine whether a project is likely to worsen air quality for the area substantially affected by the project:

> “a. The project significantly increases the percentage of vehicles operating in cold start mode. Increasing the number of vehicles operating in cold start mode by as little as 2% should be considered potentially significant.
>
> “b. The project significantly increases traffic volumes. Increases in traffic volumes in excess of 5% should be considered potentially significant. Increasing the traffic volume by less than 5% may still be potentially significant if there is also a reduction in average speeds.

> "c. The project worsens traffic flow. For uninterrupted roadway segments, a reduction in average speeds (within a range of 3 to 50 mph) should be regarded as worsening traffic flow. For intersection segments, a reduction in average speed or an increase in average delay should be considered as worsening traffic flow."

Projects that would meet these criteria are considered to have the potential for resulting in a significant CO air quality impact. According to the Protocol document, detailed dispersion modeling is not needed for projects that do not meet these criteria and, in this Air Quality Study, projects that do not meet these criteria are considered to have a less-than-significant CO air quality impact.

6.2 METHODOLOGY

The screening procedures described above were applied to traffic analysis results presented in the *Silver Springs Parkway to Bass Lake Road (South Segment) Transportation Impact Analysis* (Fehr & Peers 2014), which presents analyses of existing and future conditions both with and without the Project.

The *Silver Springs Parkway to Bass Lake Road (South Segment) Transportation Impact Analysis* presents peak hour LOS at study intersections for each of the scenarios. Both the LOS results, and a comparison of LOS with and without the Project, are used to determine whether CO concentrations in excess of the air quality standards would occur.

6.3 IMPACTS

The following is a description of local CO impacts associated with operation of the Project.

6.3.1 Existing Background

The *Silver Springs Parkway to Bass Lake Road (South Segment) Transportation Impact Analysis* identifies that nine of the 10 study intersections would operate at LOS D or better during both the a.m. peak hour and p.m. peak hour under both Existing conditions and Existing Plus Project conditions. Based on Section 4.7.4 of the *Transportation Project-Level Carbon Monoxide Protocol*, the Project is considered to not have the potential for resulting in a significant CO air quality impact. Therefore, this impact is considered less-than-significant at these nine study intersections. No mitigation measures are required.

The *Silver Springs Parkway to Bass Lake Road (South Segment) Transportation Impact Analysis* identifies that the intersection of Green Valley Road and El Dorado Hills Boulevard would operate at LOS E during the a.m. peak hour and LOS D during the p.m. peak hour under both Existing conditions and Existing Plus Project conditions. Under existing conditions in the a.m. peak hour, the approach volume at this intersection is 1,809 vehicles without the project and is predicted to be 1,824 vehicles with the Project. The Project would result in a 0.83 percent increase in approach volume at this intersection (1,824 ÷ 1,809 = 1.0083). The 0.83 percent increase would be less than a five percent increase. Therefore, based on Section 4.7.1 of the *Transportation Project-Level Carbon Monoxide Protocol*, the Project is considered to not have the potential for resulting in a significant CO air quality impact. Therefore, this impact is considered less-than-significant at this study intersection. No mitigation measures are required.

6.3.2 Cumulative Background

The *Silver Springs Parkway to Bass Lake Road (South Segment) Transportation Impact Analysis* identifies that seven of the 10 study intersections would operate at LOS D or better during both the a.m. peak hour and p.m. peak hour under both Cumulative conditions and Cumulative Plus Project conditions. Based on Section 4.7.4 of the *Transportation Project-Level Carbon Monoxide Protocol*, the Project is considered to not have the potential for resulting in a significant CO air quality impact. Therefore, this impact is considered less-than-significant at these seven study intersections. No mitigation measures are required.

The *Silver Springs Parkway to Bass Lake Road (South Segment) Transportation Impact Analysis* identifies that the unsignalized intersection of Green Valley Road and Deer Valley Road would operate at LOS E during the a.m. peak hour and LOS F during the p.m. peak hour under both Cumulative conditions and Cumulative Plus Project conditions. Under cumulative conditions in the a.m. peak hour, the approach volume at this intersection is 1,440 vehicles without the Project and is predicted to be 1,495 vehicles with the Project. The Project would result in a 3.82 percent increase in approach volume at this intersection (1,495 ÷ 1,440 = 1.0382). The 3.82 percent increase would be less than a five percent increase. Under cumulative conditions in the p.m. peak hour, the approach volume at this intersection is 1,750 vehicles without the Project and is predicted to be 1,820 vehicles with the Project. The Project would result in a 4.00 percent increase in approach volume at this intersection (1,820 ÷ 1,750 = 1.0400). The 4.00 percent increase would be less than a five percent increase. Therefore, based on Section 4.7.1 of the Transportation Project-Level Carbon Monoxide Protocol, the Project is considered to not have the potential for resulting in a significant CO air quality impact. Therefore, this impact is considered less-than-significant at this study intersection. No mitigation measures are required.

The *Silver Springs Parkway to Bass Lake Road (South Segment) Transportation Impact Analysis* identifies that the intersection of Green Valley Road and Bass Lake Road would operate at LOS F during the a.m. peak hour under both Cumulative conditions and Cumulative Plus Project conditions. Cumulative conditions a.m. peak hour approach volume at this intersection would be 2,205 vehicles without the Project and 2,055 vehicles with the Project. The Project would result in a decrease in approach volume at this intersection. The decrease would be less than a five percent increase. Therefore, based on Section 4.7.1 of the *Transportation Project-Level Carbon Monoxide Protocol*, the Project is considered to not have the potential for resulting in a significant CO air quality impact. Therefore, this impact is considered less-than-significant at this study intersection. No mitigation measures are required.

The *Silver Springs Parkway to Bass Lake Road (South Segment) Transportation Impact Analysis* identifies that the intersection of Green Valley Road and Cambridge Road would operate at LOS F during the a.m. peak hour and LOS D during the p.m. peak hour under both Cumulative conditions and Cumulative Plus Project conditions. Cumulative conditions in the a.m. peak hour approach volume at this intersection are predicted to be 1,935 vehicles both with and without the Project, concluding that the Project would result in no change in approach volume at this intersection. No change in the approach volume would be less than a five percent increase. Therefore, based on Section 4.7.1 of the *Transportation Project-Level Carbon Monoxide Protocol*, the Project is considered to not have the potential for resulting in a significant CO air quality impact. Therefore, this impact is considered less-than-significant at this study intersection. No mitigation measures are required.

SECTION 7
GLOBAL CLIMATE CHANGE AND GREENHOUSE GASES

This section of this Air Quality Study describes the effects of the Project on global climate change and GHG emissions. Project construction would generate GHG emissions associated with vehicle and equipment operation. Once constructed and open for public use, changes in traffic patterns as a result of the availability of the new route would result in changes in motor vehicle GHG emissions. Additionally, and as discussed above in Section 5 of this Air Quality Study, the transportation impact analysis on which this GHG emissions analysis is based, assumes that under future conditions without the Project, the Silver Springs residential development project would be limited to development of Phase 1 of that project; whereas, under future conditions with the Project the Silver Springs residential development project would develop all three of its phases. This assumption results in identification of additional motor vehicle trips in the immediate Project area under conditions with the Project, although the Project would not directly generate vehicle trips.

7.1 SIGNIFICANCE THRESHOLDS

The EDCAQMD participated in a joint process with other air districts in the region to develop CEQA significance thresholds for GHG emissions. The other air districts were the SMAQMD, PCAPCD, FRAQMD, and YSAQMD. The Board of Directors of the SMAQMD adopted the GHG thresholds in October 2014 (Sacramento Metropolitan Air Quality Management District 2015). During preparation of this air quality study, the EDCAQMD recommended use of the GHG emissions significance thresholds adopted by the SMAQMD (Baughman pers. comm.). The SMAQMD GHG significance thresholds are applied in this Air Quality Study

Project-related GHG emissions are considered a significant impact if the amount of emissions exceeds:

- 1,100 metric tons per year of construction-related GHG emissions, or
- 1,100 metric tons per year of operational GHG emissions.

If Project-related GHG emissions exceed the thresholds listed above, measures to reduce or offset the GHG emissions should be considered. Measures that reduce the amount of GHG emissions to less than the thresholds are considered to reduce the impact to less than significant levels.

7.2 METHODOLOGY

The following describes methods used to estimate short-term construction-related and long-term operational GHG emissions for this Air Quality Study.

7.2.1 Short-Term Construction-Related Emissions

GHG emissions associated with construction of the Project were estimated by applying version 7.1.5.1 of the *Road Construction Emissions Model* (Sacramento Metropolitan Air Quality Management District 2015). This model, developed for the SMAQMD, specifically analyzes emissions associated with construction of roadway improvement projects.

Project-specific information (e.g., the linear and spatial size of the Project, and the anticipated schedule for the Project) were used in the *Road Construction Emissions Model*. These values are presented in the **Technical Appendix** of this Air Quality Study. Other than those values shown in the **Technical Appendix**, default assumptions included in the model were used.

During construction of the roadway improvements, various phases of construction would result in the use of different groups of equipment. This would result in the generation of different amounts of emissions during the various construction phases. The air quality analysis presented in this study assessed construction emissions during various phases of construction. The *Road Construction Emissions Model* analyzes each of these phases separately.

7.2.2 Long-Term Operational Emissions

The Project-related change in long-term operational GHG emissions were calculated for this Air Quality Study using the EMFAC2014 mobile source emissions model (California Air Resources Board 2014).

The Project-related change in VMT was estimated as part of the traffic analysis of the Project (Fehr & Peers 2014). This change in VMT was entered into the EMFAC2014 model.

Using the EMFAC2014 model, GHG emissions were estimated for conditions without the Project, and with the Project. The difference in emissions estimates is considered to be the net change in emissions due to the Project. The net change in emissions was calculated for each of two background years:

- 2010 background, and
- 2035 background.

Reports from the EMFAC2014 model are presented in the **Technical Appendix**.

7.2.3 Calculation of Carbon Dioxide Equivalent Emissions

The calculation of CO_2e emissions is based on weighting factors applied to CO_2, CH_4, and N_2O emissions. Weighting factors used in this Air Quality Study are based on data provided by the EPA (U.S. Environmental Protection Agency 2015).

Calculating CO_2e emissions requires estimates of CO_2, CH_4, and N_2O emissions. Both the *Road Construction Emissions Model* and EMFAC2014 provide estimates of CO_2 emissions. Where necessary, CH_4 emissions estimates are based on organic gas emissions estimates and factors provided by ARB, and N_2O emissions estimates are based on NO_x emissions estimates and factors provided by ARB (California Air Resources Board 2015).

7.3 IMPACTS

The following describes the impact of the Project on global climate change and GHG emissions. **Table 10** presents estimates of both short-term construction-related and long-term operational GHG emissions.

7.3.1 Construction-Related Emissions. As shown in **Table 10**, construction activities associated with implementation of the Project would result in 1,313.32 MT per year of CO_2e emissions. The amount of construction-related GHG emissions would be more than the 1,100 MT per year significance threshold. It is important to recognize that construction-related GHG emissions would be temporary, occurring during a period of less than one year. As discussed below, once the Silver Springs Parkway is completed and provides a connection between Bass Lake Road and Green Valley Road available for public use, annual motor vehicle GHG emissions would be reduced as compared to conditions without the Project. This comparative reduction would occur in perpetuity and within less than one year would fully offset construction GHG emissions. It is appropriate for County decision makers to determine whether the long-term operational reductions should be considered as sufficient to mitigate construction-related GHG emissions to a less than significant level. Therefore, a determination of the significance of construction-related GHG emissions is not provided here in deference to the County decision making process.

If the County determines that the construction period emissions of greenhouse gases is significant, this impact would be reduced by implementing one or more of the emission reduction measure recommendations listed below. However, it cannot be determined with certainty that the mitigation recommendations would reduce construction-related GHG emissions below the significance threshold (an approximately 20 percent reduction in GHG emissions would be required).

> **GHG Emissions Reduction Recommendation 1.** Onsite equipment and vehicles shall be shut off when not in use and idling shall be avoided or limited to the greatest extent practicable. Idling durations shall not exceed 5 minutes.

> **GHG Emissions Reduction Recommendation 2.** All construction equipment shall be maintained in proper working condition according to manufacturer's specifications. Equipment shall be checked by a certified mechanic and determine to be running in proper condition before it is operated and construction contractors shall maintain records of equipment maintenance during the duration of the construction period.

GHG Emissions Reduction Recommendation 3. The prime contractor shall provide an approved construction emissions control plan demonstrating that heavy-duty (i.e., greater than 50 horsepower) off-road vehicles to be used in the construction project, and operated by either the prime contractor or any subcontractor, will achieve the maximum feasible fleet-averaged GHG emission reductions. Successful implementation of this measure requires the prime contractor to submit a construction emissions control plan that includes a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower having the potential to be used an aggregate of 40 or more hours during construction. The inventory shall include horsepower rating, engine production year, and hours of use or fuel throughput for each piece of equipment. The inventory shall be updated and submitted monthly to the County's construction manager throughout the duration of the construction period. Options that shall be considered for reducing emissions include, but are not limited to, use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

GHG Emissions Reduction Recommendation 4. The County shall obligate the prime contractor to use an aqueous emulsified fuel or other alternative fuel (other than diesel) verified by the California Air Resources Board or otherwise documented through emissions testing to have the greatest GHG reduction benefit available.

Emissions Reduction Recommendation 5. To the extent feasible, all construction vehicles and equipment shall comply with Tier 3 or better emission control standards.

7.3.2 Operational Emissions in 2010. Under existing (2010) conditions and as shown in **Table 10**, motor vehicle emissions associated with the Project once opened for public use would result in a reduction of 2,106.95 MT per year of CO_2e emissions as compared to existing conditions without the Project. The amount of operational GHG emissions would be less than the 1,100 MT per year significance threshold. Therefore, this impact is considered less than significant, and no mitigation measures are required.

7.3.3 Operational Emissions in 2035. Under future (2035) conditions and as shown in **Table 10**, motor vehicle emissions associated with the Project once opened for public use would result in a reduction of 1,083.77 MT per year of CO_2e emissions as compared to future conditions without the Project. The amount of operational GHG emissions would be less than the 1,100 MT per year significance threshold. Therefore, this impact is considered less than significant, and no mitigation measures are required.

Table 10. Greenhouse Gas Emissions

Scenario	Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide Equivalent
Construction Emissions	1,186.50	0.06	0.42	1,313.32
<u>Operational Emissions in 2010</u>				
2010 No Project	1,787,716.92	135.36	154.53	1,837,152.22
2010 Plus Project	1,785,651.35	135.24	154.41	1,835,045.27
Project-Related Change in 2010	-2,065.57	-0.13	-0.13	-2,106.95
<u>Operational Emissions in 2035</u>				
2035 No Project	1,321,596.80	29.56	27.18	1,330,436.82
2035 Plus Project	1,320,519.36	29.54	27.17	1,329,353.05
Project-Related Change in 2035	-1,077.44	-0.02	-0.02	-1,083.77

Note: All values are in metric tons per year.
Source: California Air Resources Board 2014. California Air Resources Board 2015. U.S. Environmental Protection Agency 2015.

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TECHNICAL APPENDIX

Appendix A

South Coast Air Quality Management District

Rule 403 Tables

C.6 Fugitive Dust Mitigation Measures

The following tables C.4 and C.5 are taken from Rule 403 of the South Coast Air Quality Management District (SCAQMD) and contain mitigation measures that may be applied under the screening criteria in sec. 4.2 of Chapter 4 to reduce fugitive dust emissions from construction activities to a less-than-significant level.

Table C.4 Best Available Fugitive Dust Control Measures

Fugitive Dust Source Category	Control Actions
Earth-moving (except construction cutting and filling areas, and mining operations)	1a. Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the District; two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; OR 1a-1. For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Earth-moving – construction fill areas	1b. Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the District; for areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM method 1557 or other equivalent method approved by the District, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content; two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations.
Earth-moving – construction cut areas and mining operations	1c. Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining areas unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Disturbed surface areas (except completed grading areas)	2a/b. Apply dust suppression in a sufficient quantity and frequency to maintain a stabilized surface; any areas which cannot be stabilized, as evidenced by wind driven dust, must have an application of water at least twice per day to at least 80 percent of the unstabilized area.

Disturbed surface areas – completed grading areas	2c. Apply chemical stabilizers within 5 working days or grading completion; OR 2d. Take action 3a or 3c specified for inactive disturbed surface areas.
Inactive disturbed surface areas	3a. Apply water to at least 80 percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible due to excessive slope or other safety conditions; OR 3b. Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR 3c. Establish a vegetative ground cover within 21 days after active operations have ceased; ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; OR 3d. Utilize any combination of control actions 3a, 3b and 3c such that, in total, they apply to all inactive disturbed surface areas.
Unpaved roads	4a. Water all roads used for any vehicular traffic at least once per every two hours of active operations; OR 4b. Water all roads used for any vehicular traffic once daily and restrict vehicle speed to 15 mph; OR 4c. Apply chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
Open storage piles	5a. Apply chemical stabilizers; OR 5b. Apply water to at least 80 percent of the surface areas of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; OR 5c. Install a three-sided enclosure with walls with no more than 50 percent porosity that extend, at a minimum, to the top of the pile.
Track-out control	6a. Pave or apply chemical stabilization at sufficient concentration and frequency to maintain a stabilized surface starting from the point of intersection with the public paved surface, and extending for a centerline distance of at least 100 feet and width of at least 20 feet; OR 6b. Pave from the point of intersection with the public paved road surface, and extending for a centerline distance of at least 25 feet and a width of at least 20 feet, and install a track-out control device immediately adjacent to the paved surface such that exiting vehicles do not travel on any unpaved road surface after passing through the track-out control device.

All categories	7a. Any other control measures approved by the District.
Source: SCAQMD Rule 403, Tables 2 and 3.	

Table C.5 Best Available Fugitive Dust Control Measures for High Wind Conditions*

Fugitive Dust Source Category	Control Measures
Earth moving	1A. Cease all active operations, OR 2A. Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	0B. On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; OR 1B. Apply chemical stabilizers prior to a wind event; OR 2B. Apply water to all unstabilized disturbed areas 3 times per day; if there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; OR 3B. Take the actions specified in Table B.6, Item 3c; OR 4B. Utilize any combination of control actions specified in Table 1, Items 1B, 2B and 3B, such that, in total, they apply to all disturbed surfaced areas.
Unpaved roads	1C. Apply chemical stabilizers prior to a wind event; OR 2C. Apply water twice per hour during active operation; OR 3C. Stop all vehicular traffic.
Open storage piles	1D. Apply water twice per hour; OR 2D. Install temporary coverings.
Paved road track-out	1E. Cover all haul vehicles; OR 2E. Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for operation on both public and private roads.
All categories	1F. Any other control measures approved by the District.
* High wind conditions means when gusts exceed 25 mph. Source: SCAQMD Rule 403, Table 1.	

Appendix B

Road Construction Emissions Model Output Files

Road Construction Emissions Model, Version 7.1.5.1

Emission Estimates for -> Silver Springs Parkway South Segment				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	3.0	18.6	31.5	79.3	1.3	78.0	17.4	1.2	16.2	3,990.1
Grading/Excavation	14.0	75.5	158.8	85.2	7.2	78.0	22.7	6.5	16.2	18,699.9
Drainage/Utilities/Sub-Grade	11.6	62.1	108.2	83.9	5.9	78.0	21.6	5.4	16.2	12,214.0
Paving	4.5	27.0	37.9	2.5	2.5	-	2.2	2.2	-	4,898.3
Maximum (pounds/day)	14.0	75.5	158.8	85.2	7.2	78.0	22.7	6.5	16.2	18,699.9
Total (tons/construction project)	1.1	5.8	11.2	7.1	0.5	6.6	1.9	0.5	1.4	1,308.1

Notes: Project Start Year -> 2017

Project Length (months) -> 9

Total Project Area (acres) -> 14

Maximum Area Disturbed/Day (acres) -> 8

Total Soil Imported/Exported (yd^3/day)-> 520

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> Silver Springs Parkway South Segment				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM2.5 (kgs/day)	PM2.5 (kgs/day)	PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	1.4	8.4	14.3	36.1	0.6	35.5	7.9	0.5	7.4	1,813.7
Grading/Excavation	6.4	34.3	72.2	38.7	3.3	35.5	10.3	2.9	7.4	8,500.0
Drainage/Utilities/Sub-Grade	5.3	28.2	49.2	38.1	2.7	35.5	9.8	2.4	7.4	5,551.8
Paving	2.0	12.3	17.2	1.1	1.1	-	1.0	1.0	-	2,226.5
Maximum (kilograms/day)	6.4	34.3	72.2	38.7	3.3	35.5	10.3	2.9	7.4	8,500.0
Total (megagrams/construction project)	1.0	5.3	10.1	6.4	0.5	6.0	1.7	0.4	1.2	1,186.5

Notes: Project Start Year -> 2017

Project Length (months) -> 9

Total Project Area (hectares) -> 5

Maximum Area Disturbed/Day (hectares) -> 3

Total Soil Imported/Exported ($meters^3$/day)-> 398

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Appendix C

EMFAC2014 Model Output Files

Title	Veh_Tech	Population	VMT	Trips	TOG_TOTAL	ROG_TOTAL	CO_TOTEX	NOx_TOTEX	CO2_TOTEX	PM10_TOTAL	PM2_5_TOTAL	SOx_TOTEX	Fuel_GAS	Fuel_DSL
El Dorado (MC)-2010-Annual	All Vehicles	292,435.5	10,139,661.0	1,900,145.7	6.34	5.83	46.9	11.2	5,399.0	0.7518	0.3979	0.0544	509.3	62.7
El Dorado (MC)-2010-Annual	ALL OTHER BUSES - DSL	96.6	5,374.4		0.0039	0.0035	0.0105	0.0545	6.87	0.0030	0.0024	0.0001		0.6179
El Dorado (MC)-2010-Annual	LDA - DSL	913.9	28,453.5	5,351.9	0.0044	0.0039	0.0283	0.0343	10.5	0.0041	0.0032	0.0001		0.9452
El Dorado (MC)-2010-Annual	LDA - GAS	119,408.6	4,293,107.2	745,648.7	1.95	1.82	14.8	1.29	1,655.6	0.2298	0.1007	0.0168	179.0	
El Dorado (MC)-2010-Annual	LDT1 - DSL	73.6	1,367.1	388.9	0.0004	0.0004	0.0022	0.0021	0.6095	0.0004	0.0003	0.0000		0.0549
El Dorado (MC)-2010-Annual	LDT1 - GAS	22,835.4	689,664.9	135,476.8	0.9389	0.8831	6.15	0.5159	308.4	0.0409	0.0199	0.0032	34.0	
El Dorado (MC)-2010-Annual	LDT2 - DSL	2.23	33.5	10.9	0.0000	0.0000	0.0001	0.0001	0.0184	0.0000	0.0000	0.0000		0.0017
El Dorado (MC)-2010-Annual	LDT2 - GAS	54,096.9	2,059,081.0	339,243.1	0.9881	0.9123	8.36	1.04	1,086.9	0.1096	0.0477	0.0110	117.3	
El Dorado (MC)-2010-Annual	LHD1 - DSL	12,215.7	463,412.4	153,658.3	0.1348	0.1184	0.5552	3.20	305.0	0.0724	0.0443	0.0029		27.5
El Dorado (MC)-2010-Annual	LHD1 - GAS	8,310.3	280,717.4	123,810.4	0.4511	0.4071	2.80	0.5368	273.5	0.0281	0.0126	0.0028	29.7	
El Dorado (MC)-2010-Annual	LHD2 - DSL	2,565.7	105,645.2	32,273.8	0.0276	0.0242	0.1142	0.6454	78.1	0.0170	0.0098	0.0007		7.03
El Dorado (MC)-2010-Annual	LHD2 - GAS	517.2	18,937.1	7,704.9	0.0208	0.0186	0.1351	0.0299	20.7	0.0021	0.0009	0.0002	2.23	
El Dorado (MC)-2010-Annual	MCY - GAS	12,340.5	80,099.8	24,678.6	0.5645	0.5191	2.90	0.1210	15.3	0.0018	0.0009	0.0002	2.24	
El Dorado (MC)-2010-Annual	MDV - DSL	142.7	3,864.6	791.4	0.0005	0.0005	0.0029	0.0027	2.51	0.0006	0.0004	0.0000		0.2262
El Dorado (MC)-2010-Annual	MDV - GAS	50,240.5	1,876,494.8	316,789.0	0.8788	0.7926	8.45	1.14	1,252.3	0.0989	0.0425	0.0126	134.9	
El Dorado (MC)-2010-Annual	MH - DSL	880.5	8,440.9	88.1	0.0017	0.0015	0.0058	0.0723	9.98	0.0032	0.0023	0.0001		0.8979
El Dorado (MC)-2010-Annual	MH - GAS	3,513.1	29,067.6	351.5	0.0201	0.0162	0.4058	0.0462	42.1	0.0047	0.0020	0.0004	4.56	
El Dorado (MC)-2010-Annual	MOTOR COACH - DSL	14.0	1,900.7		0.0034	0.0030	0.0089	0.0357	3.96	0.0014	0.0012	0.0000		0.3560
El Dorado (MC)-2010-Annual	OBUS - GAS	180.6	8,832.1	3,612.7	0.0097	0.0081	0.1276	0.0259	13.2	0.0014	0.0006	0.0001	1.43	
El Dorado (MC)-2010-Annual	PTO - DSL	0	5,419.4		0.0161	0.0141	0.0566	0.1203	13.7	0.0072	0.0068	0.0001		1.23
El Dorado (MC)-2010-Annual	SBUS - DSL	164.8	5,997.9		0.0060	0.0053	0.0173	0.0828	8.37	0.0082	0.0051	0.0001		0.7536
El Dorado (MC)-2010-Annual	SBUS - GAS	60.2	2,353.0	240.7	0.0104	0.0089	0.1580	0.0109	1.66	0.0020	0.0009	0.0000	0.2060	
El Dorado (MC)-2010-Annual	T6 AG - DSL	123.2	2,298.3		0.0040	0.0035	0.0085	0.0335	3.18	0.0021	0.0018	0.0000		0.2863
El Dorado (MC)-2010-Annual	T6 CAIRP HEAVY - DSL	8.23	422.9		0.0004	0.0004	0.0009	0.0046	0.5673	0.0002	0.0002	0.0000		0.0511
El Dorado (MC)-2010-Annual	T6 CAIRP SMALL - DSL	22.5	1,298.1		0.0010	0.0008	0.0021	0.0123	1.74	0.0007	0.0005	0.0000		0.1565
El Dorado (MC)-2010-Annual	T6 INSTATE CONSTRUCTION HEAVY - DSL	0.8849	46.5		0.0001	0.0000	0.0001	0.0006	0.0625	0.0000	0.0000	0.0000		0.0056
El Dorado (MC)-2010-Annual	T6 INSTATE CONSTRUCTION SMALL - DSL	87.3	5,259.9		0.0042	0.0037	0.0092	0.0514	7.06	0.0027	0.0022	0.0001		0.6352
El Dorado (MC)-2010-Annual	T6 INSTATE HEAVY - DSL	586.1	25,763.0		0.0362	0.0318	0.0757	0.3343	34.9	0.0198	0.0168	0.0003		3.14
El Dorado (MC)-2010-Annual	T6 INSTATE SMALL - DSL	1,180.0	61,732.4		0.0589	0.0517	0.1270	0.6693	82.9	0.0361	0.0293	0.0008		7.46
El Dorado (MC)-2010-Annual	T6 OOS HEAVY - DSL	4.72	242.3		0.0002	0.0002	0.0005	0.0027	0.3250	0.0001	0.0001	0.0000		0.0293
El Dorado (MC)-2010-Annual	T6 OOS SMALL - DSL	12.9	743.8		0.0005	0.0005	0.0012	0.0070	0.9965	0.0004	0.0003	0.0000		0.0897
El Dorado (MC)-2010-Annual	T6 PUBLIC - DSL	353.2	5,723.3		0.0039	0.0034	0.0090	0.0586	7.96	0.0031	0.0024	0.0001		0.7162
El Dorado (MC)-2010-Annual	T6 UTILITY - DSL	15.1	312.1		0.0001	0.0001	0.0002	0.0025	0.4303	0.0001	0.0001	0.0000		0.0387
El Dorado (MC)-2010-Annual	T6TS - GAS	428.0	10,935.2	8,563.3	0.0903	0.0833	0.7548	0.0683	18.2	0.0020	0.0010	0.0002	2.09	
El Dorado (MC)-2010-Annual	T7 AG - DSL	2.40	40.7		0.0001	0.0001	0.0003	0.0009	0.0850	0.0001	0.0000	0.0000		0.0076
El Dorado (MC)-2010-Annual	T7 CAIRP - DSL	7.13	1,537.4		0.0024	0.0021	0.0068	0.0263	3.06	0.0011	0.0009	0.0000		0.2757
El Dorado (MC)-2010-Annual	T7 CAIRP CONSTRUCTION - DSL	0.1499	33.0		0.0000	0.0000	0.0001	0.0005	0.0657	0.0000	0.0000	0.0000		0.0059
El Dorado (MC)-2010-Annual	T7 NNOOS - DSL	7.71	1,906.3		0.0022	0.0020	0.0063	0.0262	3.86	0.0011	0.0009	0.0000		0.3470
El Dorado (MC)-2010-Annual	T7 NOOS - DSL	2.82	607.3		0.0010	0.0008	0.0027	0.0105	1.22	0.0004	0.0004	0.0000		0.1098
El Dorado (MC)-2010-Annual	T7 OTHER PORT - DSL	0.0000	0.0009		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0		0.0000
El Dorado (MC)-2010-Annual	T7 POAK - DSL	0.7467	85.6		0.0000	0.0000	0.0001	0.0020	0.1728	0.0000	0.0000	0.0000		0.0156
El Dorado (MC)-2010-Annual	T7 POLA - DSL	0.0000	0.0007		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0		0.0000
El Dorado (MC)-2010-Annual	T7 PUBLIC - DSL	281.0	6,566.7		0.0137	0.0121	0.0439	0.1538	15.5	0.0065	0.0058	0.0001		1.40
El Dorado (MC)-2010-Annual	T7 SINGLE - DSL	507.8	27,293.3		0.0456	0.0401	0.1573	0.5377	54.8	0.0269	0.0240	0.0005		4.93
El Dorado (MC)-2010-Annual	T7 SINGLE CONSTRUCTION - DSL	1.21	85.4		0.0001	0.0001	0.0003	0.0015	0.1676	0.0001	0.0000	0.0000		0.0151
El Dorado (MC)-2010-Annual	T7 SWCV - DSL	63.3	2,955.3		0.0011	0.0009	0.0038	0.0639	16.1	0.0008	0.0006	0.0002		1.45
El Dorado (MC)-2010-Annual	T7 TRACTOR - DSL	4.58	520.0		0.0011	0.0010	0.0035	0.0109	1.02	0.0005	0.0005	0.0000		0.0918
El Dorado (MC)-2010-Annual	T7 TRACTOR CONSTRUCTION - DSL	0.8867	63.7		0.0001	0.0001	0.0003	0.0012	0.1249	0.0001	0.0000	0.0000		0.0112
El Dorado (MC)-2010-Annual	T7 UTILITY - DSL	0.1681	3.81		0.0000	0.0000	0.0000	0.0001	0.0090	0.0000	0.0000	0.0000		0.0008
El Dorado (MC)-2010-Annual	T7IS - GAS	51.3	2,248.6	1,025.8	0.0265	0.0238	0.4602	0.0270	5.07	0.0003	0.0001	0.0001	0.6228	
El Dorado (MC)-2010-Annual	UBUS - DSL	66.9	7,758.2	267.5	0.0040	0.0032	0.0406	0.0872	20.4	0.0091	0.0048	0.0002		1.84
El Dorado (MC)-2010-Annual	UBUS - GAS	42.4	4,913.5	169.4	0.0125	0.0089	0.0883	0.0150	9.49	0.0008	0.0003	0.0001	1.03	

Title	Veh_Tech	Population	VMT	Trips	TOG_TOTAL	ROG_TOTAL	CO_TOTEX	NOx_TOTEX	CO2_TOTEX	PM10_TOTAL	PM2_5_TOTAL	SOx_TOTEX	Fuel_GAS	Fuel_DSL
El Dorado (MC)-2010-Annual	All Vehicles	292,210.7	10,131,866.0	1,898,685.0	6.34	5.83	46.8	11.2	5,392.7	0.7512	0.3976	0.0543	508.6	62.6
El Dorado (MC)-2010-Annual	ALL OTHER BUSES - DSL	96.5	5,370.3		0.0039	0.0035	0.0105	0.0544	6.86	0.0030	0.0024	0.0001		0.6173
El Dorado (MC)-2010-Annual	LDA - DSL	913.2	28,431.6	5,347.8	0.0044	0.0039	0.0283	0.0343	10.5	0.0041	0.0032	0.0001		0.9440
El Dorado (MC)-2010-Annual	LDA - GAS	119,316.8	4,289,806.8	745,075.4	1.95	1.82	14.8	1.29	1,653.6	0.2296	0.1006	0.0168	178.8	
El Dorado (MC)-2010-Annual	LDT1 - DSL	73.5	1,366.0	388.6	0.0004	0.0004	0.0022	0.0021	0.6088	0.0004	0.0003	0.0000		0.0548
El Dorado (MC)-2010-Annual	LDT1 - GAS	22,817.8	689,134.7	135,372.6	0.9380	0.8823	6.15	0.5154	308.0	0.0408	0.0198	0.0032	33.9	
El Dorado (MC)-2010-Annual	LDT2 - DSL	2.23	33.5	10.9	0.0000	0.0000	0.0001	0.0001	0.0184	0.0000	0.0000	0.0000		0.0017
El Dorado (MC)-2010-Annual	LDT2 - GAS	54,055.3	2,057,498.1	338,982.3	0.9871	0.9114	8.35	1.04	1,085.6	0.1095	0.0477	0.0110	117.1	
El Dorado (MC)-2010-Annual	LHD1 - DSL	12,206.3	463,056.2	153,540.2	0.1347	0.1183	0.5547	3.20	304.8	0.0723	0.0442	0.0029		27.4
El Dorado (MC)-2010-Annual	LHD1 - GAS	8,303.9	280,501.6	123,715.2	0.4507	0.4068	2.80	0.5364	273.3	0.0281	0.0126	0.0028	29.6	
El Dorado (MC)-2010-Annual	LHD2 - DSL	2,563.8	105,563.9	32,249.0	0.0275	0.0242	0.1142	0.6449	78.1	0.0170	0.0098	0.0007		7.03
El Dorado (MC)-2010-Annual	LHD2 - GAS	516.8	18,922.5	7,699.0	0.0208	0.0186	0.1350	0.0299	20.7	0.0021	0.0009	0.0002	2.23	
El Dorado (MC)-2010-Annual	MCY - GAS	12,331.1	80,038.3	24,659.6	0.5638	0.5185	2.90	0.1209	15.3	0.0018	0.0009	0.0002	2.24	
El Dorado (MC)-2010-Annual	MDV - DSL	142.6	3,861.6	790.8	0.0005	0.0005	0.0029	0.0027	2.51	0.0006	0.0004	0.0000		0.2260
El Dorado (MC)-2010-Annual	MDV - GAS	50,201.8	1,875,052.2	316,545.4	0.8779	0.7919	8.44	1.14	1,250.8	0.0988	0.0425	0.0126	134.7	
El Dorado (MC)-2010-Annual	MH - DSL	879.8	8,434.4	88.0	0.0017	0.0015	0.0058	0.0722	9.97	0.0032	0.0023	0.0001		0.8972
El Dorado (MC)-2010-Annual	MH - GAS	3,510.4	29,045.3	351.2	0.0201	0.0162	0.4055	0.0462	42.1	0.0047	0.0020	0.0004	4.55	
El Dorado (MC)-2010-Annual	MOTOR COACH - DSL	14.0	1,899.2		0.0034	0.0029	0.0089	0.0357	3.95	0.0014	0.0012	0.0000		0.3558
El Dorado (MC)-2010-Annual	OBUS - GAS	180.4	8,825.3	3,609.9	0.0096	0.0081	0.1275	0.0259	13.2	0.0014	0.0006	0.0001	1.43	
El Dorado (MC)-2010-Annual	PTO - DSL	0	5,415.3		0.0161	0.0141	0.0566	0.1202	13.7	0.0071	0.0068	0.0001		1.23
El Dorado (MC)-2010-Annual	SBUS - DSL	164.7	5,993.3		0.0060	0.0053	0.0173	0.0827	8.36	0.0081	0.0051	0.0001		0.7527
El Dorado (MC)-2010-Annual	SBUS - GAS	60.1	2,351.2	240.6	0.0104	0.0089	0.1578	0.0109	1.66	0.0020	0.0009	0.0000	0.2057	
El Dorado (MC)-2010-Annual	T6 AG - DSL	123.1	2,296.5		0.0040	0.0035	0.0085	0.0335	3.18	0.0021	0.0018	0.0000		0.2861
El Dorado (MC)-2010-Annual	T6 CAIRP HEAVY - DSL	8.23	422.5		0.0004	0.0004	0.0009	0.0046	0.5668	0.0002	0.0002	0.0000		0.0510
El Dorado (MC)-2010-Annual	T6 CAIRP SMALL - DSL	22.4	1,297.1		0.0010	0.0008	0.0021	0.0123	1.74	0.0007	0.0005	0.0000		0.1564
El Dorado (MC)-2010-Annual	T6 INSTATE CONSTRUCTION HEAVY - DSL	0.8842	46.5		0.0001	0.0000	0.0001	0.0006	0.0625	0.0000	0.0000	0.0000		0.0056
El Dorado (MC)-2010-Annual	T6 INSTATE CONSTRUCTION SMALL - DSL	87.3	5,255.9		0.0042	0.0037	0.0092	0.0513	7.05	0.0027	0.0022	0.0001		0.6348
El Dorado (MC)-2010-Annual	T6 INSTATE HEAVY - DSL	585.7	25,743.2		0.0362	0.0318	0.0756	0.3340	34.9	0.0198	0.0168	0.0003		3.14
El Dorado (MC)-2010-Annual	T6 INSTATE SMALL - DSL	1,179.1	61,684.9		0.0589	0.0517	0.1269	0.6687	82.9	0.0361	0.0293	0.0008		7.46
El Dorado (MC)-2010-Annual	T6 OOS HEAVY - DSL	4.71	242.1		0.0002	0.0002	0.0005	0.0027	0.3248	0.0001	0.0001	0.0000		0.0292
El Dorado (MC)-2010-Annual	T6 OOS SMALL - DSL	12.9	743.2		0.0005	0.0005	0.0012	0.0070	0.9957	0.0004	0.0003	0.0000		0.0896
El Dorado (MC)-2010-Annual	T6 PUBLIC - DSL	352.9	5,718.9		0.0039	0.0034	0.0090	0.0586	7.95	0.0031	0.0024	0.0001		0.7157
El Dorado (MC)-2010-Annual	T6 UTILITY - DSL	15.1	311.8		0.0001	0.0001	0.0002	0.0025	0.4300	0.0001	0.0001	0.0000		0.0387
El Dorado (MC)-2010-Annual	T6TS - GAS	427.7	10,926.8	8,556.8	0.0902	0.0832	0.7542	0.0683	18.2	0.0020	0.0010	0.0002	2.08	
El Dorado (MC)-2010-Annual	T7 AG - DSL	2.40	40.6		0.0001	0.0001	0.0003	0.0009	0.0849	0.0001	0.0000	0.0000		0.0076
El Dorado (MC)-2010-Annual	T7 CAIRP - DSL	7.13	1,536.2		0.0024	0.0021	0.0068	0.0263	3.06	0.0011	0.0009	0.0000		0.2755
El Dorado (MC)-2010-Annual	T7 CAIRP CONSTRUCTION - DSL	0.1497	33.0		0.0000	0.0000	0.0001	0.0005	0.0656	0.0000	0.0000	0.0000		0.0059
El Dorado (MC)-2010-Annual	T7 NNOOS - DSL	7.70	1,904.9		0.0022	0.0020	0.0063	0.0261	3.85	0.0011	0.0009	0.0000		0.3467
El Dorado (MC)-2010-Annual	T7 NOOS - DSL	2.82	606.8		0.0010	0.0008	0.0027	0.0105	1.22	0.0004	0.0004	0.0000		0.1097
El Dorado (MC)-2010-Annual	T7 OTHER PORT - DSL	0.0000	0.0009		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0		0.0000
El Dorado (MC)-2010-Annual	T7 POAK - DSL	0.7461	85.5		0.0000	0.0000	0.0001	0.0020	0.1727	0.0000	0.0000	0.0000		0.0155
El Dorado (MC)-2010-Annual	T7 POLA - DSL	0.0000	0.0007		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0		0.0000
El Dorado (MC)-2010-Annual	T7 PUBLIC - DSL	280.8	6,561.6		0.0137	0.0120	0.0438	0.1536	15.5	0.0065	0.0058	0.0001		1.39
El Dorado (MC)-2010-Annual	T7 SINGLE - DSL	507.4	27,272.3		0.0456	0.0401	0.1572	0.5373	54.8	0.0269	0.0240	0.0005		4.93
El Dorado (MC)-2010-Annual	T7 SINGLE CONSTRUCTION - DSL	1.20	85.3		0.0001	0.0001	0.0003	0.0015	0.1675	0.0001	0.0000	0.0000		0.0151
El Dorado (MC)-2010-Annual	T7 SWCV - DSL	63.2	2,953.0		0.0011	0.0009	0.0038	0.0639	16.1	0.0008	0.0006	0.0002		1.45
El Dorado (MC)-2010-Annual	T7 TRACTOR - DSL	4.57	519.6		0.0011	0.0010	0.0035	0.0109	1.02	0.0005	0.0005	0.0000		0.0917
El Dorado (MC)-2010-Annual	T7 TRACTOR CONSTRUCTION - DSL	0.8860	63.6		0.0001	0.0001	0.0003	0.0012	0.1249	0.0001	0.0000	0.0000		0.0112
El Dorado (MC)-2010-Annual	T7 UTILITY - DSL	0.1680	3.81		0.0000	0.0000	0.0000	0.0001	0.0090	0.0000	0.0000	0.0000		0.0008
El Dorado (MC)-2010-Annual	T7IS - GAS	51.2	2,246.9	1,025.0	0.0265	0.0238	0.4599	0.0270	5.06	0.0003	0.0001	0.0001	0.6223	
El Dorado (MC)-2010-Annual	UBUS - DSL	66.8	7,752.3	267.3	0.0040	0.0032	0.0406	0.0871	20.4	0.0091	0.0048	0.0002		1.84
El Dorado (MC)-2010-Annual	UBUS - GAS	42.3	4,909.8	169.3	0.0125	0.0089	0.0882	0.0150	9.48	0.0008	0.0003	0.0001	1.03	

2035 No Project

Title	Veh_Tech	Population	VMT	Trips	TOG_TOTAL	ROG_TOTAL	CO_TOTEX	NOx_TOTEX	CO2_TOTEX	PM10_TOTAL	PM2_5_TOTAL	SOx_TOTEX	Fuel_GAS	Fuel_DSL
El Dorado (MC)-2035-Annual	All Vehicles	488,509.5	14,778,620.0	2,997,506.8	2.04	1.93	10.9	1.97	3,991.3	0.8125	0.3371	0.0397	360.3	56.3
El Dorado (MC)-2035-Annual	ALL OTHER BUSES - DSL	204.5	11,393.3		0.0006	0.0005	0.0026	0.0170	14.4	0.0018	0.0008	0.0001		1.30
El Dorado (MC)-2035-Annual	LDA - DSL	3,000.1	98,029.3	19,020.3	0.0007	0.0006	0.0178	0.0014	20.7	0.0050	0.0020	0.0002		1.87
El Dorado (MC)-2035-Annual	LDA - GAS	256,570.5	8,339,756.8	1,622,051.7	0.4633	0.4442	3.55	0.2299	1,634.0	0.4218	0.1728	0.0164	174.6	
El Dorado (MC)-2035-Annual	LDT1 - DSL	8.99	275.3	54.4	0.0000	0.0000	0.0001	0.0000	0.0658	0.0000	0.0000	0.0000		0.0059
El Dorado (MC)-2035-Annual	LDT1 - GAS	15,674.3	489,212.5	95,452.6	0.0826	0.0803	0.3462	0.0243	124.9	0.0249	0.0103	0.0013	13.4	
El Dorado (MC)-2035-Annual	LDT2 - DSL	224.3	7,367.7	1,414.6	0.0002	0.0001	0.0013	0.0003	1.98	0.0004	0.0002	0.0000		0.1781
El Dorado (MC)-2035-Annual	LDT2 - GAS	107,653.7	3,406,249.7	668,350.7	0.4036	0.3892	2.45	0.1699	872.2	0.1733	0.0715	0.0087	93.3	
El Dorado (MC)-2035-Annual	LHD1 - DSL	4,377.1	105,234.8	55,057.9	0.0232	0.0204	0.1001	0.2242	63.3	0.0130	0.0068	0.0006		5.70
El Dorado (MC)-2035-Annual	LHD1 - GAS	3,554.2	79,051.5	52,952.0	0.1021	0.0986	0.2629	0.1111	74.3	0.0076	0.0033	0.0007	7.97	
El Dorado (MC)-2035-Annual	LHD2 - DSL	1,319.7	41,119.7	16,600.7	0.0068	0.0059	0.0277	0.0177	26.7	0.0052	0.0024	0.0003		2.41
El Dorado (MC)-2035-Annual	LHD2 - GAS	484.0	15,764.2	7,210.2	0.0034	0.0032	0.0253	0.0062	15.9	0.0017	0.0007	0.0002	1.70	
El Dorado (MC)-2035-Annual	MCY - GAS	16,603.2	65,954.7	33,203.1	0.4471	0.3981	1.74	0.0970	14.4	0.0014	0.0007	0.0002	1.91	
El Dorado (MC)-2035-Annual	MDV - DSL	1,574.9	46,756.3	9,813.9	0.0004	0.0004	0.0100	0.0007	16.5	0.0024	0.0010	0.0002		1.49
El Dorado (MC)-2035-Annual	MDV - GAS	66,580.5	1,704,363.5	394,205.8	0.4561	0.4430	1.87	0.1520	552.6	0.0870	0.0360	0.0055	59.2	
El Dorado (MC)-2035-Annual	MH - DSL	311.0	2,081.9	31.1	0.0003	0.0003	0.0009	0.0091	2.37	0.0005	0.0003	0.0000		0.2130
El Dorado (MC)-2035-Annual	MH - GAS	929.8	6,490.1	93.0	0.0005	0.0004	0.0048	0.0019	8.87	0.0010	0.0004	0.0001	0.9454	
El Dorado (MC)-2035-Annual	MOTOR COACH - DSL	28.1	3,747.3		0.0004	0.0004	0.0020	0.0090	6.96	0.0006	0.0003	0.0001		0.6268
El Dorado (MC)-2035-Annual	OBUS - GAS	235.1	8,786.6	4,703.0	0.0033	0.0031	0.0293	0.0053	12.2	0.0014	0.0006	0.0001	1.31	
El Dorado (MC)-2035-Annual	PTO - DSL	0	7,738.6		0.0023	0.0021	0.0114	0.0463	16.3	0.0001	0.0001	0.0002		1.47
El Dorado (MC)-2035-Annual	SBUS - DSL	215.1	7,931.8		0.0005	0.0005	0.0022	0.0199	11.0	0.0067	0.0029	0.0001		0.9911
El Dorado (MC)-2035-Annual	SBUS - GAS	70.9	2,307.1	283.4	0.0014	0.0010	0.0102	0.0006	1.61	0.0019	0.0008	0.0000	0.1730	
El Dorado (MC)-2035-Annual	T6 AG - DSL	211.6	2,545.9		0.0002	0.0002	0.0008	0.0109	3.50	0.0004	0.0002	0.0000		0.3148
El Dorado (MC)-2035-Annual	T6 CAIRP HEAVY - DSL	17.1	833.7		0.0000	0.0000	0.0002	0.0016	1.05	0.0001	0.0001	0.0000		0.0945
El Dorado (MC)-2035-Annual	T6 CAIRP SMALL - DSL	44.3	2,559.3		0.0001	0.0001	0.0006	0.0043	3.29	0.0004	0.0002	0.0000		0.2964
El Dorado (MC)-2035-Annual	T6 INSTATE CONSTRUCTION HEAVY - DSL	2.06	162.6		0.0000	0.0000	0.0000	0.0003	0.2107	0.0000	0.0000	0.0000		0.0190
El Dorado (MC)-2035-Annual	T6 INSTATE CONSTRUCTION SMALL - DSL	382.8	18,377.7		0.0010	0.0009	0.0047	0.0346	23.8	0.0029	0.0013	0.0002		2.14
El Dorado (MC)-2035-Annual	T6 INSTATE HEAVY - DSL	1,355.5	47,738.3		0.0033	0.0029	0.0150	0.1257	61.7	0.0077	0.0033	0.0006		5.55
El Dorado (MC)-2035-Annual	T6 INSTATE SMALL - DSL	2,850.8	112,479.8		0.0072	0.0064	0.0325	0.2661	147.6	0.0182	0.0078	0.0014		13.3
El Dorado (MC)-2035-Annual	T6 OOS HEAVY - DSL	9.82	477.7		0.0000	0.0000	0.0001	0.0009	0.6016	0.0001	0.0000	0.0000		0.0541
El Dorado (MC)-2035-Annual	T6 OOS SMALL - DSL	25.4	1,466.4		0.0001	0.0001	0.0003	0.0025	1.89	0.0002	0.0001	0.0000		0.1698
El Dorado (MC)-2035-Annual	T6 PUBLIC - DSL	1,466.8	25,307.8		0.0012	0.0010	0.0053	0.0699	33.5	0.0041	0.0017	0.0003		3.01
El Dorado (MC)-2035-Annual	T6 UTILITY - DSL	23.8	448.4		0.0000	0.0000	0.0001	0.0011	0.5884	0.0001	0.0000	0.0000		0.0530
El Dorado (MC)-2035-Annual	T6TS - GAS	770.8	25,347.5	15,423.0	0.0162	0.0150	0.1280	0.0192	36.2	0.0040	0.0017	0.0004	3.88	
El Dorado (MC)-2035-Annual	T7 AG - DSL	4.70	45.0		0.0000	0.0000	0.0000	0.0004	0.1037	0.0000	0.0000	0.0000		0.0093
El Dorado (MC)-2035-Annual	T7 CAIRP - DSL	11.8	3,031.0		0.0003	0.0003	0.0016	0.0062	5.08	0.0003	0.0001	0.0000		0.4572
El Dorado (MC)-2035-Annual	T7 CAIRP CONSTRUCTION - DSL	0.5332	115.3		0.0000	0.0000	0.0001	0.0002	0.2004	0.0000	0.0000	0.0000		0.0180
El Dorado (MC)-2035-Annual	T7 NNOOS - DSL	15.2	3,758.5		0.0004	0.0003	0.0018	0.0069	6.40	0.0004	0.0002	0.0001		0.5757
El Dorado (MC)-2035-Annual	T7 NOOS - DSL	4.67	1,197.3		0.0001	0.0001	0.0007	0.0025	2.04	0.0001	0.0001	0.0000		0.1834
El Dorado (MC)-2035-Annual	T7 OTHER PORT - DSL	0.0000	0.0006		0	0	0.0000	0.0000	0.0000	0	0	0		0.0000
El Dorado (MC)-2035-Annual	T7 POAK - DSL	1.80	273.7		0.0000	0.0000	0.0002	0.0006	0.4526	0.0000	0.0000	0.0000		0.0407
El Dorado (MC)-2035-Annual	T7 POLA - DSL	0.0000	0.0007		0	0	0.0000	0.0000	0.0000	0	0	0		0.0000
El Dorado (MC)-2035-Annual	T7 PUBLIC - DSL	891.2	20,421.9		0.0022	0.0019	0.0096	0.1011	40.4	0.0024	0.0009	0.0004		3.64
El Dorado (MC)-2035-Annual	T7 SINGLE - DSL	471.7	38,973.1		0.0042	0.0037	0.0200	0.1151	68.6	0.0045	0.0018	0.0007		6.17
El Dorado (MC)-2035-Annual	T7 SINGLE CONSTRUCTION - DSL	3.16	298.4		0.0000	0.0000	0.0001	0.0006	0.5040	0.0000	0.0000	0.0000		0.0454
El Dorado (MC)-2035-Annual	T7 SWCV - DSL	127.9	5,893.4		0.0003	0.0003	0.0009	0.0195	27.2	0.0007	0.0003	0.0003		2.45
El Dorado (MC)-2035-Annual	T7 TRACTOR - DSL	6.58	507.6		0.0001	0.0001	0.0003	0.0016	0.8579	0.0001	0.0000	0.0000		0.0772
El Dorado (MC)-2035-Annual	T7 TRACTOR CONSTRUCTION - DSL	2.57	222.5		0.0000	0.0000	0.0001	0.0005	0.3746	0.0000	0.0000	0.0000		0.0337
El Dorado (MC)-2035-Annual	T7 UTILITY - DSL	0.2398	5.47		0.0000	0.0000	0.0000	0.0000	0.0107	0.0000	0.0000	0.0000		0.0010
El Dorado (MC)-2035-Annual	T7IS - GAS	52.4	3,531.4	1,047.9	0.0034	0.0028	0.1763	0.0170	6.47	0.0003	0.0001	0.0001	0.7191	
El Dorado (MC)-2035-Annual	UBUS - DSL	68.2	6,594.0	273.0	0.0004	0.0003	0.0155	0.0162	15.7	0.0064	0.0028	0.0001		1.41
El Dorado (MC)-2035-Annual	UBUS - GAS	66.2	6,393.6	264.7	0.0013	0.0011	0.0111	0.0042	11.5	0.0010	0.0004	0.0001	1.23	

2035 Plus Project

Title	Veh_Tech	Population	VMT	Trips	TOG_TOTAL	ROG_TOTAL	CO_TOTEX	NOx_TOTEX	CO2_TOTEX	PM10_TOTAL	PM2_5_TOTAL	SOx_TOTEX	Fuel_GAS	Fuel_DSL
El Dorado (MC)-2035-Annual	All Vehicles	488,165.5	14,768,213.0	2,995,395.9	2.04	1.93	10.9	1.97	3,988.0	0.8119	0.3369	0.0397	360.0	56.3
El Dorado (MC)-2035-Annual	ALL OTHER BUSES - DSL	204.4	11,385.2		0.0006	0.0005	0.0026	0.0170	14.4	0.0018	0.0008	0.0001		1.29
El Dorado (MC)-2035-Annual	LDA - DSL	2,998.0	97,960.2	19,006.9	0.0007	0.0006	0.0177	0.0014	20.7	0.0050	0.0020	0.0002		1.86
El Dorado (MC)-2035-Annual	LDA - GAS	256,389.8	8,333,884.0	1,620,909.5	0.4629	0.4439	3.55	0.2297	1,632.6	0.4215	0.1726	0.0164	174.4	
El Dorado (MC)-2035-Annual	LDT1 - DSL	8.98	275.1	54.3	0.0000	0.0000	0.0001	0.0000	0.0657	0.0000	0.0000	0.0000		0.0059
El Dorado (MC)-2035-Annual	LDT1 - GAS	15,663.2	488,868.0	95,385.4	0.0825	0.0803	0.3459	0.0243	124.8	0.0249	0.0103	0.0013	13.4	
El Dorado (MC)-2035-Annual	LDT2 - DSL	224.2	7,362.5	1,413.6	0.0002	0.0001	0.0013	0.0003	1.98	0.0004	0.0002	0.0000		0.1780
El Dorado (MC)-2035-Annual	LDT2 - GAS	107,577.9	3,403,851.0	667,880.0	0.4033	0.3889	2.44	0.1698	871.5	0.1732	0.0714	0.0087	93.2	
El Dorado (MC)-2035-Annual	LHD1 - DSL	4,374.0	105,160.7	55,019.1	0.0232	0.0203	0.1000	0.2240	63.3	0.0130	0.0068	0.0006		5.70
El Dorado (MC)-2035-Annual	LHD1 - GAS	3,551.7	78,995.8	52,914.7	0.1020	0.0985	0.2627	0.1110	74.3	0.0076	0.0033	0.0007	7.96	
El Dorado (MC)-2035-Annual	LHD2 - DSL	1,318.8	41,090.8	16,589.0	0.0067	0.0059	0.0277	0.0177	26.7	0.0052	0.0024	0.0003		2.40
El Dorado (MC)-2035-Annual	LHD2 - GAS	483.6	15,753.1	7,205.1	0.0034	0.0032	0.0253	0.0062	15.9	0.0017	0.0007	0.0002	1.69	
El Dorado (MC)-2035-Annual	MCY - GAS	16,591.5	65,908.3	33,179.7	0.4467	0.3977	1.74	0.0969	14.3	0.0014	0.0007	0.0002	1.91	
El Dorado (MC)-2035-Annual	MDV - DSL	1,573.8	46,723.4	9,807.0	0.0004	0.0004	0.0099	0.0007	16.5	0.0024	0.0010	0.0002		1.49
El Dorado (MC)-2035-Annual	MDV - GAS	66,533.6	1,703,163.3	393,928.2	0.4558	0.4427	1.87	0.1519	552.1	0.0869	0.0360	0.0055	59.1	
El Dorado (MC)-2035-Annual	MH - DSL	310.8	2,080.4	31.1	0.0003	0.0003	0.0009	0.0091	2.37	0.0005	0.0003	0.0000		0.2129
El Dorado (MC)-2035-Annual	MH - GAS	929.2	6,485.5	93.0	0.0005	0.0004	0.0048	0.0019	8.86	0.0010	0.0004	0.0001	0.9448	
El Dorado (MC)-2035-Annual	MOTOR COACH - DSL	28.1	3,744.7		0.0004	0.0004	0.0020	0.0090	6.96	0.0006	0.0003	0.0001		0.6263
El Dorado (MC)-2035-Annual	OBUS - GAS	234.9	8,780.4	4,699.7	0.0033	0.0031	0.0293	0.0053	12.2	0.0014	0.0006	0.0001	1.31	
El Dorado (MC)-2035-Annual	PTO - DSL	0	7,733.1		0.0023	0.0021	0.0114	0.0463	16.3	0.0001	0.0001	0.0002		1.47
El Dorado (MC)-2035-Annual	SBUS - DSL	215.0	7,926.3		0.0005	0.0005	0.0022	0.0198	11.0	0.0067	0.0029	0.0001		0.9902
El Dorado (MC)-2035-Annual	SBUS - GAS	70.8	2,305.5	283.2	0.0014	0.0010	0.0102	0.0006	1.60	0.0019	0.0008	0.0000	0.1728	
El Dorado (MC)-2035-Annual	T6 AG - DSL	211.4	2,544.1		0.0002	0.0002	0.0008	0.0109	3.50	0.0004	0.0002	0.0000		0.3146
El Dorado (MC)-2035-Annual	T6 CAIRP HEAVY - DSL	17.1	833.1		0.0000	0.0000	0.0002	0.0016	1.05	0.0001	0.0001	0.0000		0.0944
El Dorado (MC)-2035-Annual	T6 CAIRP SMALL - DSL	44.3	2,557.5		0.0001	0.0001	0.0006	0.0043	3.29	0.0004	0.0002	0.0000		0.2962
El Dorado (MC)-2035-Annual	T6 INSTATE CONSTRUCTION HEAVY - DSL	2.06	162.5		0.0000	0.0000	0.0000	0.0003	0.2106	0.0000	0.0000	0.0000		0.0190
El Dorado (MC)-2035-Annual	T6 INSTATE CONSTRUCTION SMALL - DSL	382.5	18,364.8		0.0010	0.0009	0.0047	0.0346	23.8	0.0029	0.0013	0.0002		2.14
El Dorado (MC)-2035-Annual	T6 INSTATE HEAVY - DSL	1,354.5	47,704.7		0.0033	0.0029	0.0150	0.1256	61.6	0.0077	0.0033	0.0006		5.55
El Dorado (MC)-2035-Annual	T6 INSTATE SMALL - DSL	2,848.7	112,400.6		0.0072	0.0064	0.0325	0.2659	147.5	0.0182	0.0078	0.0014		13.3
El Dorado (MC)-2035-Annual	T6 OOS HEAVY - DSL	9.82	477.4		0.0000	0.0000	0.0001	0.0009	0.6011	0.0001	0.0000	0.0000		0.0541
El Dorado (MC)-2035-Annual	T6 OOS SMALL - DSL	25.4	1,465.4		0.0001	0.0001	0.0003	0.0025	1.89	0.0002	0.0001	0.0000		0.1697
El Dorado (MC)-2035-Annual	T6 PUBLIC - DSL	1,465.7	25,290.0		0.0012	0.0010	0.0053	0.0699	33.4	0.0041	0.0017	0.0003		3.01
El Dorado (MC)-2035-Annual	T6 UTILITY - DSL	23.8	448.1		0.0000	0.0000	0.0001	0.0011	0.5880	0.0001	0.0000	0.0000		0.0529
El Dorado (MC)-2035-Annual	T6TS - GAS	770.3	25,329.7	15,412.1	0.0162	0.0150	0.1279	0.0192	36.2	0.0040	0.0017	0.0004	3.88	
El Dorado (MC)-2035-Annual	T7 AG - DSL	4.70	45.0		0.0000	0.0000	0.0000	0.0004	0.1036	0.0000	0.0000	0.0000		0.0093
El Dorado (MC)-2035-Annual	T7 CAIRP - DSL	11.8	3,028.9		0.0003	0.0003	0.0016	0.0062	5.08	0.0003	0.0001	0.0000		0.4568
El Dorado (MC)-2035-Annual	T7 CAIRP CONSTRUCTION - DSL	0.5328	115.3		0.0000	0.0000	0.0001	0.0002	0.2002	0.0000	0.0000	0.0000		0.0180
El Dorado (MC)-2035-Annual	T7 NNOOS - DSL	15.2	3,755.9		0.0004	0.0003	0.0018	0.0069	6.39	0.0004	0.0002	0.0001		0.5753
El Dorado (MC)-2035-Annual	T7 NOOS - DSL	4.67	1,196.4		0.0001	0.0001	0.0007	0.0025	2.04	0.0001	0.0001	0.0000		0.1833
El Dorado (MC)-2035-Annual	T7 OTHER PORT - DSL	0.0000	0.0006		0	0	0.0000	0.0000	0.0000	0	0	0		0.0000
El Dorado (MC)-2035-Annual	T7 POAK - DSL	1.80	273.5		0.0000	0.0000	0.0002	0.0006	0.4523	0.0000	0.0000	0.0000		0.0407
El Dorado (MC)-2035-Annual	T7 POLA - DSL	0.0000	0.0007		0	0	0.0000	0.0000	0.0000	0	0	0		0.0000
El Dorado (MC)-2035-Annual	T7 PUBLIC - DSL	890.6	20,407.5		0.0022	0.0019	0.0096	0.1010	40.4	0.0024	0.0009	0.0004		3.64
El Dorado (MC)-2035-Annual	T7 SINGLE - DSL	471.4	38,945.6		0.0042	0.0037	0.0200	0.1150	68.6	0.0045	0.0018	0.0007		6.17
El Dorado (MC)-2035-Annual	T7 SINGLE CONSTRUCTION - DSL	3.15	298.2		0.0000	0.0000	0.0001	0.0006	0.5036	0.0000	0.0000	0.0000		0.0453
El Dorado (MC)-2035-Annual	T7 SWCV - DSL	127.8	5,889.2		0.0003	0.0003	0.0009	0.0195	27.2	0.0007	0.0003	0.0003		2.45
El Dorado (MC)-2035-Annual	T7 TRACTOR - DSL	6.57	507.3		0.0001	0.0001	0.0003	0.0016	0.8573	0.0001	0.0000	0.0000		0.0772
El Dorado (MC)-2035-Annual	T7 TRACTOR CONSTRUCTION - DSL	2.57	222.3		0.0000	0.0000	0.0001	0.0005	0.3743	0.0000	0.0000	0.0000		0.0337
El Dorado (MC)-2035-Annual	T7 UTILITY - DSL	0.2396	5.47		0.0000	0.0000	0.0000	0.0000	0.0107	0.0000	0.0000	0.0000		0.0010
El Dorado (MC)-2035-Annual	T7IS - GAS	52.3	3,528.9	1,047.1	0.0034	0.0028	0.1762	0.0170	6.46	0.0003	0.0001	0.0001	0.7186	
El Dorado (MC)-2035-Annual	UBUS - DSL	68.2	6,589.3	272.8	0.0004	0.0003	0.0155	0.0162	15.7	0.0064	0.0028	0.0001		1.41
El Dorado (MC)-2035-Annual	UBUS - GAS	66.1	6,389.1	264.5	0.0013	0.0011	0.0111	0.0042	11.5	0.0010	0.0004	0.0001	1.23	

APPENDIX D-1

BIOLOGICAL RESOURCES EVALUATION, SILVER SPRINGS PARKWAY TO BASS LAKE ROAD (SOUTH SEGMENT) PROJECT

Biological Resources Assessment

Silver Springs Parkway to Bass Lake Road
(South Segment) Project
El Dorado County, California

Prepared for: Benchmark Resources

Date: April 30, 2015

Submitted by:
FOOTHILL ASSOCIATES

Table of Contents

List of Tables

List of Figures

List of Appendices

1.0 EXECUTIVE SUMMARY

Foothill Associates' biologists have prepared this Biological Resources Assessment for the Silver Springs Parkway to Bass Lake Road (south segment) project (project), located in western El Dorado County, California. The project site is located approximately two miles north of U.S. Highway 50. The project will construct an approximately 1,400 foot long segment of road to connect a recently constructed segment of Silver Springs Parkway to the north with Bass Lake Road to the south. The purpose of the Biological Resources Assessment documented herein is to describe the general biological resources within the project site, assess the suitability of the site to support special-status species and sensitive habitat types, identify potential impacts to biological resources that would occur as a result of the project, and provide recommendations for regulatory permitting or further analysis that may be required.

Biological issues considered for the purposes of this analysis consider potential sensitive biological resources that could be associated with the project site, including:

- Potential habitat for nineteen special-status plant species;
- Potential habitat for Cosumnes spring stonefly;
- Potential habitat for valley elderberry longhorn beetle;
- Potential habitat for coast horned lizard;
- Potential habitat for California red-legged frog and foothill yellow-legged frog;
- Potential habitat for western pond turtle;
- Potential nesting sites and foraging habitat for raptors and other migratory birds (including white-tailed kite, Cooper's hawk, golden eagle, Merlin, grasshopper sparrow, and purple martin);
- Potential habitat for western burrowing owl;
- Potential habitat for special-status bat species; and
- Sensitive habitats, including potentially jurisdictional waters of the U.S., riparian habitat, and oak woodlands.

2.0 INTRODUCTION

This report documents the biological resources assessment completed for the Silver Springs Parkway to Bass Lake Road (south segment) project. The project will construct an approximately 1,400-foot long segment of road to connect a recently constructed segment of Silver Springs Parkway to the north with Bass Lake Road to the south. The project will create a new four-way intersection where Silver Springs Parkway connects with Bass Lake Road and will modify segments of Bass Lake Road adjacent to the intersection. The study area for the biological resources assessment is shown on **Figure 1 — Site and Vicinity**, and is approximately 26 acres in size, including potential construction staging areas.

This document addresses the physical features, biological communities' present, and common plant and wildlife species occurring or potentially occurring in the study area, and impacts that could occur to such biological resources as a result of the project. Furthermore, the suitability of habitats in the study area to support special-status species are analyzed and recommendations are provided for any regulatory permitting or further analysis required prior to development occurring within the study area. Finally, recommendations for avoidance and mitigation measures are provided.

While this Biological Resources Assessment and the mitigation recommendations contained herein are intended to satisfy requirements of the County's *Interim Interpretive Guidelines for Policy 7.4.4.4 (Option A)*, by satisfying these elements Foothill Associates is not intending to suggest that the interim guidelines are interpreted by the County to be applicable to the project.

3.0 REGULATORY FRAMEWORK

Federal, State, and local environmental laws, regulations, and policies relevant to the California Environmental Quality Act (CEQA) review process are summarized below. The CEQA significance criteria are also included in this section.

3.1 Federal Endangered Species Act

The United States Congress passed the Federal Endangered Species Act (FESA) in 1973 to protect those species that are endangered or threatened with extinction. FESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend.

FESA prohibits the "take" of endangered or threatened wildlife species. "Take" is defined to include harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such conduct (FESA Section 3 [(3)(19)]). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (50 CFR §17.3). Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR §17.3). Actions that result in take can result in civil or criminal penalties.

FESA and Clean Water Act (CWA) Section 404 guidelines prohibit the issuance of wetland permits for projects that jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species. The U.S. Army Corps of Engineers (Corps) must consult with the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS) when threatened or endangered species under their jurisdiction may be affected by a proposed project. In the context of the proposed project, FESA would be initiated if development resulted in take of a threatened or endangered species or if issuance of a Section 404 permit or other federal agency action could result in take of an endangered species or adversely modify critical habitat of such a species.

3.2 Migratory Bird Treaty Act

Raptors (birds of prey), migratory birds, and other avian species are protected by a number of State and federal laws. The federal Migratory Bird Treaty Act (MBTA) prohibits the killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of Interior. Section 3503.5 of the California Fish and Game Code states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

3.3 California Endangered Species Act

The State of California enacted the California Endangered Species Act (CESA) in 1984. CESA is similar to the FESA but pertains to State-listed endangered and threatened species. CESA requires state agencies to consult with the California Department of Fish and Wildlife (CDFW), formally California Department of Fish and Game, when preparing California Environmental Quality Act (CEQA) documents. The purpose is to ensure that the state lead agency actions do not jeopardize the continued existence of a listed species or result in the destruction, or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available (Fish and Game Code §2080). CESA directs agencies to consult with CDFW on projects or actions that could affect listed species, directs CDFW to determine whether jeopardy would occur and allows CDFW to identify "reasonable and prudent alternatives" to the project consistent with conserving the species. CESA allows CDFW to authorize exceptions to the State's prohibition against take of a listed species if the "take" of a listed species is incidental to carrying out an otherwise lawful project that has been approved under CEQA (Fish & Game Code § 2081).

3.4 CDFW Species of Concern

In addition to formal listing under FESA and CESA, species receive additional consideration by CDFW and local lead agencies during the CEQA process. Species that may be considered for review are included on a list of "Species of Special Concern," developed by the CDFW. It tracks species in California whose numbers, reproductive success, or habitat may be threatened.

3.5 California Native Plant Society

The California Native Plant Society (CNPS) maintains a rank of plant species native to California that has low population numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. Potential impacts to populations of CNPS-ranked plants receive consideration under CEQA review. The following identifies the definitions of the CNPS ranks:

- Rank 1A: Plants presumed Extinct in California
- Rank 1B: Plants Rare, Threatened, or Endangered in California and elsewhere
- Rank 2: Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere
- Rank 3: Plants about which we need more information – A Review List
- Rank 4: Plants of limited distribution – A Watch List

3.6 Jurisdictional Waters of the United States

3.6.1 Federal Jurisdiction

The Corps regulates discharge of dredge or fill material into waters of the United States under Section 404 of the CWA. "Discharges of fill material" is defined as the addition of fill material into waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; fill for intake and outfall pipes and subaqueous utility lines [33 C.F.R. §328.2(f)]. In addition, Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a Federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Waters of the U.S. include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, and wet meadows. Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of waters is present. Methods for delineating wetlands and non-tidal waters are described below.

- Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R. §328.3(b)]. Presently, to be a wetland, a site must exhibit three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the "normal circumstances" for the site.

- The lateral extent of non-tidal waters is determined by delineating the ordinary high water mark (OHWM) [33 C.F.R. §328.4(c)(1)]. The OHWM is defined by the Corps as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" [33 C.F.R. §328.3(e)].

3.6.2 State Jurisdiction

CDFW is a trustee agency that has jurisdiction over riparian areas and certain waters of the state under Section 1600 *et seq*. of the California Fish and Game Code. Under Sections 1602 and 1603, a private party must notify CDFW if a proposed project will "substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds…except when the department has been notified pursuant to Section 1601." If an existing fish or wildlife resource may be substantially adversely affected by the activity, CDFW may propose reasonable measures that will allow protection of those resources. If these measures are agreeable to the parties involved, they may enter into an agreement with CDFW identifying the approved activities and associated mitigation measures.

3.7 CEQA Significance Criteria

Section 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Appendix G provides examples of impacts that would normally be considered significant. Based on these examples, impacts to biological resources would normally be considered significant if the project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS;

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and

- Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional or state habitat conservation plan.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, State, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA. The reason for this is that although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish, or result in the permanent loss of, an important resource on a population-wide or region-wide basis.

3.8 El Dorado County General Plan

The following goals, objectives, and policies are contained in the 2004 El Dorado County General Plan and are relevant to consider for applicability to biological resources and potential impacts associated with the project and for consideration of the project's consistency with the County General Plan.

CONSERVATION AND PROTECTION OF WATER RESOURCES

GOAL 7.3: WATER QUALITY AND QUANTITY
Conserve, enhance, and manage water resources and protect their quality from degradation.

OBJECTIVE 7.3.1: WATER RESOURCE PROTECTION
Preserve and protect the supply and quality of the County's water resources including the protection of critical watersheds, riparian zones, and aquifers.

Policy 7.3.1.1 *Encourage the use of Best Management Practices, as identified by the Soil Conservation Service, in watershed lands as a means to prevent erosion, siltation, and flooding.*

Policy 7.3.1.2 *Establish water conservation programs that include both drought tolerant landscaping and efficient building design requirements as well as incentives for the conservation and wise use of water.*

***Policy 7.3.1.**3* *The County shall develop the criteria and draft an ordinance to allow and encourage the use of domestic gray water for landscape irrigation purposes. (See Title 22 of the State Water Code and the Graywater Regulations of the Uniform Plumbing Code).*

OBJECTIVE 7.3.2: WATER QUALITY
Maintenance of and, where possible, improvement of the quality of underground and surface water.

Policy 7.3.2.1 *Stream and lake embankments shall be protected from erosion, and streams and lakes shall be protected from excessive turbidity.*

Policy 7.3.2.2 *Projects requiring a grading permit shall have an erosion control program approved, where necessary.*

Policy 7.3.2.3 *Where practical and when warranted by the size of the project, parking lot storm drainage shall include facilities to separate oils and salts from storm water in accordance with the recommendations of the Storm Water Quality Task Force's California Storm Water Best Management Practices Handbooks (1993).*

Policy 7.3.2.4 *The County should evaluate feasible alternatives to the use of salt for ice control on County roads.*

Policy 7.3.2.5 *As a means to improve the water quality affecting the County's recreational waters, enhanced and increased detailed analytical water quality studies and monitoring should be implemented to identify and reduce point and non-point pollutants and contaminants. Where such studies or monitoring reports have identified sources of pollution, the County shall propose means to prevent, control, or treat identified pollutants and contaminants.*

OBJECTIVE 7.3.3: WETLANDS

Protection of natural and man-made wetlands, vernal pools, wet meadows, and riparian areas from impacts related to development for their importance to wildlife habitat, water purification, scenic values, and unique and sensitive plant life.

Policy 7.3.3.1 *For projects that would result in the discharge of material to or that may affect the function and value of river, stream, lake, pond, or wetland features, the application shall include a delineation of all such features. For wetlands, the delineation shall be conducted using the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual*

Policy 7.3.3.2 *intentionally blank*

Policy 7.3.3.3 *The County shall develop a database of important surface water features, including lake, river, stream, pond, and wetland resources.*

Policy 7.3.3.4 *The Zoning Ordinance shall be amended to provide buffers and special setbacks for the protection of riparian areas and wetlands. The County shall encourage the incorporation of protected areas into conservation easements or natural resource protection areas.*

Exceptions to riparian and wetland buffer and setback requirements shall be provided to permit necessary road and bridge repair and construction, trail construction, and other recreational access structures such as docks and piers, or where such buffers deny reasonable use of the property, but only when appropriate mitigation measures and Best Management Practices are incorporated into the project. Exceptions shall also be provided for horticultural and grazing activities on agriculturally zoned lands that utilize "best management practices (BMPs)" as recommended by the County Agricultural Commission and adopted by the Board of Supervisors.

Until standards for buffers and special setbacks are established in the Zoning Ordinance, the County shall apply a minimum setback of 100 feet from all perennial streams, rivers, lakes, and 50 feet from intermittent streams and wetlands. These interim standards may be modified in a *particular instance if more detailed information relating to slope, soil stability, vegetation, habitat, or other site- or project-specific conditions supplied as part of the review for a specific project demonstrates that a different setback is necessary or would be sufficient to protect the particular riparian area at issue.*

For projects where the County allows an exception to wetland and riparian buffers, development in or immediately adjacent to such features shall be planned so that impacts on the resources are minimized. If avoidance and minimization are not feasible, the County shall make findings, based on documentation provided by the project proponent, that avoidance and minimization are infeasible.

Policy 7.3.3.5 *Rivers, streams, lakes and ponds, and wetlands shall be integrated into new development in such a way that they enhance the aesthetic and natural character of the site while disturbance to the resource is avoided or minimized and fragmentation is limited.*

OBJECTIVE 7.3.4: DRAINAGE
Protection and utilization of natural drainage patterns.

Policy 7.3.4.1 *Natural watercourses shall be integrated into new development in such a way that they enhance the aesthetic and natural character of the site without disturbance.*

Policy 7.3.4.2 *Modification of natural stream beds and flow shall be regulated to ensure that adequate mitigation measures are utilized.*

OBJECTIVE 7.3.5: WATER CONSERVATION
Conservation of water resources, encouragement of water conservation, and construction of wastewater disposal systems designed to reclaim and re-use treated wastewater on agricultural crops and for other irrigation and wildlife enhancement projects.

Policy 7.3.5.1 *Drought-tolerant plant species, where feasible, shall be used for landscaping of commercial development. Where the use of drought-tolerant native plant species is feasible, they should be used instead of non-native plant species.*

Policy 7.3.5.2 *A list of appropriate local indigenous drought tolerant plant materials shall be maintained by the County Planning Department and made available to the public.*

Policy 7.3.5.3 *The County Parks and Recreation Division shall use drought tolerant landscaping for all new parks and park improvement projects.*

Policy 7.3.5.4 *Require efficient water conveyance systems in new construction. Establish a program of ongoing conversion of open ditch systems shall be considered for conversion to closed conduits, reclaimed water supplies, or both, as circumstances permit.*

Policy 7.3.5.5 *Encourage water reuse programs to conserve raw or potable water supplies consistent with State Law.*

CONSERVATION OF BIOLOGICAL RESOURCES

GOAL 7.4: WILDLIFE AND VEGETATION RESOURCES
Identify, conserve, and manage wildlife, wildlife habitat, fisheries, and vegetation resources of significant biological, ecological, and recreational value.

OBJECTIVE 7.4.1: RARE, THREATENED, AND ENDANGERED SPECIES
The County shall protect State and Federally recognized rare, threatened, or endangered species and their habitats consistent with Federal and State laws.

Policy 7.4.1.1 *The County shall continue to provide for the permanent protection of the eight sensitive plant species known as the Pine Hill endemics and their habitat through the establishment and management of ecological preserves consistent with County Code Chapter 17.71 and the USFWS's Gabbro Soil Plants for the Central Sierra Nevada Foothills Recovery Plan (USFWS 2002).*

Policy 7.4.1.2 *Private land for preserve sites will be purchased only from willing sellers.*

Policy 7.4.1.3 *Limit land uses within established preserve areas to activities deemed compatible. Such uses may include passive recreation, research and scientific study, and education. In conjunction with use as passive recreational areas, develop a rare plant educational and interpretive program.*

Policy 7.4.1.4 *Proposed rare, threatened, or endangered species preserves, as approved by the County Board of Supervisors, shall be designated Ecological Preserve (-EP) overlay on the General Plan land use map.*

Policy 7.4.1.5 *Species, habitat, and natural community preservation/conservation strategies shall be prepared to protect special status plant and animal species and natural communities and habitats when discretionary development is proposed on lands with such resources unless it is determined that those resources exist, and either are or can be protected, on public lands or private Natural Resource lands.*

Policy 7.4.1.6 *All development projects involving discretionary review shall be designed to avoid disturbance or fragmentation of important habitats to the extent reasonably feasible. Where avoidance is not possible, the development shall be required to fully mitigate the effects of important habitat loss and fragmentation. Mitigation shall be defined in the Integrated Natural Resources Management Plan (INRMP) (see Policy 7.4.2.8 and Implementation Measure CO-M).*

The County Agricultural Commission, Plant and Wildlife Technical Advisory Committee, representatives of the agricultural community, academia, and other stakeholders shall be involved and consulted in defining the important habitats of the County and in the creation and implementation of the INRMP.

Policy 7.4.1.7 *The County shall continue to support the Noxious Weed Management Group in its efforts to reduce and eliminate noxious weed infestations to protect native habitats and to reduce fire hazards.*

OBJECTIVE 7.4.2: IDENTIFY AND PROTECT RESOURCES
Identification and protection, where feasible, of critical fish and wildlife habitat including deer winter, summer, and fawning ranges; deer migration routes; stream and river riparian habitat; lake shore habitat; fish spawning areas; wetlands; wildlife corridors; and diverse wildlife habitat.

Policy 7.4.2.1 *To the extent feasible in light of other General Plan policies and to the extent permitted by State law, the County of El Dorado will protect identified critical fish and wildlife habitat, as identified on the Important Biological Resources Map maintained at the Planning Department, through any of the following techniques: utilization of open space, Natural Resource land use designation, clustering, large lot design, setbacks, etc.*

Policy 7.4.2.2 *Where critical wildlife areas and migration corridors are identified during review of projects, the County shall protect the resources from degradation by requiring all portions of the project site that contain or influence said areas to be retained as non-disturbed natural areas through mandatory clustered development on suitable portions of the project site or other means such as density transfers if clustering cannot be achieved. The setback distance for designated or protected migration corridors shall be determined as part of the project's environmental analysis. The intent and emphasis of the Open Space land use designation and of the non-disturbance policy is to ensure continued viability of contiguous or interdependent habitat areas and the preservation of all movement corridors between related habitats. The intent of mandatory clustering is to provide a mechanism for natural resource protection while allowing appropriate development of private property. Horticultural and grazing* *projects on agriculturally designated lands are exempt from the restrictions placed on disturbance of natural areas when utilizing "Best Management Practices" (BMPs) recommended by the County Agricultural Commission and adopted by the Board of Supervisors when not subject to Policy 7.1.2.7.*

Policy 7.4.2.3 *Consistent with Policy 9.1.3.1 of the Parks and Recreation Element, low impact uses such as trails and linear parks may be provided within river and stream buffers if all applicable mitigation measures are incorporated into the design.*

Policy 7.4.2.4 *Establish and manage wildlife habitat corridors within public parks and natural resource protection areas to allow for wildlife use. Recreational uses within these areas shall be limited to those activities that do not require grading or vegetation removal.*

Policy 7.4.2.5 *Setbacks from all rivers, streams, and lakes shall be included in the Zoning Ordinance for all ministerial and discretionary development projects.*

Policy 7.4.2.6 *El Dorado County Biological Community Conservation Plans shall be required to protect, to the extent feasible, rare, threatened, and endangered plant species only when existing federal or State plans for non-jurisdictional areas do not provide adequate protection.*

Policy 7.4.2.7 *The County shall form a Plant and Wildlife Technical Advisory Committee to advise the Planning Commission and Board of Supervisors on plant and wildlife issues, and the committee should be formed of local experts, including agricultural, fire protection, and forestry representatives, who will consult with other experts with special expertise on various plant and wildlife issues, including representatives of regulatory agencies. The Committee shall formulate objectives which will be reviewed by the Planning Commission and Board of Supervisors.*

Policy 7.4.2.8 *Develop within five years and implement an Integrated Natural Resources Management Plan (INRMP) that identifies important habitat in the County and establishes a program for effective habitat preservation and management. The INRMP shall include the following components:*

A. *Habitat Inventory. This part of the INRMP shall inventory and map the following important habitats in El Dorado County:*

    1. *Habitats that support special status species;*
    2. *Aquatic environments including streams, rivers, and lakes;*
    3. *Wetland and riparian habitat;*
    4. *Important habitat for migratory deer herds; and*

5. *Large expanses of native vegetation.*

The County should update the inventory every three years to identify the amount of important habitat protected, by habitat type, through County programs and the amount of important habitat removed because of new development during that period. The inventory and mapping effort shall be developed with the assistance of the Plant and Wildlife Technical Advisory Committee, CDFW, and USFWS. The inventory shall be maintained and updated by the County Planning Department and shall be publicly accessible.

B. *Habitat Protection Strategy. This component shall describe a strategy for protecting important habitats based on coordinated land acquisitions (see item D below) and management of acquired land. The goal of the strategy shall be to conserve and restore contiguous blocks of important habitat to offset the effects of increased habitat loss and fragmentation elsewhere in the county. The Habitat Protection Strategy should be updated at least once every five years based on the results of the habitat monitoring program (item F below). Consideration of wildlife movement will be given by the County on all future 4- and 6-lane roadway construction projects. When feasible, natural undercrossings along proposed roadway alignments that could be utilized by terrestrial wildlife for movement will be preserved and enhanced.*

C. *Mitigation Assistance. This part of the INRMP shall establish a program to facilitate mitigation of impacts to biological resources resulting from projects approved by the County that are unable to avoid impacts on important habitats. The program may include development of mitigation banks, maintenance of lists of potential mitigation options, and incentives for developers and landowner participation in the habitat acquisition and management components of the INRMP.*

D. *Habitat Acquisition. Based on the Habitat Protection Strategy and in coordination with the Mitigation Assistance program, the INRMP shall include a program for identifying habitat acquisition opportunities involving willing sellers. Acquisition may be by state or federal land management agencies, private land trusts or mitigation banks, the County, or other public or private organizations. Lands may be acquired in fee or protected through acquisition of a conservation easement designed to protect the core habitat values of the land while allowing other uses by the fee owner. The program should identify opportunities for partnerships between the County and other organizations for habitat acquisition and management. In evaluating proposed acquisitions, consideration will be given to site* *specific features (e.g., condition and threats to habitat, presence of special status species), transaction related features (e.g., level of protection gained, time frame for purchase completion, relative costs), and regional considerations (e.g., connectivity with adjacent protected lands and important habitat, achieves multiple agency and community benefits). Parcels that include important habitat and are located generally to the west of the El Dorado National Forest should be given priority for acquisition. Priority will also be given to parcels that would preserve natural wildlife movement corridors such as crossing under major roadways (e.g., U.S. Highway 50 and across canyons). All land acquired shall be added to the Ecological Preserve overlay area.*

E. *Habitat Management. Each property or easement acquired through the INRMP should be evaluated to determine whether the biological resources would benefit from restoration or management actions. Examples of the many types of restoration or management actions that could be undertaken to improve current habitat conditions include: removal of non native plant species, planting native species, repair and rehabilitation of severely grazed riparian and upland habitats, removal of culverts and other structures that impede movement by native fishes, construction of roadway under and overcrossing that would facilitate movement by terrestrial wildlife, and installation of erosion control measures on land adjacent to sensitive wetland and riparian habitat.*

F. *Monitoring. The INRMP shall include a habitat monitoring program that covers all areas under the Ecological Preserve overlay together with all lands acquired as part of the INRMP. Monitoring results shall be incorporated into future County planning efforts so as to more effectively conserve and restore important habitats. The results of all special status species monitoring shall be reported to the CNDDB. Monitoring results shall be compiled into an annual report to be presented to the Board of Supervisors.*

G. *Public Participation. The INRMP shall be developed with and include provisions for public participation and informal consultation with local, state, and federal agencies having jurisdiction over natural resources within the County.*

H. *Funding. The County shall develop a conservation fund to ensure adequate funding of the INRMP, including habitat maintenance and restoration. Funding may be provided from grants, mitigation fees, and the County general fund. The INRMP annual report described under item F above shall include information on current funding levels and shall project anticipated funding needs and anticipated and potential funding sources for the following five years.*

Policy 7.4.2.9 *The Important Biological Corridor (-IBC) overlay shall apply to lands identified as having high wildlife habitat values because of extent, habitat function, connectivity, and other factors. Lands located within the overlay district shall be subject to the following provisions except that where the overlay is applied to lands that are also subject to the Agricultural District (-A) overlay or that are within the Agricultural Lands (AL) designation, the land use restrictions associated with the -IBC policies will not apply to the extent that the agricultural practices do not interfere with the purposes of the -IBC overlay.*

- *Increased minimum parcel size;*
- *Higher canopy-retention standards and/or different mitigation standards/thresholds for oak woodlands;*
- *Lower thresholds for grading permits;*
- *Higher wetlands/riparian retention standards and/or more stringent mitigation requirements for wetland/riparian habitat loss;*
- *Increased riparian corridor and wetland setbacks;*
- *Greater protection for rare plants (e.g., no disturbance at all or disturbance only as recommended by U.S. Fish and Wildlife Service/California Department of Fish and Wildlife);*
- *Standards for retention of contiguous areas/large expanses of other (non-oak or non-sensitive) plant communities;*
- *Building permits discretionary or some other type of "site review" to ensure that canopy is retained;*
- *More stringent standards for lot coverage, floor area ratio (FAR), and building height; and*
- *No hindrances to wildlife movement (e.g., no fences that would restrict wildlife movement).*

The standards listed above shall be included in the Zoning Ordinance.

Wildland Fire Safe measures are exempt from this policy, except that Fire Safe measures will be designed insofar as possible to be consistent with the objectives of the Important Biological Corridor.

OBJECTIVE 7.4.3: COORDINATION WITH APPROPRIATE AGENCIES
Coordination of wildlife and vegetation protection programs with appropriate Federal and State agencies.

OBJECTIVE 7.4.4: FOREST AND OAK WOODLAND RESOURCES
Protect and conserve forest and woodland resources for their wildlife habitat, recreation, water production, domestic livestock grazing, production of a sustainable flow of wood products, and aesthetic values.

Policy 7.4.4.1 *The Natural Resource land use designation shall be used to protect important forest resources from uses incompatible with timber harvesting.*

Policy 7.4.4.2 *Through the review of discretionary projects, the County, consistent with any limitations imposed by State law, shall encourage the protection, planting, restoration, and regeneration of native trees in new developments and within existing communities.*

Policy 7.4.4.3 *Utilize the clustering of development to retain the largest contiguous areas possible in wildland (undeveloped) status.*

Policy 7.4.4.4 *For all new development projects (not including agricultural cultivation and actions pursuant to an approved Fire Safe Plan necessary to protect existing structures, both of which are exempt from this policy) that would result in soil disturbance on parcels that (1) are over an acre and have at least 1 percent total canopy cover or (2) are less than an acre and have at least 10 percent total canopy cover by woodlands habitats as defined in this General Plan and determined from base line aerial photography or by site survey performed by a qualified biologist or licensed arborist, the County shall require one of two mitigation options: (1) the project applicant shall adhere to the tree canopy retention and replacement standards described below; or (2) the project applicant shall contribute to the County's Integrated Natural Resources Management Plan (INRMP) conservation fund described in Policy 7.4.2.8.*

Option A

The County shall apply the following tree canopy retention standards:

Percent Existing Canopy Cover	Canopy Cover to be Retained
80–100	60% of existing canopy
60–79	70% of existing canopy
40–59	80% of existing canopy
20–39	85% of existing canopy
10-19	90% of existing canopy
1-9 for parcels > 1 acre	90% of existing canopy

Under Option A, the project applicant shall also replace woodland habitat removed at 1:1 ratio. Impacts on woodland habitat and mitigation requirements shall be addressed in a Biological Resources Study and Important Habitat Mitigation Plan as described in Policy 7.4.2.8.

Woodland replacement shall be based on a formula, developed by the County, that accounts for the number of trees and acreage affected.

Option B

The project applicant shall provide sufficient funding to the County's INRMP conservation fund, described in Policy 7.4.2.8, to fully compensate for the impact to oak woodland habitat. To compensate for fragmentation as well as habitat loss, the preservation mitigation ratio shall be 2:1 and based on the total woodland acreage onsite directly impacted by habitat loss and indirectly impacted by habitat fragmentation. The costs associated with acquisition, restoration, and management of the habitat protected shall be included in the mitigation fee. Impacts on woodland habitat and mitigation requirements shall be addressed in a Biological Resources Study and Important Habitat Mitigation Plan as described in Policy 7.4.2.8.

Policy 7.4.4.5 *Where existing individual or a group of oak trees are lost within a stand, a corridor of oak trees shall be retained that maintains continuity between all portions of the stand. The retained corridor shall have a tree density that is equal to the density of the stand.*

OBJECTIVE 7.4.5: NATIVE VEGETATION AND LANDMARK TREES
Protect and maintain native trees including oaks and landmark and heritage trees.

Policy 7.4.5.1 *A tree survey, preservation, and replacement plan shall be required to be filed with the County prior to issuance of a grading permit for discretionary permits on all high-density residential, multifamily residential, commercial, and industrial projects. To ensure that proposed replacement trees survive, a mitigation monitoring plan should be incorporated into discretionary projects when applicable and shall include provisions for necessary replacement of trees.*

Policy 7.4.5.2 *It shall be the policy of the County to preserve native oaks wherever feasible, through the review of all proposed development activities where such trees are present on either public or private property, while at the same time recognizing individual rights to develop private property in a reasonable manner. To ensure that oak tree loss is reduced to reasonable acceptable levels, the County shall develop and implement an Oak Tree Preservation Ordinance that includes the following components:*

A. Oak Tree Removal Permit Process. Except under special exemptions, a tree removal permit shall be required by the County for removal of any native oak tree with a single main trunk of at least 6 inches diameter at breast height (dbh), or a multiple trunk with an aggregate of at least 10 inches dbh. Special exemptions when a tree removal permit is not needed shall include removal of trees less than

36 inches dbh on 1) lands in Williamson Act Contracts, Farmland Security Zone Programs, Timber Production Zones, Agricultural Districts, designated Agricultural Land (AL), and actions pursuant to a Fire Safe plan; 2) all single family residential lots of one acre or less that cannot be further subdivided; 3) when a native oak tree is cut down on the owner's property for the owner's personal use; and 4) when written approval has been received from the County Planning Department. In passing judgment upon tree removal permit applications, the County may impose such reasonable conditions of approval as are necessary to protect the health of existing oak trees, the public and the surrounding property, or sensitive habitats. The County Planning Department may condition any removal of native oaks upon the replacement of trees in kind. The replacement requirement shall be calculated based upon an inch for inch replacement of removed oaks. The total of replacement trees shall have a combined diameter of the tree(s) removed. Replacement trees may be planted onsite or in other areas to the satisfaction of the County Planning Department. The County may also condition any tree removal permit that would affect sensitive habitat (e.g., valley oak woodland), on preparation of a Biological Resources Study and an Important Habitat Mitigation Program as described in Policy 7.4.1.6. If an application is denied, the County shall provide written notification, including the reasons for denial, to the applicant.

B. Tree Removal Associated with Discretionary Project. Any person desiring to remove a native oak shall provide the County with the following as part of the project application:

- *A written statement by the applicant or an arborist stating the justification for the development activity, identifying how trees in the vicinity of the project or construction site will be protected and stating that all construction activity will follow approved preservation methods;*
- *A site map plan that identifies all native oaks on the project site; and*
- *A report by a certified arborist that provides specific information for all native oak trees on the project site.*

C. Commercial Firewood Cutting. Fuel wood production is considered commercial when a party cuts firewood for sale or profit. An oak tree removal permit shall be required for commercial firewood cutting of any native oak tree. In reviewing a permit application, the Planning Department shall consider the following:

- *Whether the trees to be removed would have a significant negative environmental impact;*

- *Whether the proposed removal would not result in clear-cutting, but will result in thinning or stand improvement;*
- *Whether replanting would be necessary to ensure adequate regeneration;*
- *Whether the removal would create the potential for soil erosion;*
- *Whether any other limitations or conditions should be imposed in accordance with sound tree management practices; and*
- *What the extent of the resulting canopy cover would be.*

D. Penalties. Fines will be issued to any person, firm, or corporation that is not exempt from the ordinance who damages or destroys an oak tree without first obtaining an oak tree removal permit. Fines may be as high as three times the current market value of replacement trees as well as the cost of replacement, and/or replacement of up to three times the number of trees required by the ordinance. If oak trees are removed without a tree removal permit, the County Planning Department may choose to deny or defer approval of any application for development of that property for a period of up to 5 years. All monies received for replacement of illegally removed or damaged trees shall be deposited in the County's Integrated Natural Resources Management Plan (INRMP) conservation fund.

PRESERVATION OF OPEN SPACE

GOAL 7.6: OPEN SPACE CONSERVATION
Conserve open space land for the continuation of the County's rural character, commercial agriculture, forestry and other productive uses, the enjoyment of scenic beauty and recreation, the protection of natural resources, for protection from natural hazards, and for wildlife habitat.

OBJECTIVE 7.6.1: IMPORTANCE OF OPEN SPACE
Consideration of open space as an important factor in the County's quality of life.

Policy 7.6.1.1 *The General Plan land use map shall include an Open Space land use designation. The purpose of this designation is to implement the goals and objectives of the Land Use and the Conservation and Open Space Elements by serving one or more of the purposes stated below. In addition, the designations on the land use map for Rural Residential and Natural Resource areas are also intended to implement said goals and objectives. Primary purposes of open space include:*

A. Conserving natural resource areas required for the conservation of plant and animal life including habitat for fish and wildlife species; areas required for ecologic and other scientific study purposes; rivers, streams, banks of rivers and streams and watershed lands;

B. Conserving natural resource lands for the managed production of resources including forest products, rangeland, agricultural lands important to the production of food and fiber; and areas containing important mineral deposits;

C. Maintaining areas of importance for outdoor recreation including areas of outstanding scenic, historic and cultural value; areas particularly suited for park and recreation purposes including those providing access to lake shores, beaches and rivers and streams; and areas which serve as links between major recreation and open space reservations including utility easements, banks of rivers and streams, trails and scenic highway corridors;

D. Delineating open space for public health and safety including, but not limited to, areas which require special management or regulation because of hazardous or special conditions such as earthquake fault zones, unstable soil areas, flood plains, watersheds, areas presenting high fire risks, areas required for the protection of water quality and water reservoirs, and areas required for the protection and enhancement of air quality; and

E. Providing for open spaces to create buffers which may be landscaped to minimize the adverse impact of one land use on another.

Policy 7.6.1.2 *The County will provide for Open Space lands through:*

A. The designation of land as Open Space;

B. The designation of land for low-intensity land uses as provided in the Rural Residential and Natural Resource land use designations;

C. Local implementation of the Federal Emergency Management Agency's National Flood Insurance Program;

D. Local implementation of the State Land Conservation Act Program; and

E. Open space land set aside through Planned Developments (PDs).

Policy 7.6.1.3 *The County shall implement Policy 7.6.1.1 through zoning regulations and the administration thereof. It is intended that certain districts and certain requirements in zoning regulations carry out the purposes set forth in Policy 7.6.1.1 as follows:*

A. *The Open Space (OS) Zoning District is consistent with and shall implement the Open Space designation of the General Plan land use map and all other land use designations.*

B. *The Agricultural (A), Exclusive Agricultural (AE), Planned Agricultural (PA), Select Agricultural (SA-10), and Timberland Production Zone (TPZ) zoning districts are consistent with Policy 7.6.1.1 and serve one or more of the purposes set forth therein.*

C. *Zoning regulations shall provide for setbacks from all flood plains, streams, lakes, rivers and canals to maintain Purposes A, B, C, and D set forth in Policy 7.6.1.1.*

D. *Zoning regulations shall provide for maintenance of permanent open space in residential, commercial, industrial, agricultural, and residential agricultural zone districts based on standards established in those provisions of the County Code. The regulations shall minimize impacts on wetlands, flood plains, streams, lakes, rivers, canals, and slopes in excess of 30 percent and shall maintain Purposes A, B, C, and D in Policy 7.6.1.1.*

E. *Landscaping requirements in zoning regulations shall provide for vegetative buffers between incompatible land uses in order to maintain Purpose E in Policy 7.6.1.1.*

F. *Zoning regulations shall provide for Mineral Resource Combining Zone Districts and/or other appropriate mineral zoning categories which shall be applied to lands found to contain important mineral deposits if development of the resource can occur in compliance with all other policies of the General Plan. Those regulations shall maintain Purposes A, B, C, D, and E of Policy 7.6.1.1.*

Policy 7.6.1.4 *The creation of new open space areas, including Ecological Preserves, common areas of new subdivisions, and recreational areas, shall include wildfire safety planning.*

3.9 Interim Oak Woodland Guidelines

As described above, General Policy 7.4.4.4 required development of a County wide oak woodland strategy. In 2008, the County adopted the *El Dorado County Oak Woodland Management Plan* (OWMP) to implement these General Plan oak woodland protection policies. The County's adoption of the OWMP was challenged in court and in 2012, the Appellate Court upheld the CEQA challenge to the OWMP and remanded to the Superior Court which directed the County to rescind approval of the OWMP until additional CEQA analysis is performed. As a result, only Option "A" of Policy 7.4.4.4 is applicable to oak woodland mitigation.

At the time this report was prepared, the County was in the process of updating the biological resources policies and implementation measures. That process is expected to be completed in May 2016. Currently, all impacts to oak woodlands and individual oak trees are evaluated in accordance with the *Interim Guidelines for Policy 7.4.4.4 (Option A)* (Interim Guidelines), which were adopted on November 9, 2006 and amended on October 12, 2007.

3.10 El Dorado Hills Community Services District

The El Dorado Hills Community Services District (EDHCSD) identifies goals, objectives, and policies regarding oak tree preservation through Article III *Preservation of Oak Trees, Oak Tree Removal*. These policies are enforced through the design review process, which applies to all developments for which the EDHCSD provides enforcement of the Covenants, Conditions, and Restrictions (CC&Rs). The Project site is adjacent to the Bass Lake Woodridge Village, which is subject to EDHCSD design review. Any work done within the village may be subject to review by the EDHCSD.

3.11 Existing Environmental Impact Report

An Environmental Impact Report (EIR) for the project was prepared in 1992 and Certified in 1993 (SCH #90021120). An addendum to the 1992 EIR was completed in 2001. The project evaluated in the 1992 EIR extended from Bass Lake Road to Green Valley Road. The current study area includes only the southern third of the project evaluated in the 1992 EIR. The impacts to biological resources, including oak trees, wetlands, and water quality, and associated biological mitigation measures (MM) were identified in the previous EIR documents. It was determined that implementation of the mitigation measures would reduce all impacts to less than significant levels.

The original project estimated that approximately 330 oak trees would be removed from the current study area. The removal of trees in oak woodlands was not considered significant due to the number of trees affected and because some of the trees were in poor condition. While the loss of oak trees in the riparian corridor was considered significant, it was determined that the impacts from a loss of trees in the riparian area could be reduced to less than significant levels by re-creating a riparian corridor at the south end of the realignment area and implementing the following mitigation measures:

MM F – 1: No vehicles, construction equipment, mobile offices or materials shall be parked or located within the driplines of oaks which are not within the realignment right-of-way.

MM F – 2: Oak trees not removed along the realignment route shall be fenced to protect them from damage. The fencing shall be placed beneath the driplines of the trees.

MM F – 3: Grade changes within the driplines of oak trees should be avoided. However, if grade changes must be made within the driplines of oak trees, the roots must be cleanly pruned back within 1 to 2 inches of the soil level.

MM F – 4: Trenching within the driplines of oak trees should be avoided. If trenching must be done, then the utilities should be placed in a conduit which is bored or tunneled though the soil.

MM F – 5: Replace native oaks that are removed with a like kind and species in the general vicinity of the removed trees. Replacement rate goal of 5 to 1 is recommended. This measure should be coordinated with adjacent property owners so that the replaced oaks are not likely to be removed during subsequent development of these areas.

MM F – 6: Implement mitigation measures G-1 through G-5 which are designed to protect wetland areas.

Two intermittent creeks and a pond were identified in the study area in the 1992 EIR. Loss of more than one acre of wetlands was considered a significant impact. The loss of the pond was determined to be less than significant due to its size, fluctuating water levels, and condition as well as the presence of similar habitat nearby. Impacts to wetlands along the realignment route were considered to be significant, but could be reduced to less than significant levels by implementation of the following mitigation measures.

MM G – 1:[1] To protect wetlands and streambeds, an Army Corps of Engineers (COE) Nationwide 26 Permit and a Department of Fish and Game (DFG) Section 1600 Streambed Alteration Permit must be obtained prior to the commencement of major construction. To mitigate for the loss of the pond habitat, the County, to the satisfaction of the COE and DFG, shall do one of the following:

1. Reconstruct a new pond similar in size to the existing pond and reconstruct *a* new natural-appearing intermittent creek north and south of the pond. The County must hire a wetland reconstruction specialist to oversee this work; or

2. Purchase credits in an approved mitigation bank to compensate for the loss of wetlands at a 1:1 ratio; or

3. Reconstruct a new pond similar in size to the existing pond and reconstruct a new natural-appearing intermittent creek in an off-site location to be approved by the COE and DFG. The County must hire a wetland reconstruction specialist to oversee this work.

The 1992 EIR found that impacts associated with stormwater runoff carrying construction-related sediment in the short-term and transportation-related pollutants, including oil, gasoline, grease, and heavy metals in the long-term, could be reduced to less than significant with implementation of the mitigation measures listed below.

[1] Original Mitigation Measure G-1, G-2, and G-3 were combined to form G-1 in the 2001 addendum.

MM G – 4: Site-specific erosion and drainage control measures shall be developed and implemented as part of future roadway construction. Measures include, but are not limited to, limiting removal of vegetation around construction areas, minimizing exposure of bare soils, replanting disturbed soils with suitable native species, controlling runoff, preventing sedimentation from entering drainages, and limiting construction to dry seasons.

MM G – 5: Equipment fueling and chemical storage areas shall be sited away from active stream courses.

4.0 METHODS

To determine existing site conditions and the potential for special-status or other sensitive biological resources to be present within the study area, available information pertaining to the natural resources of the region was reviewed. All references reviewed for this assessment are listed in the **References** section. Site-specific information was reviewed including:

- California Department of Fish and Wildlife (CDFW). 2014. *California Natural Diversity Data Base*. (CNDDB: *Buffalo Creek, Clarksville, Coloma, Folsom, Folsom SE, Latrobe, Pilot Hill, Rocklin, and Shingle Springs* quadrangles), Sacramento, CA. [Accessed 6/12/2014];

- California Native Plant Society (CNPS). 2014. *Inventory of Rare and Endangered Plants* (online edition, v8-01a), (CNPS: *Buffalo Creek, Clarksville, Coloma, Folsom, Folsom SE, Latrobe, Pilot Hill, Rocklin, and Shingle Springs* quadrangles). [Accessed 6/12/2014];

- Natural Resource Conservation Service (NRCS). 1974. *Soil Survey of El Dorado Area, California*. U.S. Department of Agriculture.; and

- U.S. Fish and Wildlife Service (USFWS). 2014. *Federal Endangered and Threatened Species that may be affected by Projects in the Clarksville 7.5-minute series Quadrangle. Sacramento, CA*. [Accessed 06/12/2014].

Foothill Associates' biologists conducted a field assessment of portions of the study area on June 24, 2014.[2] The publicly-owned portion of the site east of the existing Bass Lake Road was systematically surveyed on foot with binoculars to ensure total search coverage, with special attention given to identifying those portions of the site with the potential for supporting special-status species and sensitive habitats. The residential properties north of Bass Lake Road were surveyed with binoculars and using available aerial photos and Google Streetview Imagery. During the field surveys, biologists recorded plant and animal species observed, and characterized biological communities occurring on the project site. Previous environmental documents for this site and the Silver Springs Subdivision, located immediately north of the site, were also reviewed.

[2] Portions of the project site are located within private property. Permission to access certain properties for the purposes of environmental studies associated with the project was denied by property owners. Therefore, some properties were not accessible for pedestrian surveys. Observations from adjacent accessible areas and interpretation of aerial photography and other information provided sufficient information for the biological resources assessment.

5.0 RESULTS

5.1 Site Location and Description

The study area is located in western El Dorado County, California. The project site is located approximately two miles north of U.S. Highway 50. The study area is located within Township 10 North, Range 9 East, Section 32 of the *Clarksvill*e USGS 7.5-minute series quadrangle (**Figure 1**). Three large-lot, rural residential properties are located adjacent to the proposed new segment of Silver Springs Parkway. Residential properties are also located south and east of the proposed Silver Springs Parkway/Bass Lake Road intersection.

5.2 Project Description

The project will extend Silver Springs Parkway as a two-lane road south from the southern terminus of the recently constructed northern segment of Silver Springs Parkway to Bass Lake Road. The project will also realign Bass Lake Road from south of the Bass Lake Road/Madera Way intersection north to the new intersection that would be constructed at Bass Lake Road/Silver Springs Parkway. The project includes installation of Class II bicycle lanes and concrete sidewalks on both sides of the parkway, and a center median with turn pockets for driveway access. The project will reconstruct the existing intersection of Bass Lake Road and Hill Road, to become a new four-way intersection with Bass Lake Road forming the east and south legs, Silver Springs Parkway forming the north leg, and a western leg that will terminate immediately west of the intersection to a private driveway.

The new segment of Silver Springs Parkway will be approximately 1,400 feet in length, and the reconstructed segments of Bass Lake Road south and east of the new intersections are approximately 800 and 500 feet in length, respectively. Silver Springs Parkway will be constructed within a right-of-way approximately 100 feet in width and will be constructed with a 16-foot center median, two 14-foot vehicle lanes (one in each direction), and shoulders/Class II bicycle lanes (including drainage gutter) 6 feet wide on each side of the roadway. Concrete sidewalks will be installed along both sides of the road consisting of a 6-foot sidewalk adjacent and parallel to the eastern side of the road and an 8-foot meandering sidewalk on the west side. The sidewalks will connect in the north with sidewalks along the northern segment of Silver Springs Parkway and, in the south, will terminate on Bass Lake Road south and east of the Silver Springs Parkway intersection. Three potential construction staging areas are identified for the project, one or more of which could be used for vehicle and equipment staging and other activities during construction (see **Figure 2 — Proposed Project**).

5.2.1 Topography and Drainage

The study area generally slopes from the south to the north. Elevation ranges from 1,230 feet above mean sea level (MSL) in the south to 1,190 feet above MSL in the north.

The study area is located within the Upper American River Watershed. Intermittent drainages were identified in the project area in the 1992 EIR. These drainages flow northwest to Green Springs Creek, which flows to New York Creek and thence into Folsom Reservoir, the nearest traditionally navigable water.

Two intermittent drainages and a pond were identified in the study area in the 1992 EIR. Due to access limitations, the pond and intermittent drainages could not be directly surveyed through on-site pedestrian surveys for this assessment. Review of existing literature and aerial imagery suggests that the pond was created by damming the intermittent drainages. All of these features are located in the riparian woodland, as discussed in Section 5.2.3. For the purposes of this Biological Resources Assessment, all of these features are assumed to be jurisdictional waters of the U.S. and State.

5.2.2 Soils

The Natural Resources Conservation Service (NRCS) has mapped four soil units on the site (**Figure 3 — Soils**). The soil units that occur on the site include the following: **Rescue Clay, Clayey Variant**, **Rescue Sandy Loam, 2 to 9 Percent Slopes**, **Rescue Very Stony Sandy Loam, 3 to 15 Percent Slopes**, and **Serpentine Rock Land**. General characteristics associated with these soils types are described below (NRCS 2014).

- **Rescue Clay, Clayey Variant**: This poorly-drained soil is found between 500 and 1500 feet in elevation. They are formed by layers of clay and clay loam underlain by igneous rock at a depth of more than 40 inches. These soils are often found in wet drainageways and swales. This soil is not considered prime farmland. The hydric soils list for El Dorado County does not identify this soil type as hydric (USDA, NRCS, 2014).

- **Rescue Sandy Loam, 2 to 9 Percent Slopes**: This soil is found between 800 and 2000 feet in elevation. It is a relatively deep, well-drained soil, averaging approximately 66 inches to bedrock. With irrigation, this soil is considered prime farmland. The hydric soils list for El Dorado County does not identify this soil type as hydric (USDA, NRCS, 2014).

- **Rescue Very Stony Sandy Loam, 3 to 15 Percent Slopes**: This soil is similar to Rescue Sandy Loam, but typically has more stone and clay intrusions. The bedrock is slightly shallower, typically located between 55 and 50 inches below the surface. This soil is not considered prime farmland. The hydric soils list for El Dorado County does not identify this soil type as hydric (USDA, NRCS, 2014).

- **Serpentine Rock Land**: Serptentine rock land is found from 600 to 4,000 feet above MSL. It is consists of unweathered serpentine soils with thin surface soils. The hydric soils list for El Dorado County does not identify this soil type as hydric (USDA, NRCS, 2014).

5.3 Biological Communities

Six biological communities occur within the study area, including annual grassland, blue oak woodland, valley foothill riparian woodland, chaparral, pond, and developed areas (see **Figure 4 — Biological Communities**). The two intermittent drainages that occur within the study area flow through both the valley foothill riparian and blue oak woodlands. Almost half of the site is comprised of blue oak woodland and valley foothill riparian woodland. These communities provide habitat to a number of common species of wildlife and may provide potentially suitable habitat for special-status species. Each of the biological communities including associated common plant and wildlife species observed, or that are expected to occur within these communities, are described below.

5.3.1 Annual Grassland

A total of 6.9 acres of annual grassland is found in the study area, the majority of which is in the southern half of the site. Annual grassland is characterized primarily by an assemblage of non-native grasses and herbaceous species. These grasslands are dominated by introduced annual grasses that sprout in the fall, grow through the winter and spring, and set seed as the soil moisture declines. The annual grasslands on site are dominated by barbed goat grass (*Aegilops triuncialis*), yellow star thistle (*Centaurea solstitialis*), soft chess (*Bromus hordeaceus*), and mouse-tail grass (*Vulpia myuros*). Other species observed in the annual grassland include vetch (*Vicia* sp.), medusahead grass (*Elymus caput-medusae*), soaproot (*Chlorogalum* sp.), wild oat (*Avena barbata*), perennial ryegrass (*Festuca perennis*), Fitch's tarweed (*Centromadia fitchii*), and bur chervil (*Anthriscus caucalis*). There are scattered blue oaks (*Quercus douglasii*) and gray pines (*Pinus sabiniana*) located throughout the annual grassland. There are small patches of open space and bare ground throughout the annual grassland habitat that are typically no larger than 5 feet by 5 feet (**Figure 4**).

Annual grassland habitat supports breeding, foraging, and shelter habitat for several species of wildlife. Wildlife observed in the annual grasslands on the project site include western scrub jay (*Aphelocoma californica*), California ground squirrel (*Otospermophilus beecheyi*), coyote (*Canis latrans*), turkey vulture (*Cathartes aura*), and red-tailed hawk (*Buteo jamaicensis*).

5.3.2 Blue Oak Woodland

Approximately 6.2 acres of blue oak woodland is located in the northern and central areas of the study area between the annual grassland and the more dense riparian woodland. The canopy is dominated by blue oaks with scattered gray pines. The understory is open annual grassland with few shrubs or small trees.

Wildlife species observed in the blue oak woodland include western scrub jay, American crow (*Corvus brachyrhynchos*), and western fence swift (*Sceloporus occidentalis*).

5.3.3 Valley Foothill Riparian Woodland

The northeast portion of the study area is dominated by 4.8 acres of valley foothill riparian woodland along the intermittent drainages and around the pond, which is discussed below. This habitat is generally dominated by valley oak (*Quercus lobata*) and interior live oak (*Quercus wislizeni*), but also includes other riparian trees such as Fremont cottonwood (*Populus fremontii*), willow (*Salix* sp.), blue oak, and gray pine. Valley foothill riparian woodland generally has a dense understory of shrubs and small trees including poison oak (*Toxicodendron diversiloba*) and Himalayan blackberry (*Rubus armeniacus*). Edible fig (*Ficus carica*) was also observed in the valley foothill riparian woodlands on site.

Wildlife species observed in the valley foothill riparian woodlands on site include mule deer (*Odocoileus hemionus*). Other species commonly found in this habitat include western gray squirrel (*Sciurus griseus*) and red-shouldered hawks (*Buteo lineatus*).

5.3.4 Chaparral

Approximately 3.2 acres of chaparral habitat is found along the western portion of the northern half of the study area. This habitat is dominated by dense shrubs including Manzanita (*Arctostaphylos* sp.), buckbrush (*Ceanothus cuneatus*), deerbrush (*Ceanothus integerrimus*), coffeeberry (*Frangula californica*), yerba santa (*Eriodictyon californica*), and poison oak. Small clusters of gray pines and blue oaks are scattered throughout the brush.

Wildlife species observed in the chaparral include black phoebe (*Sayornis nigricans*), ash-throated flycatcher (*Myiarchus cinerascens*), and spotted towhee (*Pipilo maculatus*).

5.3.5 Pond

An approximately 0.6-acre pond is located in the northern half of the study area, as shown on **Figure 4**. As documented in the 1992 EIR, this pond was created by construction of a 10-foot high dam across a seasonal drainage. The pond is thought to be fed by a combination of spring inflow and irrigation runoff. A review of historic aerial photos shows that the water level in the pond can fluctuate significantly over the course of a year. Depending on rainfall and the amount of irrigation runoff, it is possible that the pond may dry completely in some years, although it is thought to contain water year-round in most years.

Although the pond could not be directly observed as part of this survey due to property access limitations, wildlife species observed and typical at other ponds in the region include Canada goose (*Branta canadensis*), killdeer (*Charadrius vociferus*), mallard (*Anas platyrhynchos*), and western pond turtle (*Actinemys marmorata*).

5.3.6 Developed Area

The study area includes 4.8 acres of developed areas. This includes the existing Bass Lake Road and its adjacent landscaping and landscape improvements and access roads/driveways associated with three residences. Landscape species identified in the Bass Lake Road corridor include sweetgum (*Liquidambar styraciflua*), black locust (*Robinia pseudoacacia*), ceanothus (*Ceanothus* sp.), and redbud (*Cercis occidentalis*).

5.4 Special-Status Species

Special-status species are plant and animal species that are afforded special recognition by federal, State, or local resource agencies or organizations. Listed and special-status species are of relatively limited distribution and may require specialized habitat conditions. Special-status species are defined as meeting one or more of the following criteria:

- Listed or proposed for listing under CESA or FESA;
- Protected under other regulations (e.g. Migratory Bird Treaty Act);
- CDFW Species of Special Concern;
- Identified as species of concern by CNPS; or
- Receive consideration during environmental review under CEQA.

Special-status species considered for this analysis are based on queries of the CNDDB and the online versions of the USFWS and CNPS species occurrence lists for the 7.5-minute USGS *Buffalo Creek, Clarksville, Coloma, Folsom, Folsom SE, Latrobe, Pilot Hill, Rocklin,* and *Shingle Springs* topographic quadrangles (**Table 1**). **Figure 5 — CNDDB Query Results** depicts the locations of special-status species recorded in the CNDDB within five miles of the study area. **Table 1** includes, the common name and scientific name for each species, regulatory status (federal, State, local, CNPS), habitat descriptions, and potential for occurrence on the project site. The following set of criteria has been used to determine each species potential for occurrence within the study area:

- **Present**: Species known to occur on the site, based on CNDDB records, and/or was observed on the site during the field survey(s).

- **High**: Species known to occur on or near the site (based on CNDDB records within 8 km or 5 mi, and/or based on professional expertise specific to the site or species) and there is suitable habitat on the site.

- **Low**: Species known to occur in the vicinity of the site, and there is marginal habitat onsite.-**OR**-Species is not known to occur in the vicinity of the site, however there is suitable habitat on the site.

- **None**: Species is not known to occur on or in the vicinity of the site and there is no suitable habitat for the species on the site.-**OR**-Species was surveyed for during the appropriate season with negative results.

Only those species that are known to be present or that have a high or low potential for occurrence are discussed further following **Table 1**.

Table 1 — Listed and Special-Status Species Potentially Occurring on the Site or in the Vicinity

Common Name	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
Plants			
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	--; --; --; 1B	Found in moist areas in valley and foothill grasslands and on the edge of vernal pools. Blooms March – May	**None**; there is no suitable habitat for this species onsite.
Big-scale balsamroot *Balsamorhiza macrolepis* var. *macrolepis*	--; --; --; 1B	Chaparral, cismontane woodland, valley and foothill grassland, mixed oak woodland and forest, purple needlegrass grassland, and sometimes in serpentinite soils from 300 to 5,100 feet above MSL. Blooms from March – June.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Bisbee Peak rush-rose *Helianthemum suffrutescens*	--; --; --; 3	Rocky hillsides in chaparral areas between 250 and 2200 feet. Often associated with gabbro soil types in burned or disturbed areas. Blooms from April - August. Eleven CNDDB occurrences within 5 miles of the project area.	**High**; there is suitable habitat on site and multiple occurrences within 5 miles.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	--; CE; --; 1B	Clay soils around the margins of marshes and swamps and in vernal pools.	**None**; there is no suitable habitat for this species onsite.
Brandegee's clarkia *Clarkia biloba* ssp. *brandegeeae*	--; --; --; 4	Chaparral, foothill woodlands, and conifer forest, often roadcuts from 245 to 3000 feet above MSL. Usually in dry areas. Blooms May – July. Three CNDDB occurrences within 5 miles of the project area.	**High**; there is suitable habitat on site and multiple occurrences within 5 miles.
Brewer's calandrinia *Calandrinia breweri*	--; --; --; 4	Disturbed or burned areas in chaparral or coastal scrub with sandy or loamy soils between 30 and 4000 feet. Blooms March – June.	**Low**; there is potentially suitable habitat for this species onsite but no occurrences within 5 miles of the site.
Dwarf downigia *Downingia pusilla*	--; --; --; 2	Moist valley and foothill grasslands and vernal pools. Blooms March – May.	**None**; there is no suitable habitat for this species onsite.
El Dorado bedstraw *Galium californicum* ssp. *sierrae*	FE; CR; SLC; 1B	Open pine forests and oak woodlands between 300 and 2000 feet; associated with gabbro soils. Blooms May – June.	**High**; there is suitable habitat on site and twelve known occurrences within 5 miles.

Common Name	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
El Dorado County mule ears *Wyethia reticulata*	--; -- ;--; 1B	Wooded slopes and chaparral between 1000-1500 feet above MSL. Usually associated with gabbro soils. Blooms April – August.	**High**; there is suitable habitat on site and 23 known occurrences within 5 miles.
Fresno ceanothus *Ceanothus fresnensis*	--; --; --; 4	Openings in cismontane woodland, lower montane coniferous forest, from 3300 to 6000 feet in elevation. Blooms May – July.	**None**; site is below known elevation range for this species.
Hernandez bluecurls *Trichostema rubisepalum*	--; --; --; 4	Gravelly volcanic or serpentine soil in broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest and vernal pools, from 600 to 2900 feet in elevation. Blooms June – August.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Humboldt lily *Lilium humboldtii* ssp. *humboldtii*	--; --; --; 4	Openings in chaparral and cismontane woodland and lower montane coniferous forest from 360 to 3400 feet in elevation. Blooms May – July.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Jepson’s onion *Allium jepsonii*	--; --; --; 1B	Serpentine soils in chaparral, lower montane coniferous forest, and cismontane woodland between 950 and 4400 feet. Blooms April – August.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Jepson’s woolly sunflower *Eriophyllum jepsonii*	--; --; --; 4	Chaparral, cismontane woodland, and coastal scrub between 650 and 3400 feet. Sometimes on serpentine soils. Blooms April - June	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Layne’s butterweed (=ragwort) *Packera layneae*	FT; CR; --; 1B	Dry pine woodlands, oak woodlands, or chaparral areas associated with rocky serpentine or gabbroic soils. Blooms April – August.	**High**; there is suitable habitat on site and 23 known occurrences within 5 miles.
Legenere *Legenere limosa*	--; CT; --; 1B	Vernal pools between 0 and 2640 feet. Blooms April – June.	**None**; there is no suitable habitat for this species onsite.
Parry’s horkelia *Horkelia parryi*	--; --; --; 1B	Open chaparral and foothill woodland between 250 and 3500 feet. Often on Ione formation soils. Blooms April – September.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.

Common Name	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
Pincushion navarretia *Navarretia myersii* ssp. *myersii*	--; --; --; 1B	Vernal pools in valley grassland, between 60 and 1100 feet. Blooms April – May.	**None**; there is no suitable habitat for this species onsite.
Pine Hill ceanothus *Ceanothus roderickii*	FE; CR; --; 1B	Serpentine or gabbroic soils in chaparral or woodland between 800 and 2100 feet. Blooms April – June.	**High**; there is suitable habitat on site and seven known occurrences within 5 miles.
Pine Hill flannelbush *Fremontodendron decumbens*	FE; CR; --; 1B	Chaparral and oak and pine woodlands rocky serpentine or gabbroic soils between 1400 and 2500 feet. Blooms April – July.	**High**; there is suitable habitat on site and seven known occurrences within 5 miles.
Red Hills soaproot *Chlorogalum grandiflorum*	--; --; --; 1B	Chaparral, woodland, and coniferous forest between 800 and 4100 feet. Usually associated with gabbro or serpentine soils.	**High**; there is suitable habitat on site and eight known occurrences within 5 miles.
Sacramento orcutt grass *Orcuttia viscida*	FE; CE; --; 1B	Deep vernal pools between 100 and 330 feet. Blooms April – September.	**None**; there is no suitable habitat for this species onsite.
Sanborn's onion *Allium sanbornii* var. *sanbornii*	--; --; --; 4	Chaparral, cismontane woodland, and coniferous forest on gravelly, usually serpentine soils from 850 to 5000 feet elevation. Blooms May – September.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Sanford's arrowhead *Sagittaria sanfordii*	--; --; --; 1B	Freshwater marsh, swamps, and similar quiet shallow freshwater areas between 0 and 2150 feet. Blooms May – October.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Slender orcutt grass *Orcuttia tenuis*	FT; CE; --; 1B	Vernal pools, often with gravelly substrate, between 120 and 5800 feet. Blooms May – October.	**None**; there is no suitable habitat for this species onsite.
Starved daisy *Erigeron miser*	--; --; --; 1B	Rocky ground in upper montane coniferous forest from 6000 to 8650 feet in elevation. Blooms June – October.	**None**; site is below known elevation range for this species.
Stebbins' morning glory *Calystegia stebbinsii*	FE; CE; --; 1B	Serpentine or gabbroic soils in cismontane woodlands and openings in chaparral between 600 and 3600 feet. Blooms April – July. .	**High**; there is suitable habitat on site and seven known occurrences within 5 miles.
Streambank spring beauty *Claytonia parviflora* ssp. *brandegeeae*	--; --; --; 4	Rocky outcrops in cismontane woodland between 825 and 4000 feet. Blooms February – May.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.

Common Name	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
Tuolumne button-celery *Eryngium pinnatisectum*	--; --; --; 1B	Wet areas in cismontane woodland and lower montane coniferous forest; and vernal pools between 230 and 3020 feet. Blooms May – August.	**None**; there is no suitable habitat for this species onsite.
Wildlife			
Invertebrates			
Alabaster Cave harvestman *Banksula californica*	--; CSC; --; --	Caves. Only found in Alabaster cave.	**None**; there is no suitable habitat for this species onsite.
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	--; CSC; --; --	Upland habitat near vernal pools, swales, and ephemeral freshwater habitat.	**None**; there is no suitable habitat for this species onsite. One CNDDB occurrence within 5 miles of the project area.
California linderiella *Linderiella occidentalis*	--; CSC; --; --	Vernal pools, swales, and ephemeral freshwater habitat.	**None**; there is no suitable habitat for this species onsite.
Cosumnes spring stonefly *Cosumnoperla hypocrena*	--; CSC; --; --	Freshwater intermittent streams in the American and Cosumnes River basins.	**Low**; potential suitable habitat in riparian areas, but no known occurrences within 5 miles.
Hairy water flea *Dumontia oregonensis*	--; CSC; --; --	Vernal pools, swales, and ephemeral freshwater habitat.	**None**; there is no suitable habitat for this species onsite.
Midvalley fairy shrimp *Branchinecta mesovallensis*	--; CSC; --; --	Vernal pools, swales, and ephemeral freshwater habitat.	**None**; there is no suitable habitat for this species onsite.
Ricksecker's water scavenger beetle *Hydrochara rickseckeri*	--; CSC; --; --	Vernal pools, swales, and ephemeral freshwater habitat.	**None**; there is no suitable habitat for this species onsite.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT; --; --; --	Blue elderberry shrubs usually associated with riparian areas.	**Low**; no elderberry shrubs were observed on site, but shrubs may be present in riparian area.
Vernal pool fairy shrimp *Branchinecta lynchi*	FT; --; --; --	Vernal pools, swales, and ephemeral freshwater habitat.	**None**; there is no suitable habitat for this species onsite. One CNDDB occurrence within 5 miles of the project area.
Vernal pool tadpole shrimp *Lepidurus packardi*	FE; --; --; --	Vernal pools, swales, and ephemeral freshwater habitat.	**None**; there is no suitable habitat for this species onsite.

Common Name	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
Amphibians/Reptiles			
California red-legged frog *Rana draytonii*	FT; CSC; --; --	Requires a permanent water source and is typically found along quiet, slow-moving streams, ponds, or marsh communities with emergent vegetation.	**High**; potential suitable habitat in riparian areas and pond on site and one known occurrence within 5 miles.
California tiger salamander *Ambystoma californiense*	FT; CT; --; --	Ponded water required for breeding. Adults spend summer in small mammal burrows.	**None**; there is no suitable habitat for this species onsite.
Coast (California) horned lizard *Phrynosoma blainvillii*	FT; CT; --; --	Grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose sandy soil below 4000 feet. Often found in lowlands along sandy washes with scattered shrubs and along dirt roads, and frequently found near ant hills.	**High**; there is suitable habitat on site and four known occurrences within 5 miles.
Giant garter snake *Thamnophis gigas*	FT; CT; --; --	Agricultural wetlands and other wetlands such as irrigation and drainage canals, low gradient streams, marshes, ponds, sloughs, small lakes, and their associated uplands. Upland habitat should have burrows or other soil crevices suitable for snakes to reside during their dormancy period (November – mid March).	**None**; there is no suitable habitat for this species onsite.
Foothill yellow-legged frog *Rana boylii*	--; CSC; --; --	Typically found in slow-moving streams or channels with rocky or muddy bottoms.	**Low**; there is potential habitat in riparian areas on the site, but no known occurrences within 5 miles.
Western pond turtle *Actinemys marmorata*	--; CSC; --; --	Agricultural wetlands and other wetlands such as irrigation and drainage canals, low gradient streams, marshes, ponds, sloughs, small lakes, and their associated uplands.	**High**; potential suitable habitat in riparian areas and pond on site and one known occurrence within 5 miles.
Western spadefoot *Spea hammondii*	--; CSC; --; --	Open grasslands and woodlands. Requires vernal pools or seasonal wetlands for breeding.	**None**; there is no suitable habitat for this species onsite.

Common Name	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
Fish			
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	FT; CT; --; --	Sacramento and San Joaquin Rivers and their tributaries.	**None**; there is no suitable habitat for this species onsite.
Central Valley winter-run Chinook salmon *Oncorhynchus tshawytscha*	FE; CE; --; --	Sacramento and San Joaquin Rivers and their tributaries.	**None**; there is no suitable habitat for this species onsite.
Central Valley steelhead *Oncorhynchus mykiss*	FT; --; --; --	Sacramento and San Joaquin Rivers and their tributaries.	**None**; there is no suitable habitat for this species onsite.
Delta smelt *Hypomesus transpacificus*	FT; CE; --; --	Sacramento and San Joaquin Rivers and their tributaries.	**None**; there is no suitable habitat for this species onsite.
Birds			
Bald eagle *Haliaeetus leucocephalus*	FD; CFP; --; -- (Nesting & Wintering)	Nesting restricted to the mountainous habitats near permanent water sources in the northernmost counties of California, the Central Coast Region, and on Santa Catalina Island. Winters throughout most of California at lakes, reservoirs, river systems, and coastal wetlands.	**None**; there is no suitable habitat for this species onsite. One CNDDB occurrence within 5 miles of the project area.
Bank swallow *Riparia riparia*	--; CT; --; --	Nests in riverbanks and forages over riparian areas and adjacent uplands.	**None**; there is no suitable habitat for this species onsite.
California black rail *Laterallus jamaicensis coturniculus*	--; CT; --; --	Saltwater, brackish, and freshwater marshes.	**None**; there is no suitable habitat for this species onsite.
Cooper's hawk *Accipiter cooperii*	--; CSC; --; -- (nesting)	Nests in riparian corridors. Forages in woodlands and riparian areas.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Double-crested cormorant *Phalacrocorax auritus*	--;CSC;--;-- (nesting colony)	Colonial nester in tall trees along lake margins and on sequestered islets.	**None**; there is no suitable nesting habitat for this species onsite.
Golden eagle *Aquila chrysaetos*	--; CFP; --; --	Open and semi-open areas up to 12,000 feet in elevation. Builds stick nests on cliffs, in trees, or on man-made structures.	**Low**; there is marginal habitat on site and one occurrence within 5 miles.

Common Name	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
Grasshopper sparrow *Ammodramus savannarum*	--; CSC; --; -- (nesting)	Frequents dense, dry, or well drained grassland, especially native grassland. Nests at base of overhanging clump of grass.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Great blue heron *Ardea herodias*	--; CSC; --; -- (nesting colony)	Variety of habitats close to bodies of water including fresh and saltwater marshes, wet meadows, lake edges and shorelines. Colonial nester in tall trees, cliff sides and sequestered spots on marshes.	**None**; there is no suitable nesting habitat for this species onsite.
Great egret *Ardea alba*	--; CSC; --; -- (nesting colony)	Found in salt and freshwater marshes of significant size, marshy ponds and tidal flats.	**None**; there is no suitable nesting habitat for this species onsite.
Merlin *Falco columbaris*	--; CSC; --; -- (wintering)	Found in variety of relatively open habitats often near water and tree stands.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Osprey *Pandion haliaetus*	--; CSC; --; -- (nesting)	Occur along the ocean shore, bays, freshwater lakes and larger streams. Large nests are built in tree tops within 15 miles of good fish-producing body of water.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Purple martin *Progne subis*	--; CSC; --; -- (nesting)	Often nests in tall, old trees near body of water in open forests, woodlands, and riparian areas.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Swainson's hawk *Buteo Swainsoni*	--; CT; --; --	Nests in isolated trees or riparian woodlands adjacent to suitable foraging habitat (agricultural fields, grasslands, etc.) in Central Valley.	**None**; there is no suitable habitat for this species onsite.
Tricolored blackbird *Agelaius tricolor*	--; CSC; --; -- (nesting colony)	Nests in dense blackberry, cattail, tules, willow, or wild rose within emergent wetlands throughout the Central Valley and foothills surrounding the valley.	**None**; there is no suitable nesting habitat for this species onsite. One CNDDB occurrence within 5 miles of the project area.
Western burrowing owl *Athene cunicularia hypugaea*	--; CSC; --; -- (burrowing sites and some wintering sites)	Nests in burrows in the ground, often in old ground squirrel burrows or badger, within open dry grassland and desert habitat.	**Low**; annual grassland provides potential habitat and one known occurrence within 5 miles. However, suitable burrows not observed onsite during biological assessment.

Common Name	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
White-tailed kite *Elanus leucurus*	--; CFP; --; -- (nesting)	Nests in isolated trees or woodland areas with suitable open foraging habitat.	**High**; there is suitable habitat on site and two occurrences within 5 miles.
Other Raptors (Hawks, Owls and Vultures) and Migratory Birds	MBTA and §3503.5 Department of Fish and Game Code	Nests in a variety of communities including cismontane woodland, mixed coniferous forest, chaparral, montane meadow, riparian, and urban communities.	**High**; raptors were observed onsite during the biological assessment and woodlands provide potential nesting habitat.
Mammals			
American Badger *Taxidea taxus*	--; CSC; --; --	Found in a variety of grasslands, shrublands, and open woodlands throughout California with friable soils.	**None**; very rocky soils onsite are unsuitable habitat and no known occurrences within 5 miles.
Fisher *Martes pennanti*	FC; CSC; --; --	Large areas of dense coniferous forests and deciduous; riparian habitats with >50% canopy closure.	**None**; riparian habitat is small and fragmented and no known occurrences within 5 miles.
Pallid bat *Antrozous pallidus*	--; CSC; --; --	Most common in open, dry habitats with rocky areas for roosting. Roosts in crevices and hollows in trees, rocks, cliffs, bridges, and buildings.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.
Silver-haired bat *Lasionycteris noctivagans*	--; CSC; --; --	Temperate, northern hardwoods with ponds or streams nearby. The typical day roost for the bat is behind loose tree bark.	**Low**; there is potential habitat on the site, but no known occurrences within 5 miles.

Federally-Listed Species:		**California State Listed Species:**	**CNPS* Rank Categories:**
FE = federal endangered	PT = proposed threatened	CE = California state endangered	1A = plants presumed extinct in California
FT = federal threatened	FPD = proposed for delisting	CT = California state threatened	1B = plants rare, threatened, or endangered in California and elsewhere
FC = candidate	FD = delisted	CR = California state rare	2 = plants rare, threatened, or endangered in California, but common elsewhere
		CSC = California Species of Special Concern	3 = plants about which we need more information
			4 = plants of limited distribution
			Other Special-status Listing:
Source: Foothill Associates			SLC = species of local or regional concern or conservation significance

5.4.1 Listed and Special-Status Plants

Based on a records search of the CNDDB and the USFWS list, suitable habitat for special-status plant species occurs within the study area. The potential for occurrence has been determined for each species listed in **Table 1** based on field observations and literature review. Nine species have a *high* potential to be found within the study area: Bisbee Peak rush-rose (*Helianthemum suffrutescens*), Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeeae*), El Dorado bedstraw (*Galium californicum* ssp. *sierrae*), El Dorado County mule ears (*Wyethia reticulata*), Layne's butterweed (*Packera layneae*), Pine Hill ceanothus (*Ceanothus roderickii*), Pine Hill flannelbush (*Fremontodendron decumbens*), Red Hills soaproot (*Chlorogalum grandiflorum*), and Stebbins' morning glory, (*Calystegia stebbinsii*). The species that are considered to have a *low* potential on the site include the following: big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*), Brewer's calandrinia (*Calandrinia breweri*), Hernandez bluecurls (*Trichostema rubisepalum*), Humboldt lily (*Lilium humboldtii* ssp. *humboldtii*), Jepson's onion (*Allium jepsonii*), Jepson's woolly sunflower (*Eriophyllum jepsonii*), Parry's horkelia *(Horkelia parryi*), Sanborn's onion (*Allium sanbornii* var. *sanbornii*), Sanford's arrowhead (*Sagittaria sanfordii*) and streambank spring beauty (*Claytonia parviflora* ssp. *brandegeeae*).

Plant Species with High Potential for Occurrence

Bisbee Peak Rush-rose

Bisbee Peak rush-rose is listed by CNPS as a Rank 3 species with a possibility of changing to a Rank 2B. It is typically found in chaparral areas and is often found on serpentine, gabbroic, or lone soils. It is an evergreen shrub which flowers from April-June and is found at elevations ranging from 150-2750 feet above MSL. There are eleven records of this species occurring within five miles of the project site (**Figure 5**) (CDFW 2014). This species was not observed onsite during the biological assessment, which was conducted near the end of the bloom season, but not all areas of suitable habitat could be accessed. Due to the presence of suitable habitat and multiple occurrences in the vicinity, the potential for this species to occur on site is *high*.

Brandegee's Clarkia

Brandegee's clarkia has no State or federal status, but is listed by CNPS as a Rank 4. It is typically found in foothill woodlands and low elevation conifer forests (CNPS 2014). The blooming period is from May through June. There are three records of this species occurring within five miles of the project site (**Figure 5**) (CDFW 2014). While this species was not observed onsite during the biological assessment, which was conducted near the end of the bloom season, not all areas of suitable habitat could be accessed. Due to the presence of suitable habitat and multiple occurrences in the vicinity, the potential for this species to occur on site is *high*.

El Dorado Bedstraw

El Dorado bedstraw is listed as a State rare and federal endangered plant and by CNPS as a Rank 1B species. It is endemic to El Dorado County and gabbroic soils that occur there. They are most likely to occur on the Pine Hill intrusion serpentine soils. This plant species occurs in chaparral, cismontane woodland and lower coniferous forests from 300 to1800 above MSL. The identification period for this species is from May through June. There are twelve records of this species occurring within five miles of the project site (**Figure 5**) (CDFW 2014). While this species was not observed onsite during the biological assessment, which was conducted near the end of the bloom season, not all areas of suitable habitat could be accessed. Due to the presence of suitable habitat and multiple occurrences in the vicinity, the potential for this species to occur on site is *high*.

El Dorado County Mule Ears

El Dorado County mule-ears does not have California state or federal protection, but is considered rare, threatened, or endangered in California and elsewhere by the CNPS. This species occurs on rocky cismontane woodland, and valley and foothill grassland, from 300 to 1900 feet in elevation. It blooms from April to August. There are twelve records of this species occurring within five miles of the project site (**Figure 5**) (CDFW 2014). Although this species was not observed onsite during the biological assessment, which was conducted during the bloom season, not all areas of suitable habitat could be accessed. Due to the presence of suitable habitat and multiple occurrences in the vicinity, the potential for this species to occur on site is *high*.

Layne's Butterweed

Layne's butterweed, also known as Layne's ragwort, is listed on the CNDDB list as federally threatened, California State rare; and is ranked by CNPS as rare, threatened, or endangered in California and elsewhere. This species blooms from April through August and is found in chaparral, cismontane woodland, on serpentine or gabbroic substrate from 600 to 3,000 feet elevation. There are 23 records of this species occurring within five miles of the project site (**Figure 5**) (CDFW 2014). Although this species was not observed onsite during the biological assessment, which was conducted during the bloom season, not all areas of suitable habitat could be accessed. Due to the presence of suitable habitat and multiple occurrences in the vicinity, the potential for this species to occur on site is *high*.

Pine Hill Ceanothus

Pine Hill ceanothus is listed on the CNDDB list as federally endangered, California State rare and rare, threatened, or endangered in California and elsewhere by CNPS. It blooms from April through June. Typical habitat is dry, stony soils in chaparral areas, and is often associated with serpentine or gabbro soil types. There are seven records of this species occurring within five miles of the project site (**Figure 5**) (CDFW 2014). This species was not observed onsite during the biological assessment, which was conducted near the end of the bloom season, but not all areas of suitable habitat could be accessed. Due to the presence of suitable habitat and multiple occurrences in the vicinity, the potential for this species to occur on site is *high*.

Pine Hill Flannelbush

Pine Hill flannelbush is federally-listed as endangered and a CNPS Rank 1B species. Pine Hill flannelbush is typically found in rocky areas associated with gabbro soils. This species typically flowers from April through July. There are seven records of this species occurring within five miles of the project site (**Figure 5**) (CDFW 2014). While this species was not observed onsite during the biological assessment, which was conducted during the bloom season, not all areas of suitable habitat could be accessed. Due to the presence of suitable habitat and multiple occurrences in the vicinity, the potential for this species to occur on site is *high*.

Red Hills Soaproot

Red Hills soaproot is a perennial herb that occurs in open hillsides in chaparral communities, which is usually associated with gabbro or serpentine soils. This species blooms from May through June and does not have federal or State protection, but is ranked by CNPS as rare, threatened, or endangered in California and elsewhere. There are eight records of this species occurring within five miles of the project site (**Figure 5**) (CDFW 2014). Although this species was not observed onsite during the biological assessment, which was conducted near the end of the bloom season, not all areas of suitable habitat could be accessed. Due to the presence of suitable habitat and multiple occurrences in the vicinity, the potential for this species to occur on site is *high*.

Stebbins' Morning Glory

Stebbin's morning glory is listed on the CNDDB list as federally endangered and endangered by the State of California, and is considered rare, threatened, or endangered in California and elsewhere by CNPS. This species is found on open hillsides in chaparral communities and blooms between April and July. This plant is typically associated with gabbro soil types although it can be found on serpentine soils. There are seven records of this species occurring within five miles of the project site (**Figure 5**) (CDFW 2014). While this species was not observed onsite during the biological assessment, which was conducted during the bloom season, not all areas of suitable habitat could be accessed. Due to the presence of suitable habitat and multiple occurrences in the vicinity, the potential for this species to occur on site is *high*.

Plant Species with Low Potential for Occurrence

Big-scale Balsam-root

Big-scale balsam-root is an herbaceous perennial member of the sunflower family (Asteraceae). It has no State status, but is a federal species of local concern and it is on the CNPS Rank 1B. This species has large yellow flowering heads that bloom from March to June and leaves that arise from the ground. It differs, in part, from other balsam-roots by having coarsely serrate leaves. Big-scale balsam-root grows in open woodlands and grasslands at widely scattered locations in northern California, and will tolerate serpentine soil (CNPS 2014). There are no records for this species occurring within five miles of the study area (CDFW 2014) and this species was not observed onsite during the biological assessment, which occurred at the end of the bloom season. However, since not all areas of suitable habitat could be accessed, there is *low* potential for this species to occur.

Brewer's Calandrinia

Brewer's calandrinia is found in disturbed or burned areas in chaparral or coastal scrub with sandy or loamy soils between 30 and 4000 feet in elevation. This species has no State or federal status, but is listed by CNPS as a Rank 4 (CNPS 2014). It blooms with small fuchsia flowers from March to June. There are no records for this species occurring within five miles of the study area (CDFW 2014) and this species was not observed onsite during the biological assessment, which occurred at the end of the bloom season. However, since not all areas of suitable habitat could be accessed, there is *low* potential for this species to occur.

Hernandez Bluecurls

Hernandez bluecurls are associated with volcanic or serpentinite, gravelly soil in broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest and vernal pools, from 600 to 2900 feet in elevation. This species has no State or federal protection, but is considered uncommon in California by CNPS. It blooms from June through August. Although not known within five miles of the study area (CDFW 2014), this species may be found on soils and at the elevation similar to this site. This species was not observed onsite during the biological assessment, which occurred during the bloom season. However, since not all areas of suitable habitat could be accessed, there is *low* potential for this species to occur.

Humboldt Lily

Humboldt lily occurs in openings in chaparral and cismontane woodland and lower montane coniferous forest from 360 to 3400 feet in elevation. This species has no State or federal protection, but is considered uncommon in California by CNPS. It blooms from May through July. Although not found within five miles of the study area (CDFW 2014), there is suitable habitat on site. Although not observed onsite during the biological assessment, which occurred during the bloom season, since not all areas of suitable habitat could be accessed; there is *low* potential for this species to occur.

Jepson's Onion

Jepson's onion is listed as CNPS Rank 1B and blooms from April through August. This species is found on serpentine soils in chaparral, lower montane coniferous forest, and cismontane woodland. There are no records of this species occurring within five miles of the study area (CDFW 2014). This species was not observed onsite during the biological assessment, which was conducted during the bloom season. However, since not all areas of suitable habitat could be accessed, there is *low* potential for this species to occur on site.

Jepson's Woolly Sunflower

Jepson's wooly sunflower is a perennial herb that grows to 2-3 feet in height and has small clusters of 1-inch golden yellow flowers that bloom from April - June. It is listed as CNPS Rank 4, but has no State or federal protections. Typical habitat is chaparral, woodlands, and coastal scrub sometimes on serpentine soils. Most recorded occurrences of this plant are along the east side of the coast range. There are no records for this species within five miles of the study area (CDFW 2014) and the species was not observed onsite during the biological assessment, which was conducted near the end of the bloom season. However, since suitable habitat is present on site and not all areas of the study area could be accessed, the potential for this species to occur on the site is *low*.

Parry's Horkelia

Parry's horkelia, a perennial herb, is a CNPS Rank 1B species. It blooms from April through September. Typical habitat is chaparral and foothill woodlands. There are no records for this species within five miles of the study area (CDFW 2014) and the species was not observed onsite during the biological assessment, which was conducted during the bloom season. However, since suitable habitat is present on site and not all areas of the study area could be accessed, the potential for this species to occur on the site is *low*.

Sanborn's Onion

Sanborn's onion is a perennial bulb that is classified as a CNPS Rank 4 plant, but has no State or federal protection. An inflorescence of small white to pink flowers blooms on an 8 inch to 2 foot stem from May to September. It is usually found in gravelly serpentine soils in chaparral, woodlands, and coniferous forest. There are no records for this species within five miles of the study area (CDFW 2014) and the species was not observed onsite during the biological assessment, which was conducted during the bloom season. Since not all suitable habitat in the study area could be accessed, the potential for this species to occur on the site is *low*.

Sanford's Arrowhead

Sanford's arrowhead is an aquatic perennial herb that occurs in shallow, freshwater wetland features such as marshes, swamps, ponds, ditches, and streams within California. This species blooms from May through October and is considered mostly extirpated from the Central Valley (CNPS 2014). There are no records of this species within five miles of the study area (CDFW 2014). There is potential habitat for this species in the pond on the northern half of the site, which could not be surveyed during the biological assessment. Therefore, the potential for occurrence is *low*.

Streambank Spring Beauty

Habitat for the streambank spring beauty is rocky habitat in cismontane woodlands from 600 to 3400 feet in elevation. This species has no State or federal protection, but is considered uncommon in California by CNPS. It blooms from February through April. There are no recorded occurrences within five miles of the study area (CDFW 2014). Site surveys were conducted after the bloom season and all suitable habitats could not be accessed. There is suitable habitat on site and thus this species is considered to have a *low* potential to occur.

5.4.2 Listed and Special-Status Animals

Based on a records search of the CNDDB and the USFWS list, suitable habitat for special-status animal species occurs within the study area. The potential for occurrence for each species listed in **Table 1** has been determined based on field observations and literature review. The species that are considered to have a *high* potential to occur within the study area include: California red-legged frog (*Rana draytonii*), coast horned lizard (*Phrynosoma blainvillii*), western pond turtle (*Actinemys marmorata*), white-tailed kite (*Elanus leucurus*), and other raptors (hawks, owls, and vultures) and migratory birds. Species that are considered to have a *low* potential for occurrence include: Cosumnes spring stonefly (*Cosumnoperla hypocrena*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), foothill yellow-legged frog (*Rana boylii*), Cooper's hawk (*Accipiter cooperii*), golden eagle (*Aquila chrysaetos*), grasshopper sparrow (*Ammodramus savannarum*), Merlin (*Falco columbaris*), osprey (*Pandion haliaetus*), purple martin (*Progne subis*), western burrowing owl (*Athene cunicularia hypugaea*), pallid bat (*Antrozous pallidus*), and silver-haired bat (*Lasionycteris noctivagans*).

Animal Species with High Potential for Occurrence

<u>California Red-legged Frog</u>

The federally threatened California red-legged frog (CRLF) occurs primarily in ponds or pools of streams that retain water long enough for breeding and development of young (about 5 months). The adults often prefer dense, emergent or shoreline riparian vegetation closely associated with deep, still or slow-moving water, but may also be found in unvegetated streamside areas that provide shade and shelter. Other key habitat features include good water quality and absence of introduced predators such as bullfrogs and predatory fishes. CRLFs typically aestivate in small mammal burrows and moist leaf litter within 200 feet of aquatic habitat, and they can disperse through upland habitats for distances of one mile or more at any time of year. There is one record of this species occurring within five miles of the project site (**Figure 5**) (CDFW 2014). The pond is thought to be fed by a combination of spring inflow and irrigation runoff and typically contains water throughout the year. Water that typically ponds year-round is often inhabited by bull frogs and other fish, which are predators to the CRLF. However, since the pond was not able to be surveyed as part of this study due to private property access limitations, it is unknown whether bullfrogs and other fish inhabit the pond. Therefore, without verification of the presence of predator species, the potential for CRLF to occur within the study area is *high*.

<u>Coast Horned Lizard</u>

The coast horned lizard inhabits open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains from sea level to 8,000 feet in elevation. It is typically found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil. Often found in lowlands along sandy washes with scattered shrubs and along dirt roads, and frequently found near ant hills (Zeiner *et al.* 1988). There are four CNDDB record of this species within five miles of the study area (**Figure 5**)

(CDFW 2014). Coast horned lizard was not observed during the site survey. Patches of rocky bare soil in annual grassland and chaparral provide potential habitat for this species. Due to the presence of suitable habitat and multiple occurrences in the vicinity, the potential for this species to occur on site is *high*.

Western Pond Turtle

Western pond turtles require slow moving perennial aquatic habitats with suitable basking sites. Pond turtles have sometimes adapted to using irrigation ditches. Suitable aquatic habitat typically has a muddy or rocky bottom and has emergent aquatic vegetation for cover (Stebbins 2003). There is one record of western pond turtle within five miles of the study area (**Figure 5**) (CDFW 2014), and a large turtle that appeared to be a western pond turtle was observed in a pond immediately west of the study area. Although they could not be surveyed, the onsite pond and the two intermittent drainages in the study area may provide potential aquatic habitat for this species. Therefore the potential for this species to occur on the site is *high*.

White-tailed Kite

The white-tailed kite is a medium-sized raptor that is a yearlong resident in coastal and valley lowlands in California. White-tailed kite are monogamous and breed from February to October, peaking from May to August (Zeiner *et. al.* 1990). This species nests near the top of dense oaks, willows, or other large trees. There are two CNDDB records of white-tailed kite listed within five miles of the study area (**Figure 5**) (CDFW 2014). The species was not observed onsite during the biological assessment. However, the oak woodland onsite provides potential nesting habitat for this species, and the annual grassland onsite provides potential foraging habitat. Therefore, the potential for this species to occur on the site is *high*.

Raptors and Other Migratory Birds

Raptor species forage and nest in a variety of habitats throughout El Dorado County. The nests of raptors and most other birds are protected under the MBTA. Raptors are also protected by Section 3503.5 of the California Fish and Game Code, which makes it illegal to destroy any active raptor nest. The various habitats within the study area provide potential nesting and foraging habitat for raptors and other protected bird species. Although no active nests were observed on the site, a variety of avian species were observed. Raptors and other protected migratory birds have a *high* potential to occur within the study area.

Animal Species with Low Potential for Occurrence

Cooper's Hawk

Cooper's hawk is a summer resident in the Sierra foothills to southern California. It winters in the Central Valley. This species nests in woodland habitats with high canopy cover. It feeds primarily on small birds. This species nests in woodland areas often near water sources. The breeding season is typically March through August (Zeiner *et. al.* 1990). There are no CNDDB records for this species within five miles of the study area

(CDFW 2014) and the species was not observed onsite during the biological assessment. However, there is suitable breeding and foraging habitat within the oak woodland communities within the study area. Therefore, the potential for this species to occur on the site is *low*.

Cosumnes Spring Stonefly

The Cosumnes spring stonefly occurs in freshwater intermittent streams. The females lay hundreds or even thousands of eggs in a ball which they initially carry about on their abdomens, and later deposit into the water. The eggs typically take two to three weeks to hatch, but some species undergo diapause with the eggs remaining dormant throughout a dry season, and hatching only when conditions are suitable. Stoneflies usually live in areas with running water. Although there are no CNDDB records for this species within five miles of the study area (CDFW 2014), the intermittent drainages on site are potential habitat and there is *low* potential for occurrence.

Foothill Yellow-Legged Frog

The foothill yellow-legged frog is found in or near rocky streams in a variety of habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow types. Adults often bask on exposed rock surfaces near streams. When disturbed, they dive into the water and take refuge under submerged rocks or sediments. During periods of inactivity, especially during cold weather, individuals seek cover under rocks in the streams or on shore within a few meters of water. There are no known occurrences of this species within five miles of the study area (CDFW 2014) and this species was not observed on the site during the biological assessment, but the seasonal drainages may provide habitat. There is *low* potential for this species to occur within the study area.

Golden Eagle

Golden eagles are found throughout California in a variety of habitats including grasslands, open scrublands, and woodlands. Golden eagles are federal and State species of special concern and are a fully protected species in the state of California. They construct large stick nests on cliff faces and in large trees surrounded by open areas and may return to a nest location for multiple years (Zeiner *et. al*. 1990). Golden eagles typically feed on small mammals, birds, and reptiles. There is one record of this species nesting within five miles of the study area (**Figure 5**) (CDFW 2014). This species was not observed onsite during the biological assessment. Although the annual grasslands provide potential foraging habitat, the potential for this species to occur on site is *low*.

Grasshopper Sparrow

The grasshopper sparrow (*Ammodramus savannarum*) is a small sparrow commonly found in moderately open grasslands with scattered small shrubs. It primarily occurs as a summer resident in California, where it breeds from mid-March to August. It nests on the ground, often with a dome of overhanging grasses. There are no occurrences within five miles of the site (CDFW 2014). The grasslands on the site provide marginal habitat and there is *low* potential for this species to occur within the study area.

Merlin

The Merlin is a small, dark falcon. They are a rare to uncommon spring and fall transient and winter visitor throughout California. They typically arrive in late September and are gone by March (Small 1994). They occur in grasslands, savannahs, deserts, agricultural, and urban areas. There are no CNDDB records for this species within five miles of the study area (CDFW 2014). However, there is suitable foraging habitat in the study area. Therefore, the potential for this species to occur on the site is *low*.

Purple Martin

Purple martin is a type of swallow found in riparian woodlands and coniferous forests from March through September. They use existing cavities, such as abandoned woodpecker nests, nest boxes, or under bridges or structures for nesting. Purple martins eat insects, which are usually caught in the air, but they may also forage on the ground. The riparian woodland within the study area provides potential foraging and nesting habitat. There are no known occurrences of this species within five miles of the project site (CDFW 2014) and this species was not observed on the site during the site visit. There is *low* potential for this species to occur within the study area.

Valley Elderberry Longhorn Beetle

The USFWS has determined the range of the beetle to include the watersheds of the American, San Joaquin, and Sacramento Rivers and their tributaries up to approximately 3,000 feet above MSL (USFWS 1980). Typically, the beetles are found on elderberry shrubs within riparian plant communities. Some studies have found that multiple elderberry shrubs clumped together provide superior habitat for the beetle while isolated elderberry shrubs are less likely to support beetle populations. Typical plant species that co-occur with the elderberry shrubs include California sycamore (*Platanus racemosa*), willows (*Salix* spp.), blackberry (*Rubus* spp.), and poison oak (*Toxicodendron diversilobum*) (USFWS 1984). Beetles require elderberry stems with a basal diameter of at least 1 inch in order for the larvae to utilize the stems (USFWS 1999). The valley elderberry longhorn beetle depends on elderberry shrubs for its entire lifecycle. Adults are typically active from March through May during the flowering period of the elderberry shrub. The female lays its eggs on the leaves and stems of the elderberry shrub. The larvae emerge within a few days and burrow into the elderberry stem. The larvae feed on the stem pith until they pupate. When the host shrub begins flowering, the pupa emerges from the stem as an adult (Barr 1991). Although no elderberry shrubs were observed were observed within the study area, they may be present in the riparian woodland on the north section of the site where property access was limited. There are no known occurrences of the beetle within 5 miles of the study area (CDFW 2014). Therefore the potential for occurrence is *low*.

Western Burrowing Owl

Western burrowing owl is a small ground-dwelling owl that occurs in western North America from Canada to Mexico, and east to Texas, and Louisiana. Although in certain areas of its range western burrowing owls are migratory, these owls are predominantly non-migratory in California (Zeiner *et. al*. 1990). The western burrowing owl is an opportunistic forager, foraging on large arthropods, mainly beetle and grasshoppers, small mammals, reptiles, birds, and carrion. The breeding season for western burrowing owls occurs from March to August, peaking in April and May (Zeiner *et. al.* 1990). Western burrowing owls nest in burrows in the ground, often in old ground squirrel burrows. This owl is also known to use artificial burrows including pipes, culverts, and nest boxes. There is one recorded occurrence for this species within five miles of the study area (**Figure 5**) (CDFW 2014), though no burrowing owls or burrows were observed during the biological assessment. Additionally, very few potential burrow sites that could be utilized by western burrowing owl were observed during the field surveys. However, the annual grassland onsite does provide suitable habitat for this species to occur. In addition, the rubble piles within the annual grassland provide potential nesting habitat. Consequently, this species has a *low* potential to occur within the annual grassland community.

Special-Status Bat Species

Several special-status bat species, which are State Species of Concern, may be found within the project vicinity including: pallid bat (*Antrozous pallidus*), fringed myotis (*Myotis thysanodes*), Yuma myotis (*Myotis yumaensis*), long-legged myotis (*Myotis volans*), long-eared myotis (*Myotis evotis*), western small-footed myotis (*Myotis ciliolabrum*), hoary bat (*Lasiurus cinereus*), western red bat (*Lasiurus blossevillii*), and Townsend’s big-eared bat (*Corynorhinus townsendii*).

Three of the above species, fringed myotis, Yuma myotis, and Townsend’s big-eared bat roost primarily in caves or buildings. There are no suitable nesting sites for these species in the study area. Long-legged myotis roost in buildings and small pockets or crevices in rock outcroppings. Western small-footed myotis roost in caves, mine, tunnels, rock crevices or buildings, in or near forested areas. There may be suitable rock crevices or outcroppings for these two species on the northern portion of the site that could not be accessed during the biological assessment.

The remaining four species of bats are known to roost in trees. Long-eared myotis live in thinly forested areas and occasionally caves. Hoary bats live in wooded areas and hang in trees. Western red bat roosts primarily in trees, usually at edges of streams, fields, or urban areas. Pallid bats roost in rock crevices and caves and occasionally hollow trees and buildings.

There are no CNDDB records for any of these nine special-status bat species within five miles of the study area (CDFW 2014) and no bat species were observed onsite during the biological assessment. However, habitats on site provide suitable roosting and foraging opportunities for multiple species. Therefore, the potential is *low* for special-status bat species to occur on the site.

5.5 Sensitive Habitats

Sensitive habitats include those that are of special concern to resource agencies or those that are protected under CEQA, Section 1600 of the California Fish and Game Code, or Section 404 of the Clean Water Act. Additionally, sensitive habitats are protected under the specific policies outlined in the El Dorado County General Plan. Sensitive habitats within the study area include oak woodlands, riparian habitat, and potential waters of the U.S. (**Figure 4**).

5.5.1 Potential Jurisdictional Waters of the U.S.

Potential jurisdictional waters of the U.S. within the study area include a pond and two intermittent drainages. While 2.09 acres of wetlands were previously delineated and verified by the Corps in 1988 on the Silver Springs Subdivision, which includes the study area associated with the Bass Lake Road Realignment project, that delineation has expired and a new wetland delineation will be required to determine the specific current acreage of jurisdictional wetlands within the study area. Access permission for pedestrian surveys and a wetlands delineation was not granted during this biological resources assessment. However, review of aerial imagery and the previous delineation indicates that there are 0.6 acre of pond and an unknown acreage (perhaps up to 0.2 acres) of intermittent drainages.

5.5.2 Oak Woodlands

There are ~9.0 acres of oak canopy that occur within the blue oak woodland, riparian woodland, and portions of the chaparral (**Figure 4**). Thus, approximately 34% of the 26.4-acre Project site has oak woodland canopy.

5.5.3 Riparian Habitat

Riparian habitat is found along the two intermittent drainages and around the pond as well as in the valley-foothill riparian habitat. Impacts to riparian habitat are regulated by the California Department of Fish and Wildlife. As discussed previously, the limits of CDFW jurisdiction are the outermost bank or the edge of riparian vegetation, whichever is greater.

5.5.4 Wildlife Movement Corridors

Wildlife corridors are linear areas of undeveloped land or open space that link larger natural and open space areas. Wildlife corridors allow animals to travel from one habitat area to another during seasonal migrations, natural dispersion, or daily routine. Wildlife corridors are essential to the long-term stability of many species because they allow genetic mixing and recolonization of areas after catastrophic events, such as fire.

The El Dorado County General Plan identifies a number of Important Biological Corridors (IBC). The project site is not located within any existing IBC. Although a key wildlife crossing was indicated in the project area in a report prepared for the March 2015

General Plan Biological Policies Update Workshop, Bass Lake Road is also identified as a significant roadway (Dudek 2015). Since much of the surrounding area has been developed, the proposed project is not expected to have a significant negative effect on wildlife movement corridors.

6.0 IMPACTS AND MITIGATION RECOMMENDATIONS

As discussed previously, the study area consists of ±21 acres of land that includes primarily blue oak woodland, riparian woodland, annual grassland, and chaparral habitats. Known or potentially sensitive biological resources that could be within the study area that could be impacted by the project include:

- Potential habitat for nineteen special-status plant species;
- Potential habitat for Cosumnes spring stonefly;
- Potential habitat for valley elderberry longhorn beetle;
- Potential habitat for coast horned lizard;
- Potential habitat for California red-legged frog and foothill yellow-legged frog;
- Potential habitat for western pond turtle;
- Potential nesting sites and foraging habitat for raptors and other migratory birds (including white-tailed kite, Cooper's hawk, golden eagle, Merlin, grasshopper sparrow, and purple martin);
- Potential habitat for western burrowing owl;
- Potential habitat for special-status bat species; and
- Sensitive habitats, including potentially jurisdictional waters of the U.S., riparian habitat, and oak woodlands.

The proposed project would result in up to 13.5 acres of total ground disturbance, including 11.6 acres associated with construction of the roadway and related features and 1.9 acres of potential temporary construction staging areas. Of the total disturbance, 8.2 acres would be temporary ground disturbance during construction for activities such as mobilization and materials storage (including the temporary construction staging areas) and grading, and these areas would be seeded and revegetated following construction. Approximately, 5.3 acres of permanent disturbance would occur as a result of road paving, sidewalks, medians, and other project hardscape features (see **Figure 6**). **Table 2** lists the acreages of the biological communities identified on the project site, and identifies the estimated acreages of temporary and permanent disturbance of each that would occur as a result of the project. Temporary and permanent disturbance would have the potential to disturb or destroy sensitive habitats, resulting in significant impacts to adversely affected special-status species having the potential to occur on the project site.

Table 2 — Biological Resources Communities of Temporary and Permanent Impacts

Biological Community Type	Area within Study Area (acres)	Area of Permanent Disturbance (acres)	Area of Temporary Disturbance (acres)	Total Disturbance (acres)
Annual Grassland	6.8	0.27	2.68	2.95
Blue Oak Woodland	6.2	1.11	1.40	2.51
Riparian Woodland	4.8	2.00	1.40	3.40
Chaparral	3.2	0.11	0.60	0.71
Pond	0.6	0.57	0.03	0.60
Developed Areas	4.8	1.28	2.09	3.37
Total	**26.4**	**5.34**	**8.20**	**13.54**

6.1 Special-Status Plant Species

As discussed previously, portions of the project area contain suitable habitat for nineteen special-status plant species that are known to occur in the vicinity. State and federally listed species include El Dorado bedstraw, Layne's butterweed, Pine Hill ceanothus, Pine Hill flannelbush, and Stebbins' morning glory. Non-listed special-status species include big-scale balsamroot, Bisbee Peak rush-rose, Brandegee's clarkia, Brewer's calandrinia, El Dorado County mule ears, Hernandez bluecurls, Humboldt lily, Jepson's onion, Jepson's woolly sunflower, Parry's horkelia, Red Hills soaproot, Sanborn's onion, Sanford's arrowhead, and streambank spring beauty. Ground disturbance associated with the project would result in the temporary disturbance and permanent removal of 2.95 acres of annual grassland, 2.51 acres of blue oak woodland, 3.40 acres of riparian woodland, and 0.71 acres of chaparral, which provides habitat for potentially occurring listed and non-listed special status plants. Temporary disturbance and permanent removal would impact special-status plants, if present, through removal of the individuals and elimination of their habitat.

The biological assessment was conducted during the known bloom period for all species. However, it was the end of the bloom period for many of the species, there was abnormally low rainfall this year which may have caused some species to flower earlier than normal, and the entire study area was not surveyed due to property access limitations. Therefore, prior to construction, a qualified botanist should conduct two botanical surveys; one in either in April or May and the other in June. The results of these surveys should be documented in a letter report to the County. If no special-status plants are observed during the recommended botanical surveys, no additional measures are recommended.

If any of the non-listed special-status plants are identified within areas of potential construction disturbance, they should be avoided to the greatest extent feasible. If the plants cannot be avoided, the plants and/or the seedbank should be transplanted to a suitable habitat near the project site. If non-listed special status plants are found during the recommended botanical surveys, a qualified biologist should prepare an avoidance and mitigation plan detailing protection and avoidance measures, transplanting procedures, success criteria, and long-term monitoring protocols. In addition, a pre-construction worker awareness training should be conducted alerting workers to the presence of and protections for special-status plants.

If any federally-listed plants are identified within areas of potential construction disturbance, they should be avoided to the extent feasible. If the federally-listed plants cannot be avoided, Section 7 consultation would be required and a biological opinion from the USFWS would need to be obtained prior to transplantation and commencement of construction activities. If any state-listed plants occur within the project footprint, they should be avoided to the extent feasible. If the state listed plants cannot be avoided, an Incidental Take Permit would be required from the CDFW. Additional measures may be required through the consultation process with the CDFW and/or the USFWS, including compensatory mitigation or transplanting and monitoring.

6.2 Cosumnes Spring Stonefly

The two intermittent drainages on the north half of the site may provide suitable habitat for this species. If the intermittent drainages are proposed to be avoided, then no impacts to this species would occur. Any work within the intermittent drainages, including placing fill, installing culverts, or diverting the drainages, could be significantly impact this species if it is present. A qualified biologist should conduct a preconstruction survey for this species within 14 days prior to the initiation of construction activities within the intermittent drainages. If no Cosumnes spring stonefly is observed, this finding should be documented, and no additional measures would be needed.

If this species is found in the study area, a qualified biologist should relocate the species found within the proposed work area to a portion of the intermittent drainage downstream of the work area, if possible. A qualified biologist should be onsite during any instream work for the purpose of relocating any species found within the construction footprint to suitable habitat away from the construction zone. In addition, a pre-construction worker awareness training should be conducted alerting workers to the presence of and protections for the Cosumnes Spring stonefly.

6.3 Valley Elderberry Longhorn Beetle

Although no elderberry shrubs were observed within the southern portion of the study area, they may be present in the northern half of the site. If any elderberry shrubs are present within the site, they may be habitat for the valley elderberry longhorn beetle (VELB). Disturbance or removal of elderberry shrubs during vegetation clearing associated with project construction could destroy VELB, if present. Additionally, dust that may be generated during construction could have a negative effect on VELB in the area surrounding the project site.

Once access permission is obtained for the project site, potential disturbance areas and an additional area of at least 20 feet outside of potential disturbance areas should be surveyed for the presence of any elderberry shrubs. If no shrubs are found, no further VELB avoidance measures are required. If elderberry shrubs are found on the site, they should be inspected to determine their stem diameter at ground level and to determine if there is any evidence of VELB habitation, such as exit holes. The USFWS calls for a 100-foot buffer to be maintained around any existing elderberry shrub to prevent potential VELB habitat from being impacted. The USFWS considers any work within a 20-foot buffer of elderberry shrubs to be an adverse affect to VELB. If a 100-foot buffer cannot be maintained, the County should initiate consultation with the USFWS to determine avoidance, minimization, and mitigation measures. At minimum, construction fencing should be established around any shrubs proposed to be preserved that occur between 20 feet and 100 feet of construction activities. If any shrubs are proposed for removal, the elderberry shrubs should be transplanted according to USFWS guidelines to a suitable designated mitigation area and additional elderberry shrubs and associated riparian plant species should be planted in the designated mitigation area or the applicant should purchase compensatory mitigation. The USFWS suggests mitigation for impacts to any elderberry shrub with stems of greater than 1 inch diameter at ground level.

6.4 Coast Horned Lizard

No coast horned lizards were observed during the biological assessment. However, the annual grassland onsite provides potential habitat for this species. Vegetation clearing within the annual grassland could impact these species if present. In addition, construction equipment and vehicle movement could impact these species if present within the footprint.

It is recommended that a pre-construction survey be conducted for this species by a qualified biologist no more than 14 days prior to the initiation of construction activities. If no coast horned lizards are observed, a letter report should be prepared to document the survey, and no addition measures are recommended. If construction does not commence within 14 days of the pre-construction survey, or halts for more than 14 days, an additional survey is required prior to starting work.

If coast horned lizards are found onsite, CDFW and USFWS should be consulted regarding appropriate avoidance measures. Recommended avoidance measures include conducting a pre-construction worker awareness training and having a qualified biologist onsite during vegetation clearing activities within the annual grassland for the purpose of relocating any species found within the construction footprint to suitable habitat away from the construction zone. Additional mitigation for this species may also be required, as determined by the regulatory agencies.

6.5 California Red-legged Frog and Foothill Yellow-Legged Frog

Aquatic habitat within the project site, in particular the pond in the northern portion of the site may provide suitable habitat for California red-legged frog (CRLF) and/or foothill yellow-legged frog; however, due to property access restrictions it is undetermined at this time whether suitable habitat is present and occupied by the species. Vegetation clearing, grading, and fill/elimination of aquatic habitat could directly affect individuals of these species and could eliminate suitable habitat for these species. Direct or indirect impacts to individuals or their habitat during construction in the absence of appropriate incidental take authorization or mitigation would be a significant impact and a violation of the federal Endangered Species Act.

Once property access is obtained, the habitat should be evaluated and if suitable frog habitat exists, USFWS and CDFW should be consulted to determine acceptable survey protocol. Standard survey protocol for CRLF requires up to eight surveys consisting of two day and four night surveys during the breeding season (January – June) and one day and one night survey during the non-breeding season (July 1 – September 30). Since there is no standard survey protocol for foothill yellow-legged frog, standard visual encounter surveys should be used for this species. If either species is found on site, the USFWS and CDFW should be consulted, as required, to determine appropriate avoidance and minimization measures.

6.6 Western Pond Turtle

The pond and intermittent drainages and surrounding uplands within the project site may be suitable habitat for western pond turtle and they are known to occur in the vicinity. If any instream work is proposed within the two intermittent drainages, then this species could be impacted, if present. In addition, vegetation clearing and grading within the vicinity of the pond and surrounding uplands could impact this species, if present. The pond will be filled by the proposed project, permanently eliminating this habitat.

A pre-construction survey for western pond turtle should be conducted within 14 days of the initiation of construction by a qualified biologist prior to any construction activity that would directly impact pond or stream habitat or disturb the ground within 300 feet of aquatic habitat. If no western pond turtle are observed, a letter report should be prepared to document the survey, and no additional measures are recommended. If construction does not commence within 14 days of the pre-construction survey or halts for more than 14 days a new survey should be conducted prior to reinitiating construction.

If western pond turtles are found during the pre-construction survey, then a qualified biological monitor should be on site during initial clearing and grading within 300 feet of a drainage, pond, or other aquatic habitat,. The biological monitor will relocate any western pond turtles found within the construction footprint to suitable habitat away from the construction zone, but within the vicinity of the study area, if required. In addition, a pre-construction worker awareness training should be conducted alerting workers to the presence of and protections for the western pond turtle.

6.7 Raptors and Other Migratory Birds

Several species of raptors and other migratory birds may forage and nest on the site including the special-status species white-tailed kite, Cooper's hawk, golden eagle, Merlin, grasshopper sparrow, and purple martin. Active nests are protected by the California Fish and Game code Section 3503.5 and the MBTA. Construction activities could result in disturbance of nest sites through temporary increases in ambient noise levels and increased human activity. In addition, vegetation clearing operations, including pruning or removal of trees and shrubs, could impact nesting birds if these activities occur during the nesting season (February 15 to August 31). All vegetation clearing including removal of trees and shrubs should be completed during September 1 to February 14, if feasible.

If vegetation removal and grading activities begin during the nesting season (February 15 to August 31), a qualified biologist should conduct a pre-construction survey for active nests. The pre-construction survey should be conducted within 14 days prior to commencement of ground-disturbing activities. If the pre-construction survey shows that there is no evidence of active nests, a letter report should be prepared to document the survey, and no additional measures are recommended. If construction does not commence within 14 days of the pre-construction survey, or halts for more than 14 days, an additional survey is required prior to starting work.

If nests are found and considered to be active, buffer zones should be established to prohibit construction activities and minimize nest disturbance until the young have successfully fledged. A minimum 250 foot buffer should be implemented around raptor nests. Buffer zones around other migratory bird nest vary by species, but are typically a minimum of 100 feet and should be determined by a qualified biologist. If active nests are found on site, a qualified biologist should monitor nests weekly during construction to evaluate potential nesting disturbance by construction activities. Consultation from CDFW is recommended if establishing the typical buffer zone is impractical. If active nests are found within any trees slated for removal, then an appropriate buffer should be established around the trees and the trees should not be removed until a biologist determines that the nestlings have successfully fledged. If construction activities are proposed to begin during the non-breeding season (September 1 through January 31), a survey is not required and no further studies are necessary. In addition, a pre-construction worker awareness training should be conducted alerting workers to the presence of and protections for the active avian nests.

6.8 Western Burrowing Owl

Although burrowing owls were not observed during the biological assessment, the site contains annual grassland that is potentially suitable habitat for burrowing owl. Vegetation clearing activities within the annual grassland could impact potential nest sites for this species. In addition, noise and vibration associated with construction activities in the vicinity of annual grassland could result in nest abandonment.

For this reason, it is recommended that in the spring prior to construction a qualified biologist conduct western burrowing owl surveys during the peak breeding season (April 15 and July 15), in accordance with the 2012 *California Department of Fish and Wildlife Staff Report on Burrowing Owl Mitigation* (2012 Staff Report) (CDFW 2012). The survey area includes an approximately 500-foot (150-meter) buffer around the Study

Area, where access is permitted. The report(s) should be submitted to CDFW. If the surveys are negative, then no additional measures are recommended.

If burrowing owls are observed on or within 500 feet of the project site, an impact assessment should be prepared and submitted to the CDFW, in accordance with the 2012 Staff Report. If it is determined that project activities may result in impacts to occupied western burrowing owl habitat, the County should consult with CDFW and develop a detailed mitigation plan establishing avoidance and mitigation measures based on the requirements set forth in Appendix A of the 2012 Staff Report.

6.9 Special-Status Bat Species

The existing oak woodlands could provide potential roosting habitat for various bat species that occur in the vicinity of the study area. Removal of trees or rock outcroppings could impact bats should they be roosting in areas proposed for removal. A qualified biologist should conduct a preconstruction survey within 14 days prior to clearing or grading operations and removal of trees. If no bats are observed, a letter report prepared to document the survey, and no additional measures are recommended. If construction does not commence within 14 days of the pre-construction survey, or halts for more than 14 days, an additional survey is required prior to starting work.

If special-status bat species are present and roosting on or within 100 feet of the project site, then the biologist should establish an appropriate buffer around the roost site. At minimum, no trees should be removed until the biologist has determined that the bat is no longer roosting in the tree. Additional mitigation measures for bat species, such as installation of bat boxes or alternate roost structures, would be recommended only if special-status bat species are found to be roosting within the project area. In addition, a pre-construction worker awareness training should be conducted alerting workers to the presence of and protections for various bat species.

6.10 Sensitive Habitats

6.10.1 Waters of the U.S.

Construction activities necessary for the permanent placement of the new road and related facilities would place fill almost all of the pond located in the study area and may also result in fill of intermittent drainages. A total of 2.09 acres of jurisdictional waters were previously delineated and documented in the 1992 EIR that includes the study area. Prior to construction disturbances, an updated wetland delineation should be completed and submitted to the Corps for verification. Although a permit for impacts to the pond was obtained, it has expired.

A Section 404 permit should be obtained from the Corps and a Section 401 Water Quality Certification should be obtained for the Regional Water Quality Control Board (RWQCB) prior to the start of construction that will impact any water of the U.S, and water of the state. Any waters of the U.S. or jurisdictional wetlands that would be lost or disturbed should be replaced or rehabilitated on a “no-net-loss” basis in accordance with the Corps mitigation guidelines. Habitat restoration, rehabilitation, and/or replacement should be at a location and by methods agreeable to the agencies. Since there were no impacts to aquatic features under the previous permit, the seasonal wetland mitigation credits purchased in 2006 may be applied to mitigation requirements for this project, at the discretion of the Corps.

6.10.2 Drainages, Ponds, and Riparian Woodlands

In addition, impacts to intermittent drainages, pond, and riparian woodland would require a Section 1600 Streambed Alteration Agreement from the CDFW prior to the start of construction. CDFW may require mitigation in the form of off-site habitat preservation and revegetation of disturbed areas on the project site.

6.10.3 Oak Woodlands

The Project would result in the removal of oak trees within the site, resulting in impacts to oak woodlands. For this analysis, and consistent with County General Plan policies, oak woodlands are measured and discussed in terms of canopy cover. A total of 9.0 acres of oak canopy is found in the 26.4 acre study area, equating to 34% canopy cover. In the event that the County considers the project to be a “new development project” and subject to Policy 7.4.4.4 of the General Plan, Option A of Policy 7.4.4.4 would require that at least 85% (7.65 acres) of the existing canopy must be preserved on site. Under such interpretation, the project would be allowed to remove 1.35 acres of oak canopy. As currently defined, the project would result in the removal of approximately 5.37 acres of oak canopy, comprised of 2.74 acres within permanent disturbance areas and 2.63 acres within temporary disturbance areas. Thus, as currently designed the project would result in the removal of oak canopy in excess of the Policy 7.4.4.4 Option A oak canopy retention standard. However, this biological resources assessment is not intended to provide an interpretation of Policy 7.4.4.4 applicability to the project.

Regardless of the applicability of Policy 7.4.4.4 to the project, the loss of 5.37 acres of oak canopy is considered a significant impact due to the loss of habitat, particularly riparian woodland habitat. To mitigate for the biological resources impact associated with the loss of oak woodlands associated with the project, a combination of avoidance, protection, onsite replacement, where feasible, and offsite preservation or creation of oak woodland habitat is recommended. Once full access to the project site is available and prior to the start of construction activities, a *Tree Survey, Preservation, and Replacement Plan* should be prepared, as required by the Interim Guidelines. If required, a separate *Important Habitat Mitigation Program* should be developed once the entire site is accessible for survey. .

Although the Project itself may not be subject to the EDHCSD oak preservation and removal policies, it could result in disturbance, vegetation clearing, or other activities within portions of properties within the Bass Lake Woodridge Village. Therefore, it is recommended that the County provide an opportunity for the EDHCSD to review and provide input on the environmental analysis and the oak tree and woodland impacts and mitigation during the environmental review process.

Oak Tree Avoidance and Protection Recommendations

Direct impacts and loss of oak trees within the project site should be minimized to the extent feasible. While complete avoidance of oak trees is not feasible given that the project alignment passes through an area of oak woodland habitat and is constrained by surrounding development, the final design and layout of the road improvements should avoid and minimize impacts to individual oak trees to the greatest extent possible.

Oak trees within and adjacent to the project site that will not be directly removed as a result of the project should be protected during construction to avoid disturbance of the trees and their root zones. In the event that trees identified for protection are ultimately damaged or destroyed as a result of unanticipated activities or other occurrence, mitigation for the damage or destruction of those trees should be required consistent with mitigation requirements for other trees removed as a result of the Project. An Arborist certified by the International Society of Arboriculture (ISA) should be assigned to the project during construction period grading and other ground disturbance activities to oversee implementation of these recommendations (Project Arborist). To prevent additional loss of oak canopy in the temporary impact area, the following tree protection measures should be implemented:

- Tree Protection Fencing, consisting of a minimum 4-foot tall high-visibility fence (orange plastic snow fence or similar), shall be placed around the perimeter of the tree protection zone (TPZ) (dripline radius +1 foot) for all trees to remain. The TPZ is the minimum distance for placing protective fencing, but tree protection fencing should be placed as far outside of the TPZ as possible. Signs shall be placed along the fence at approximately 50 foot intervals. Each sign shall be a minimum of 2 feet by 2 feet and shall include the following:

  TREE PROTECTION ZONE
  DO NOT MOVE OR RELOCATE FENCE
  UNTIL PROJECT COMPLETION WITHOUT
  PERMISSION OF PROJECT ARBORIST
  OR COUNTY OF EL DORADO

- Whenever possible, fence multiple trees together in a single TPZ.

- If permanent site improvements (e.g. paving and sidewalks) encroach into the TPZ, install fence at limit of work. If temporary impacts (e.g. grading, utility installation) require encroachment into the TPZ, move fence to limit of work during active construction of item and return to edge of TPZ once work is completed.

- Tree protection fencing shall not be moved without prior authorization from the Project Arborist or as detailed on approved plans.

- Avoid paving within TPZ. If paving cannot be avoided, use porous materials where feasible.

- Parking, portable toilets, dumping or storage of any construction materials, including oil, gas, or other chemicals, or other infringement by workers or domesticated animals shall be prohibited in the TPZ.

- No signs, ropes, cables, metal stakes, or any other items shall be attached to a protected tree, unless recommended by the Project Arborist.

- Grading, excavation, or trenching within the TPZ should be avoided to the greatest extent feasible. Under no circumstances should fill soil be placed against the trunk of an existing tree.

- Any grading or ground disturbance within 20 feet of the edge of the TPZ shall be supervised by the Project Arborist and recommendations by the Project Arborist regarding root avoidance and other excavation measures shall be implemented to the extent feasible.

- Underground utilities should be avoided in the TPZ, but if necessary shall be bored or drilled. No trenching is allowed within the TPZ unless specifically approved by the Project Arborist.

- Drains shall be installed according to County specifications to avoid harm to existing oak trees due to excess watering.

- Pruning of living limbs or roots shall be done under the supervision of the Project Arborist. All pruning should be done by hand, air knife, or water jet, in accordance with ISA standards using tree maintenance best practices. Climbing spikes should not be used on living trees. Limbs should be removed with clean cuts just outside the crown collar.

- Cover exposed roots or cut root ends in trenches with damp burlap to prevent drying out.

- Minimize disturbance to the native ground surface (e.g., grass, leaf, litter, or mulch) under preserved trees to the greatest extent feasible.

- Native woody plant material (trees and shrubs to be removed) may be chipped or mulched on the site and placed in a 4 to 6 inch deep layer around existing trees to remain. Mulch shall not be placed in contact with the trunk of preserved trees.

- Deep water preserved trees that have had roots cut during project activities once a month throughout the summer as needed or as recommended by the Project Arborist.

- Appropriate fire prevention techniques shall be employed around all trees to be preserved. This includes cutting tall grass, removing flammable debris within the

TPZ, and prohibiting the use of tools that may cause sparks, such as metal bladed trimmers or mowers.

- No open flames shall be permitted within 15 feet of the tree canopy.

- Damage to any protected tree during construction shall be immediately reported to the Project Arborist and to El Dorado County Planning Services. Damage shall be corrected as required by the County representative.

- Any landscaping within the TPZ should minimize ground disturbance and may include drought-tolerant plants, bark mulch, or natural vegetative cover. Rock mulches such as cobbles, boulders, or gravel shall not be used. All landscaping shall be kept at least 4 feet from trunk.

Oak Canopy Replacement Recommendations

The Interim Guidelines require 1:1 replacement of all oak canopy removed from the project site. This may take the form of either on-site or off-site replanting or preservation of off-site oak woodland through a conservation easement. Both on-site and off-site oak canopy replacement may be implemented either through sapling or 1-gallon tree planting at a rate of 200 trees per acre or acorn planting at a rate of 600 acorns per acre. Ten years of maintenance and monitoring are required for seedling or tree planting and fifteen years for acorn planting. The woodland replacement is considered successful if 90% of the trees survive at the end of the maintenance and monitoring period. Off-site planting areas must be placed in a conservation easement. The mitigation planting procedures, maintenance schedule, and monitoring protocols, and success criteria will be detailed in the *Tree Survey, Preservation, and Replacement Plan*, which will be prepared once full access to the project site is available.

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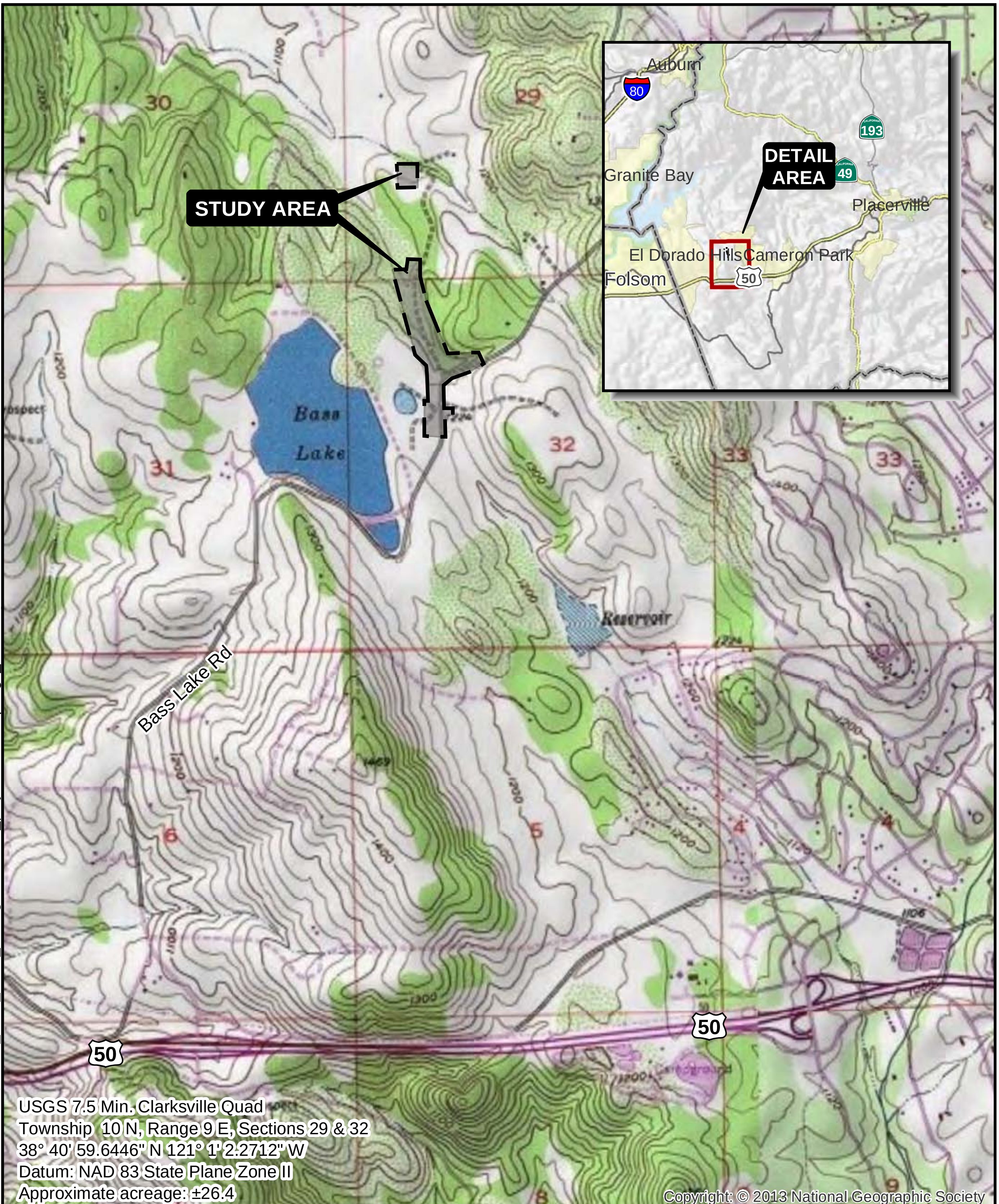


Document Path: Q:\Bass_Lake_Road_REalignment\GIS_projects\SilverSprings_SV.mxd

SITE AND VICINITY

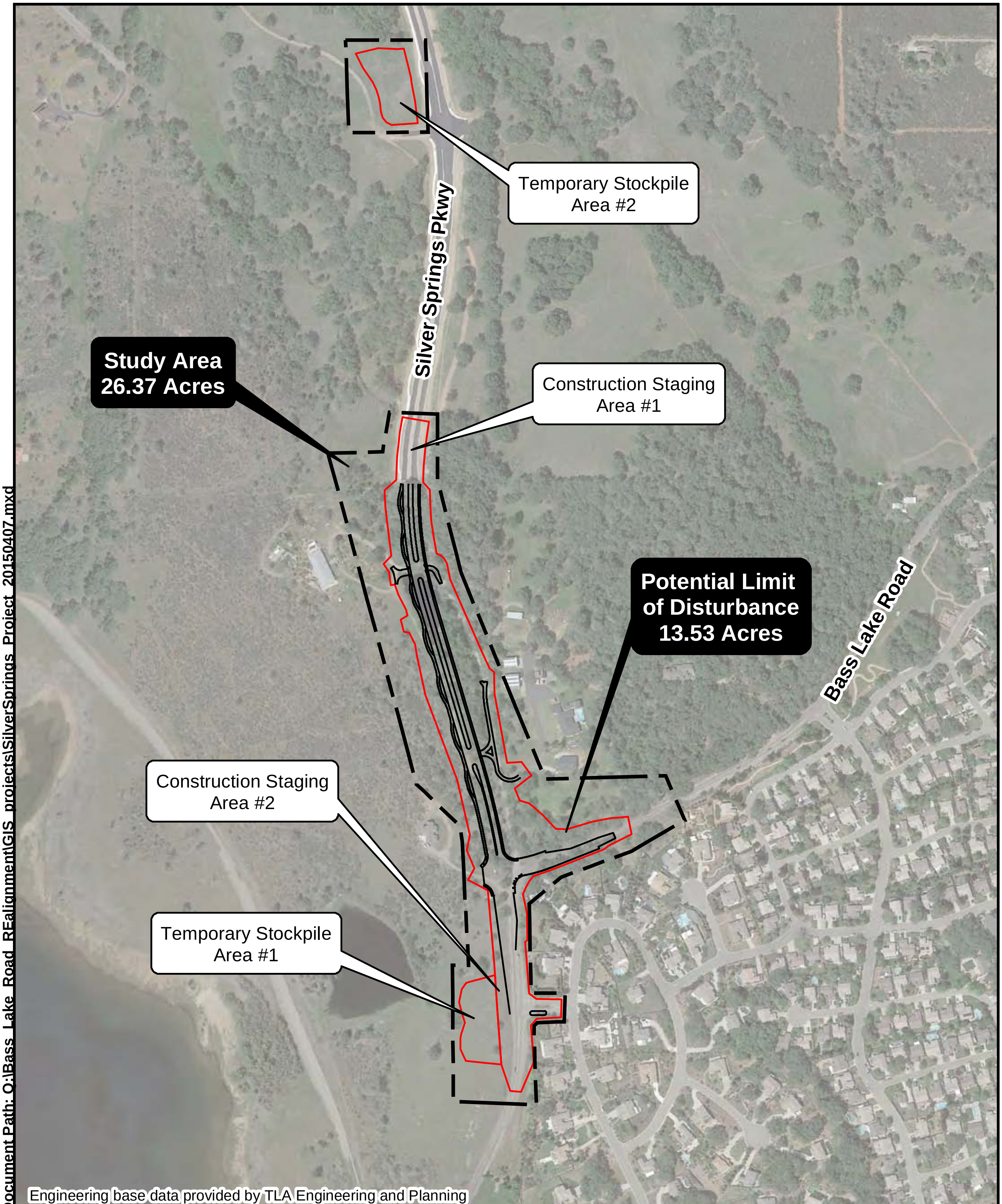
FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

N

0 1000 2000
FEET
1 inch = 2,000 feet

Drawn By: MUB, MMB
Date: 4/7/2015

FIGURE 1



PROPOSED PROJECT

FOOTHILL ASSOCIATES
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N

0 250 500
Feet
1 inch = 500 feet

Drawn By: MUB, MMB
Date: 4/7/2015

FIGURE 2

SILVER SPRINGS

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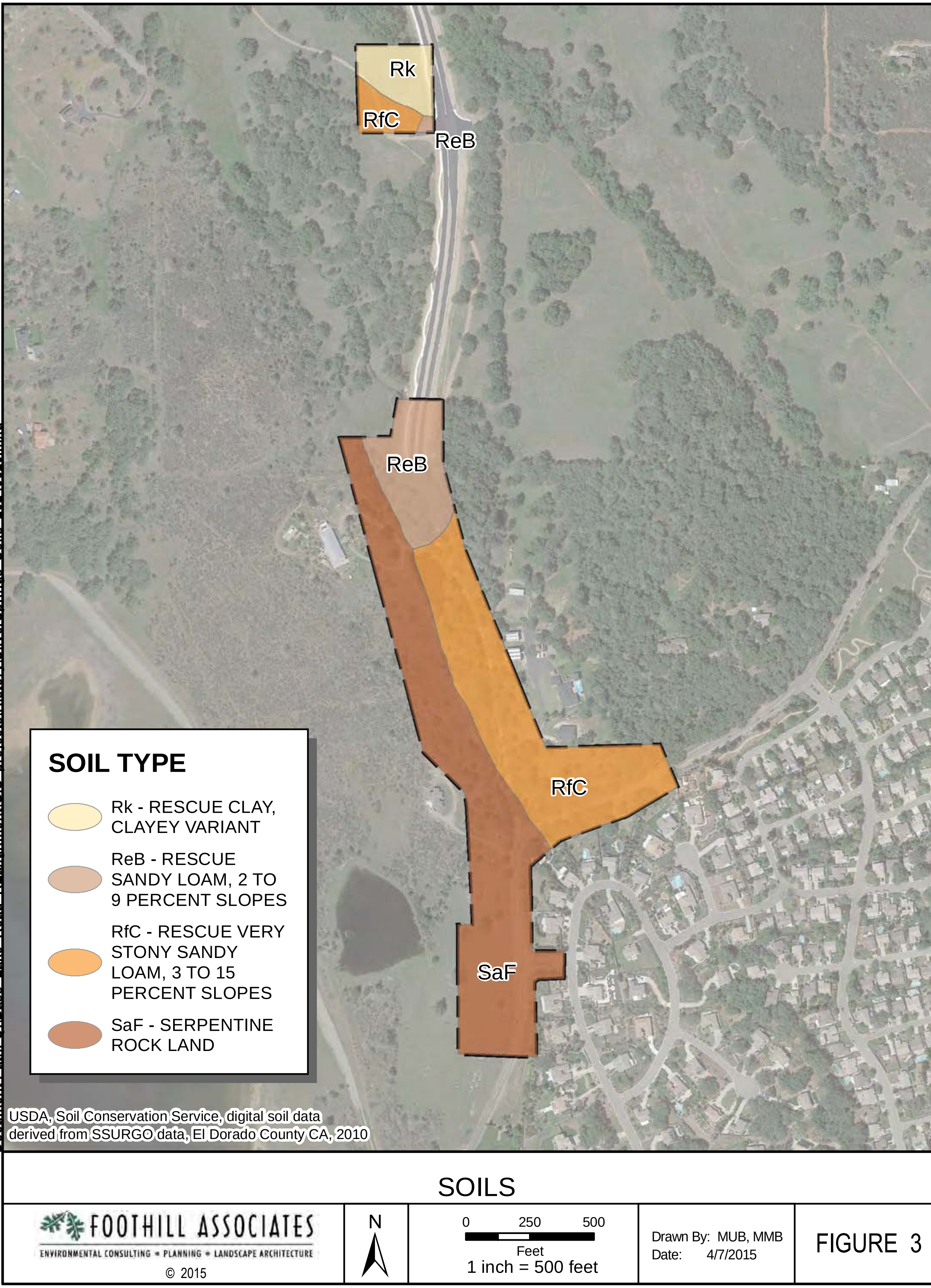
Document Path: O:\Bass_Lake_Road_REalignment\GIS_projects\History\SilverSprings_Soils_20140610.mxd



SOILS

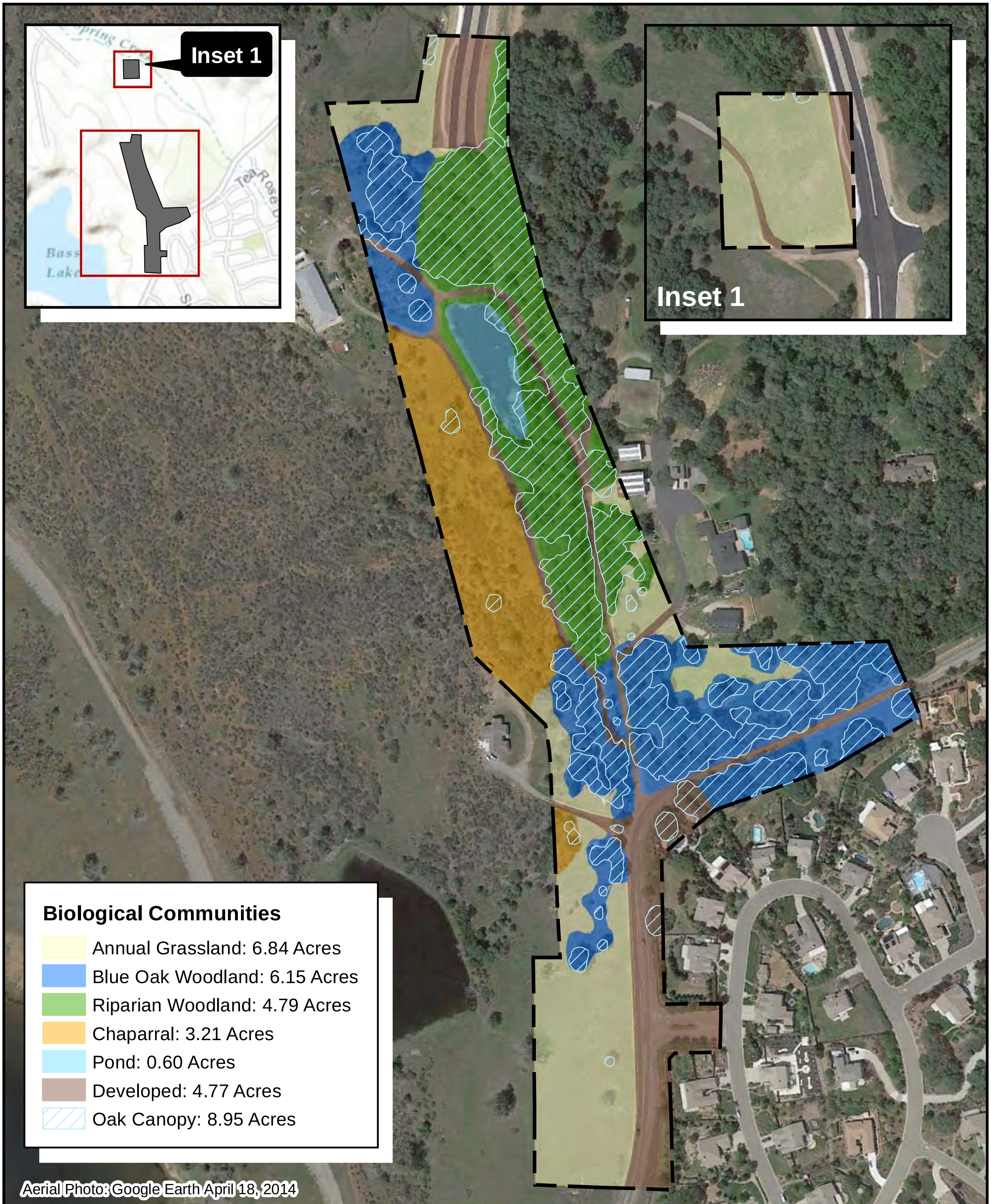
FOOTHILL ASSOCIATES

ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

Drawn By: MUB, MMB

Date: 4/7/2015

FIGURE 3



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BIOLOGICAL COMMUNITIES

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

N

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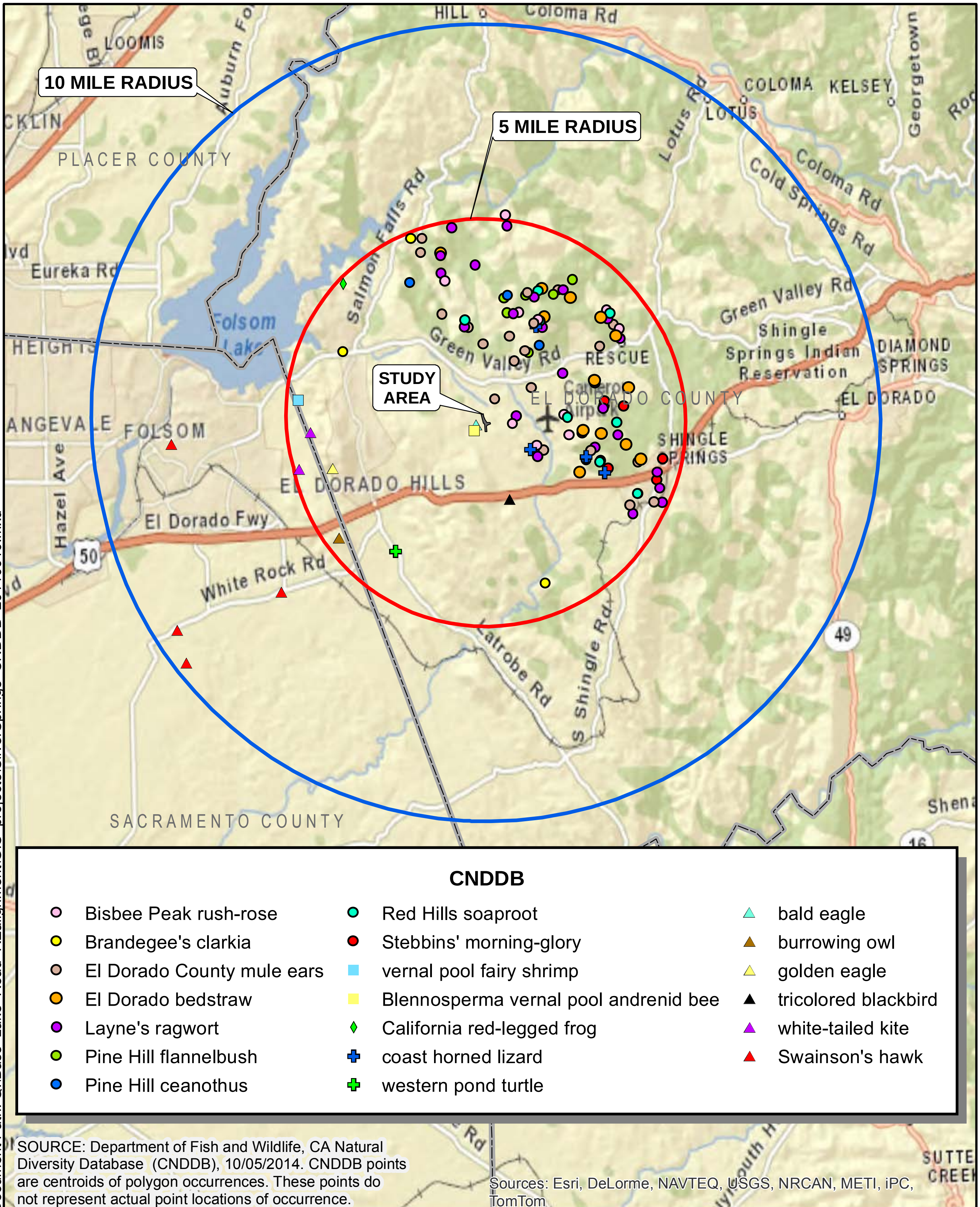
Feet
1 inch = 300 feet

Drawn By: MMB
Date: 4/7/2015

FIGURE 4



SOURCE: Department of Fish and Wildlife, CA Natural Diversity Database (CNDDB), 10/05/2014. CNDDB points are centroids of polygon occurrences. These points do not represent actual point locations of occurrence.

Document Path: Q:\Bass Lake Road REalignment\GIS projects\SilverSprings CNDDB 20140610.mxd

CNDDB Query Results

FOOTHILL ASSOCIATES
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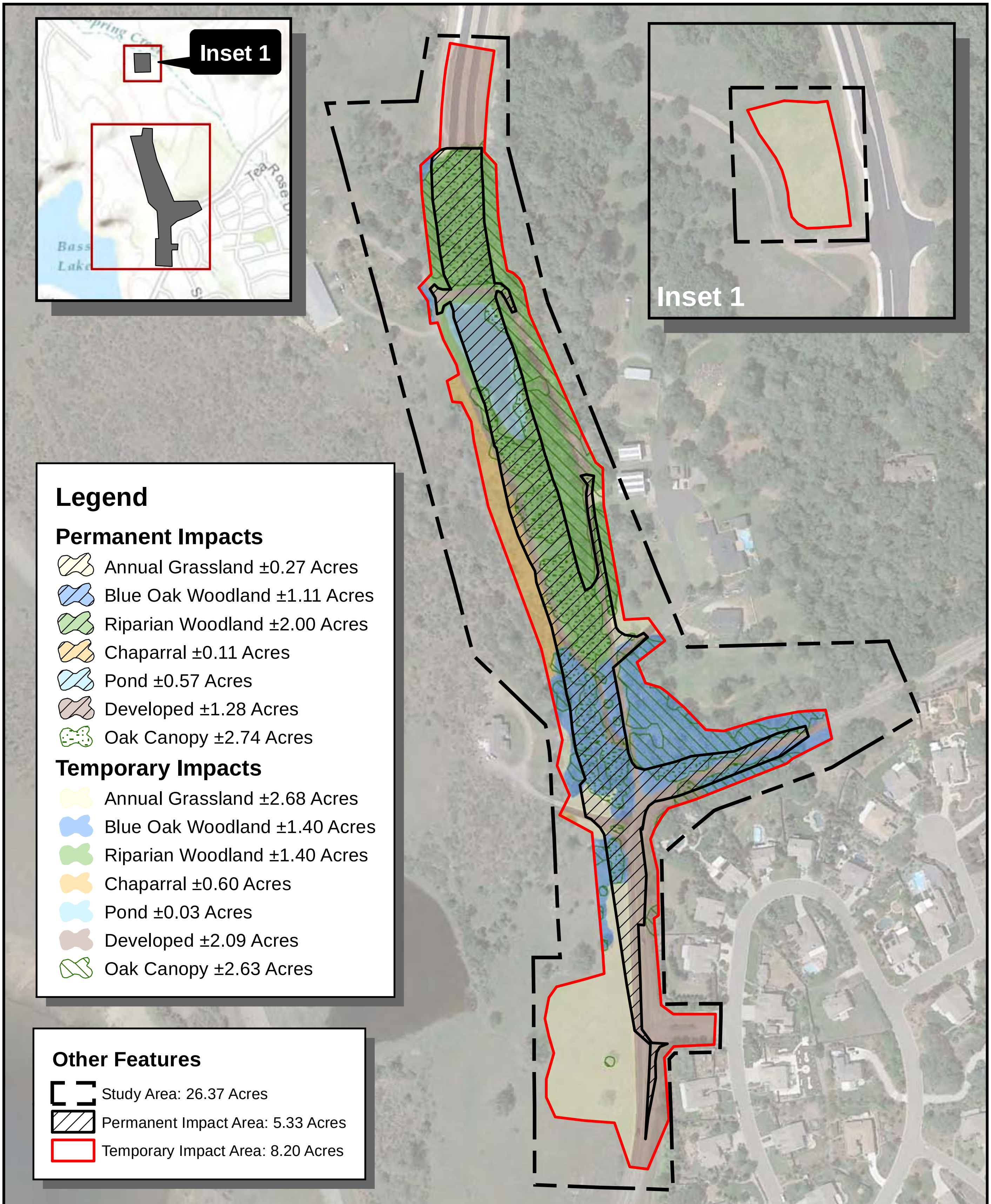
N

0 1.75 3.5
SCALE IN MILES

Drawn By: MUB
Date: 10/14/2014

FIGURE 5



Document Path: Q:\Bass_Lake_Road_REalignment\GIS_projects\SilverSprings_Bio_Impacts.mxd

PROPOSED PROJECT IMPACTS

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

N

0 150 300
Feet
1 inch = 300 feet

Drawn By: MUB, MMB
Date: 4/7/2015

FIGURE 6

Appendix A — Initial Site Assessment Form

El Dorado County

OAK/CANOPY SITE ASSESSMENT FORM

Qualified Professional & Contact Information: *(attach qualifications)*	Meredith Branstad, Foothill Associates. mbranstad@foothill.com 590 Menlo Dr. Ste 5, Rocklin, CA 95621. (916) 435-1202.
Property Owner's Name/APN(s):	Various
Address:	4870 Union Mine Road El Dorado, CA 95623
General Plan Designation:	LDR, HDR
Zoning:	R1, R1A, RE5, RE10, AE
Project Description: *(attach site photos)*	Construction of 1,400 foot road segment connecting the existing Silver Springs Parkway to Bass Lake Road.

Would the project, directly or indirectly, have the potential to cause any impact, conflict with, or disturbance to:	**YES**	**NO**
a) Individual landmark or heritage trees (of any species) subject to review under General Plan Policy 7.4.5.2?	☑	☐
c) Oak woodland corridor continuity (General Plan Policy 7.4.4.5)?	☑	☐
d) Sensitive or important oak woodland habitat as defined in the Guidelines?	☑	☐
e) Movement of Wildlife and/or Any Wildlife Migration Corridor?	☐	☑
f) Any Candidate, Listed or Special Status Plant or Animal Species observed or expected to occur on or adjacent to the project site?	☑	☐
g) Is the affected area of oak canopy within or directly adjacent to an Important Biological Corridor or Ecological Preserve overlay?	☐	☑
h) Does the removal of oak canopy comply with the retention requirements of Policy 7.4.4.4?	☐	☑
i) Was project subject to prior County approval? (If yes, provide Tentative Map # and environmental documents if available)	☑	☐
j) For Discretionary Projects, would the project have the potential to cause a significant environmental impact on biological resources?	☑	☐

I affirm that all of the information contained in this document is true and correct to the best of my knowledge and I acknowledge and agree that any material misinformation in this document can result in the denial or revocation of any permits or County approvals for this project.

Qualified Professional: Meredith Branstad Digitally signed by Meredith Branstad DN: cn=Meredith Branstad, o=Foothill Associates, ou, email=meredith@foothill.com, c=US Date: 2015.04.30 10:43:45 -07'00' **Date:** 4/30/15

Applicant/Owner:____________________ **Date:**____________

Required Attachments: 1) Qualified Professional Qualifications; 2) Site Photos; 3) Required Tree Survey, Preservation, and Replacement Plan *or* Biological Resources Study and Important Habitat Mitigation Program (see Interim Interpretive Guidelines for El Dorado County Policy 7.4.4.4 Option A)

H:\D-drive\MyDocuments\Oak Woodlands\Oak Site Assessment Form.doc

Print Form Clear Form

APPENDIX D-2

INTERIM INTERPRETIVE GUIDELINES FOR EL DORADO COUNTY GENERAL PLAN POLICY 7.4.4.4 (*OPTION A*)

INTERIM INTERPRETIVE GUIDELINES FOR EL DORADO COUNTY GENERAL PLAN POLICY 7.4.4.4 (OPTION A)

ADOPTED NOVEMBER 9, 2006
AMENDED OCTOBER 12, 2007

BACKGROUND

The adopted 2004 El Dorado County General Plan, Conservation and Open Space Element provides for the conservation and protection of soils, minerals, water, wildlife and fisheries, vegetation, cultural resources, and open space. Policies adopted in this element serve to guide the design of new development to meet these objectives. Policy 7.4.4.4 (Option A), reproduced below, addresses oak canopy retention standards. These Guidelines are intended to clarify the scope and implementation of Option A of this policy and provide for a process to consider limited modifications to oak canopy replacement and retention requirements for existing legal parcels if necessary to ensure reasonable use of those parcels. Option B (Mitigation Fee) will be available upon completion of the Oak Woodland Management Plan (OWMP) and related fee studies and implementing ordinances.

OBJECTIVE 7.4.4: FOREST AND OAK WOODLAND RESOURCES

Protect and conserve forest and woodland resources for their wildlife habitat, recreation, water production, domestic livestock grazing, production of a sustainable flow of wood products, and aesthetic values.

Policy 7.4.4.4

For all new development projects (not including agricultural cultivation and actions pursuant to an approved Fire Safe Plan necessary to protect existing structures, both of which are exempt from this policy) that would result in soil disturbance on parcels that (1) are over an acre and have at least 1 percent total canopy cover or (2) are less than an acre and have at least 10 percent total canopy cover by woodlands habitats as defined in this General Plan and determined from base line aerial photography or by site survey performed by a qualified biologist or licensed arborist, the County shall require one of two mitigation options: (1) The project applicant shall adhere to the tree canopy retention and replacement standards described below; or (2) the project applicant shall contribute to the County's Integrated Natural Resources Management Plan (INRMP) conservation fund described in Policy 7.4.2.8.

Option A
The County shall apply the following tree canopy retention standards:

Percent Existing Canopy Cover	Canopy Cover to be Retained
80–100	60% of existing canopy
60–79	70% of existing canopy
40–59	80% of existing canopy
20–39	85% of existing canopy
10-19	90% of existing canopy
1-9 for parcels > 1 acre	90% of existing canopy

- Under Option A, the project applicant shall also replace woodland habitat removed at 1:1 ratio.
- Impacts on woodland habitat and mitigation requirements shall be addressed in a Biological Resources Study and Important Habitat Mitigation Program as described in Policy 7.4.2.8.
- Woodland replacement shall be based on a formula, developed by the County, that accounts for the number of trees and acreage affected.

Note: For purposes of implementing these guidelines, "tree canopy" retention shall mean oak tree canopy retention and replacement of "woodland habitat" shall mean replacement of oak canopy.

DEFINITIONS

For the purposes of these Guidelines, the following words and phrases shall have the meanings respectively ascribed to them by this section:

<u>1:1 Woodland Replacement (Replacement Land Area/Replacement Tree/Replacement Acorn-Density Ratio)</u>: Replacement of removed tree canopy shall be at a 200 trees (saplings or one gallon trees) per acre density or as recommended by a qualified professional. Replacement is subject to intensive to moderate management[1] and 10 to 15 years of monitoring, respectively. The survival rate shall be 90 percent as specified in the approved monitoring plan for the project, prepared by a qualified professional. Acorns may be used instead of saplings or one gallon trees. If acorns are used, they

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[1] Management intensity assumes that 10 years after planting 1 year old saplings that trees that have been nurtured with high management intensity will be on average 2 inches DBH with 90 percent survival; moderate management intensity will result in trees that are on average 1.5 inches DBH with 85 percent survival. See Standiford et al 2002.

shall be planted at a 3:1 ratio as determined by the tree replacement formula[2]. The replacement is as follows:

- Replacement replanting from saplings or one-gallon trees, that are locally sourced, shall follow this formula for ratios:

  (Replacement Area in acres) x 200 trees per acre = the total number of replacement trees to be replanted

- Replacement replanting by acorn shall be from locally-sourced acorns (acorns gathered locally). The replacement ratio by acorn replanting shall be obtained by the following formula:

  (Replacement Area in acres) x (200 trees per acre) x (3 acorns per tree) = the total number of acorns to be replanted

Agricultural Conversion: As defined by General Plan Policy 7.1.2.7.

Agricultural Cultivation/Operations: As defined by General Plan Policy 8.2.2.1.

Agricultural Lands: As defined by General Plan Policies 2.2.1.2 and 8.1.1.8, and further, Policy 8.2.2.1.

Arborist: A person certified by the International Society of Arboriculture (I.S.A.) or other recognized professional organization of arborists that provides professional advice and licensed professionals to do physical work on trees in the County.

Biological Resources Study and Important Habitat Mitigation Program: The Biological Resources Study is an evaluation of a project site that quantifies the amount of important habitat, by habitat type, and addresses the potential for the project to adversely affect important habitat through conversion or fragmentation. The Important Habitat Mitigation Program identifies options that would avoid, minimize, or compensate for impacts on important habitats in compliance with General Plan policies 7.4.4.4 and 7.4.5.2, including a monitoring and reporting component (General Plan 2004 Measure CO-U). The Important Habitat Mitigation Program includes components which address “Certified Arborist Reports” and “Tree Protection Plans”. The Biological Resources Study and Important Habitat Mitigation Program shall be prepared by a qualified professional. See separate guidelines for detailed requirements.

CDF: California Department of Forestry.

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[2] McCreary DD. 2001. *Regenerating rangeland oaks in California*. Berkeley (CA): University of California, Agriculture and Natural Resources. Communication Services Publication #21601. 62 p.

Construction/Disturbance Area: Any area in which movement of earth, alteration in topography, soil compaction, disruption of vegetation, change in soil chemistry, and any other change in the natural character of the land occurs as a result of site preparation, grading, building construction or any other construction activity.

Diameter at breast height (Dbh): The measurement of the diameter of the tree in inches, specifically four (4) feet six (6) inches above natural grade on the uphill side of the tree. In the case of trees with multiple trunks, the diameter of all stems (trunks) at breast height shall be combined to calculate the diameter at breast height of the tree.

Fire Safe Plan: Defined by the El Dorado County Department of Forestry Guidelines (http://www.co.el-dorado.ca.us/building/PDF/Booklets/Fire_safe_regs.pdf), and the CDF General Guidelines for Creating Defensible Spaces (http://www.bof.fire.ca.gov/pdfs/4291finalguidelines2_23_06.pdf), and as defined by Goal 6.2 Fire Hazards of the Public Health, Safety, and Noise element of the General Plan.

Given Unit of Land: The land contained within the project site. If the project site, prior to any proposed land division, is comprised of multiple parcels, the parcels may be treated as a single given unit of land for the purpose of calculating oak canopy cover and retention requirements.

Habitat: The physical location or type of environment in which an organism or biological population lives or can be found (General Plan 2004).

Heritage trees: Trees planted by a group or individuals or by the City or the County in commemoration of an event or in memory of a person figuring significantly in history (General Plan 2004).

Important Habitat: Defined as habitats that support important flora and fauna, including deer winter, summer, and fawning ranges and migration routes; stream, river, and lakeshore habitat; fish spawning areas; seeps, springs, and wetlands; oak woodlands; large expanses of native vegetation; and other unique plant, fish, and wildlife habitats generally located within or adjacent to designated Ecological Preserves, the Important Biological Resource Corridor Overlay, or in other locations otherwise recognized as being important habitat by Federal, State or County agencies.

Landmark Tree: Trees whose size, visual impact or association with a historically significant structure or event has led the government to designate them as landmarks (General Plan 2004).

Licensed engineers and land surveyors: Professionals that are licensed by the California Board for Professional Engineers and Land Surveyors.

Oak Canopy Cover: The area directly under the live branches of the oak trees, often defined as a percent, of a given unit of land.

Oak Woodlands: A given unit of land, with one or more groupings of live trees, where the dominant species (i.e. a plurality) of the live trees within the groupings are native oaks (genus quercus). "Stand" means a group or groupings of trees.

Oak woodlands with oak tree canopy coverage of less than 10 percent of the project site for parcels one acre or less in size, or oak woodlands with oak tree canopy coverage of less than 1 percent on parcels of land that are more than one acre in size, are **not** subject to the oak tree canopy cover retention requirements of Policy 7.4.4.4 Option A.

Protected Trees: Trees of the genus quercus (oak trees), landmark, and heritage trees, which are subject to County review pursuant to General Plan Policies 7.4.4.4, 7.4.5.1, and 7.4.5.2.

Qualified Professional: An arborist certified by the International Society of Arborists, a qualified wildlife biologist, or a registered professional forester (RPF).

Qualified Wildlife Biologist: A professional with a BA or BS or advanced degree in biological sciences or other degree specializing in the natural sciences; professional or academic experience as a biological field investigator, with a background in field sampling design and field methods; taxonomic experience and knowledge of plant and animal ecology; familiarity with plants and animals of the area, including the species of concern; and familiarity with the appropriate county, state, and federal policies and protocols related to special status species and biological surveys.

Registered Professional Forester (RPF): A Registered Professional Forester (RPF) is a person licensed by the State of California to perform professional services that require the application of forestry principles and techniques to the management of forested landscapes. RPFs have an understanding of forest growth, development, and regeneration; soils, geology, and hydrology; wildlife and fisheries biology and other forest resources. RPFs are also trained in fire management and, if involved in timber harvesting operations, have expertise in both forest road design and application of the various methods used to harvest timber (California Licensed Foresters Association).

Removal: The physical destruction, displacement or removal of a tree, or portions of a tree caused by poisoning, cutting, burning, relocation for transplanting, bulldozing or other mechanical, chemical or physical means.

Replacement: See 1:1 Woodland Replacement definition.

Self Certification: Acknowledgment by an applicant constructing a single-family dwelling or accessory structures and appurtenances to a single-family dwelling that the removal of oak trees not otherwise in compliance with these interim guidelines and Policy 7.4.4.4, is in compliance with General Plan Policy 7.1.2.2 and are therefore exempt from the provisions of Policy 7.4.4.4 as "reasonable use."

Sensitive Habitat: In El Dorado County, this includes the following habitat types: montane riparian, valley-foothill riparian, aspen, valley oak woodland, wet meadow, and vernal pools (General Plan EIR).

Tree Survey, Preservation, and Replacement Plan: A plan that identifies trees at the project site, shows how specific trees shall be protected during development and related work, and includes any required mitigation measures and ensures viability of trees after construction. A Tree Survey, Preservation, and Replacement Plan is a stand-alone report, and is also included as part of an Important Habitat Mitigation Program. The plan shall be prepared by a qualified professional. See separate guidelines for requirements.

Woodland Habitats: Biological communities that range in structure from open savannah to dense forest. In El Dorado County, major woodland habitats include blue oak-foothill pine, blue oak woodland, montane hardwood, montane hardwood-conifer, and montane riparian.

Guidance for Application of Policy 7.4.4.4:

1. Trees subject to canopy retention and replacement – Policy 7.4.4.4 is intended to apply exclusively to retention and replacement of oak canopy within oak woodlands. All oak trees, of all sizes, are included in the measurement of oak canopy.

   Any oak tree canopy, landmark or heritage trees, including native oak trees that do not qualify for review as oak woodland under Policy 7.4.4.4 may be subject to review under Policy 7.4.5.2.

2. Minimum oak canopy area – The oak canopy retention requirements of Policy 7.4.4.4 are intended only to apply to:

   a. Parcels greater than 1.0 acre that contain 1 percent or more oak canopy cover; or

   b. Parcels 1.0 acre or smaller that contain 10 percent or more oak canopy cover.

3. Exceptions to oak canopy retention/replacement requirements – Policy 7.4.4.4 intends that the following activities are not subject to oak canopy cover retention or replacement requirements:

a. Agricultural cultivation/operations, whether for personal or commercial purposes, on land planned (AL, NR, RR, and Agricultural Districts [-A]) or zoned (AE, AP, A, PA, SA-10, RA, TPZ, and MR) for agricultural use per Policy 2.2.1.5 (Table 2-4 General Plan Land Use Designation and Zoning District Consistency Matrix, page 21), by the El Dorado County General Plan or Zoning Ordinance;

b. Tree removal associated with an approved Fire Safe Plan as necessary to protect an existing structure or structures. The Fire Safe Plan shall take into consideration the El Dorado County Department of Forestry SRA Fire Safe Regulations and the CDF General Guidelines for Creating Defensible Space. Fire Safe Plans are prepared by a RPF or other qualified professional subject to review and approval by the County. See Exhibit One for more information.

c. Development on parcels that are one acre or larger and have less than 1 percent total oak canopy cover;

d. Development on parcels that are less than one acre and have less than 10 percent total oak canopy cover; or

e. Oak trees determined to be dead or diseased and dying by a certified arborist or registered forester are excluded from calculations of canopy cover ~~and~~ retention and replacement requirements.

f. Applicant has "self certified" compliance with Policy 7.1.2.2. For properties located outside of an Important Biological Corridor (IBC) and Mitigation Area 0 of the Ecological Preserve (EP), the removal of natural vegetation, including oak trees (less than 36 inches dbh), is demonstrated to be limited to areas proposed to be graded or cleared for single-family residential development to include the following (for ministerial permits and Director approved design review applications):

- Primary residence
- Accessory structures (including secondary residence, garages, workshops, barns, swimming pools, decks, etc.)
- Driveways and parking area
- Septic systems
- Wells and storage tanks
- Propane tanks

- Yard areas immediately surrounding the primary residence and any accessory structure
- Yard areas immediately surrounding the primary and any accessory structures
- Retaining walls necessary for any of the above

Replacement of oak trees will be required on-site to the greatest extent feasible and an oak replacement agreement shall be recorded requiring self-monitoring and maintenance.

4. Qualified Professional – For the purposes of Policy 7.4.4.4, “Qualified Professionals”, refers to professionals approved by Development Services, suitably trained and experienced in wildlife biology, botany, arboriculture, or forestry such as qualified wildlife biologists, I.S.A. certified arborists, or Registered Professional Foresters (RPFs) can determine “habitat” value and canopy cover of oak woodlands determined from baseline aerial photography. The professional may be under contract to either the County or the property owner. The professional should be able to perform a species-focused site survey, use GPS to locate species and habitat on a map or aerial photograph, and should be able to address oak tree corridors (if applicable) for Policy 7.4.4.5. The qualified professional will need to prepare a Biological Resources Study and Important Habitat Mitigation Program that satisfies County requirements. In the event that a dispute arises involving the contents of the Biological Resources Study and/or Important Habitat Mitigation Program the County may refer the matter to an outside qualified consultant, retained by the County and paid for by the applicant/property owner, to develop recommendations for dispute resolution.

   If there is a need to provide a survey level of detail to fully ascertain which canopy level applies per Policy 7.4.4.4, then the survey shall be conducted by a California professional engineer or a California professional land surveyor.

   Generalized maps may be provided by a qualified professional using GPS.

5. Site Assessment Form and Tree Survey, Preservation, and Replacement Plan Required: An initial Site Assessment Form (Attachment 1) and Tree Survey, Preservation, and Replacement Plan must be prepared by a qualified professional and submitted to the Planning Services Division for review for all projects proposing removal of oak canopy cover. The purpose of the Site Assessment is to determine if the proposed removal of oak canopy cover would impact any of the following:

   - Landmark or heritage trees (See Policy 7.4.5.2 A);

- Oak corridor continuity, between all portions of existing stands of oak woodland habitat with connecting corridors at a tree density that is equal to the density of the stand (See Policy 7.4.4.5);
- Sensitive or important oak woodland habitats (See Policy 7.4.5.2 A);
- Oak woodland within or directly adjacent to an important biological resource corridor overlay or an ecological preserve overlay (See Policies 7.4.2.9 and 7.4.1.4);
- Listed or special status plant or animal species observed or expected to occur on the project site or in adjacent areas that may be directly or indirectly affected by the project (See Policy 7.4.1.5); or
- Removal of oak canopy that exceeds retention requirements of Policy 7.4.4.4.

For discretionary projects, the Site Assessment must also include a conclusion by the qualified professional as to whether the proposed oak tree canopy cover removal would have the potential to cause a significant effect on the environment.

If the Site Assessment concludes that the project <u>would not</u> impact any of the above, and the County concurs, and the retention/replacement requirements of Policy 7.4.4.4 are satisfied, the proposed oak tree canopy cover removal may be found consistent with Policy 7.4.4.4 without preparation of a Biological Resource Study and Important Habitat Mitigation Program. A Tree Survey, Preservation, and Replacement Plan, prepared according to County requirements, shall be required prior to issuance of a grading or building permit for the project. The Tree Survey, Preservation, and Replacement Plan will address long term preservation as well as protection of oak trees required to be retained or replaced during grading and construction.

If the Site Assessment, or the County, concludes that the proposed project <u>would</u> impact any of the above resources, and/or for discretionary projects could have the potential to cause a significant impact on the environment, then a full Biological Resources Study and Important Habitat Mitigation Program for the project must be provided to the County for review and approval. For ministerial projects, this must occur prior to issuance of a grading or building permit for the project. For discretionary projects, this must occur as part of the environmental review process. The recommendations of the plan must be fully implemented prior to final grading or building inspection for the project.

6. <u>Project Sites Within ~~or Directly Adjacent to~~ Important Biological Corridor Overlay or Ecological Preserve Overlay Areas</u>: Any projects (ministerial or discretionary) proposing any oak canopy cover removal within ~~or directly~~

~~adjacent to the~~ an Important Biological Corridor Overlay Designation or Ecological Preserve Overlay Designation shall require the submittal of Oak/Canopy Site Assessment Form, tree survey, and biological report. Should a dispute arise regarding recommendations of the biological report, review by the Planning Commission will be required to ensure consistency with Policies 7.4.2.9 and 7.4.1.4 unless the subject property is also located within an Agricultural District Overlay or Agricultural Lands designation in which case it would not be subject to additional requirements per Policy 7.4.2.9. The Biological Resources Study and Important Habitat Mitigation Program must address the requirements of Policies 7.4.2.9 and 7.4.1.4, including, but not limited to the potential for higher oak canopy cover retention and mitigation standards than for projects located outside of the Important Biological Corridor Overlay and Ecological Preserve Overlay areas.

7. Replacement Provisions – Where Policy 7.4.4.4 requires oak canopy cover replacement, the replacement shall be at a 1:1 ratio of canopy removed to canopy replaced as defined in these Guidelines or as specified by a qualified professional approved by the County. The 1:1 replacement ratio can be determined by a simple projection of an aerial photograph justified to the same scale as the underlying parcel is sufficient to estimate the land area, measured in square feet, subject to oak canopy coverage (land area in square feet shall be converted to acreage). Replacement may be by one of the following methods, at the discretion of the Development Services Director (Director):

   a. On-Site Replacement Tree Planting. The replacement requirement is calculated as set forth in the tree replacement formula. Refer to the 1:1 Woodland Replacement definition. Replacement trees are to be planted on-site to the satisfaction of the Development Services Director. The size of the designated replacement area shall equal at a minimum the total area of the oak canopy cover proposed to be removed. An agreement to the satisfaction of County Counsel and the Director shall be required to ensure the long term maintenance and preservation of any on or off-site replacement trees planted. Maintenance and monitoring shall be required for a minimum of 10 years after planting. Any trees that do not survive during this period of time shall be replaced by the property owner.

   b. On-Site Planting of Acorns. Under the direction of a qualified biologist, certified arborist and/or registered professional forester, acorns may be planted at a density designed to achieve oak canopy coverage which will equal the canopy coverage removed within no more than 15 years from the date of planting. The minimum replacement ratio for acorns is calculated as set forth in the tree replacement formula. Refer to the 1:1 Woodland Replacement definition. Recommendations from the qualified professional shall include a minimum of: site planting design; acorn planting ratios to ensure success; acorn collection areas or nurseries; propagation measures; acorn protection techniques; maintenance, and monitoring and reporting. The size of the designated replacement area shall equal at a minimum, the total area of the oak canopy cover that is proposed to be removed. An agreement to the satisfaction of County Counsel and the Director shall be required to ensure the long term maintenance and preservation of any on or off-site replacement acorns planted. Maintenance and monitoring shall be required for a minimum of 15 years after planting. Any trees that do not survive during this period of time shall be replaced by the property owner.

c. <u>On-Site Replacement of Canopy Area.</u> Under the direction of a qualified biologist, certified arborist and/or registered professional forester, acorns, oak trees or a combination of both may be planted on-site The replacement requirement is calculated as set forth in the tree replacement formula. Refer to the 1:1 Woodland Replacement definition. Replacement plantings should be at a density designed to achieve oak woodland canopy coverage which will equal the canopy coverage removed within 15 years from date of planting or sooner.

Recommendations from the qualified professional shall include a minimum of: Site planting design; planting ratios to ensure success; any required acorn collection areas or nurseries; propagation measures; acorn and tree protection techniques; maintenance, monitoring and reporting requirements. The size of the designated replacement area shall equal at a minimum, the total area of the oak canopy cover that is proposed to be removed. An agreement to the satisfaction of County Counsel and the Director shall be required to ensure the long term maintenance and preservation of any replacement trees and/or acorns planted. Maintenance and monitoring shall be required for a minimum of 10 years after planting. Any trees that do not survive during this period of time shall be replaced by the property owner.

Replacement (and execution of related maintenance and monitoring agreements) shall be completed to the County's satisfaction prior to final grading or building inspection of the project.

d. Off-Site Replacement of Canopy Area. The applicant may be permitted to procure an off-site planting area for the replacement trees and/or planting of acorns, preferably in close proximity and/or in connection with any oak woodland contiguous to the project site or within or adjacent to an Important Biological Corridor or Ecological Preserve as designated in the General Plan, to implement the replacement planting. The size of the off-site replacement planting area shall equal at a minimum the total area of oak canopy cover proposed to be removed. Oaks planted shall have characteristics of the receiver site. Replacement shall occur at a 1:1 ratio as defined in these Guidelines or as otherwise specified by a qualified professional approved by the County. A Conservation Easement to the satisfaction of County Counsel and the Director shall be required to ensure the long term maintenance and preservation of any on or off-site replacement trees and/or acorns planted. The Conservation Easement shall provide for the preservation of the designated area in perpetuity and shall include such terms, conditions, and financial endowments for monitoring and management deemed necessary by the County to ensure the long term preservation of the oak woodland within the easement area. The Conservation Easement shall be in favor of the County or a County approved conservation organization. Maintenance and monitoring shall be required for a minimum of 10 years (15 years for acorns) after planting. Any trees that do not survive during this period of time shall be replaced by the property owner; or

e. Off-Site Conservation Easement to Protect Existing Oak Woodland in Lieu of Replacement. The applicant may obtain a Conservation Easement on property off-site with healthy oak woodland canopy area equivalent to 100 percent of the oak canopy area proposed to be removed. The conservation easement site should either be in close proximity and/or in connection with any oak woodland contiguous to the project site or within or adjacent to an Important Biological Corridor or Ecological Preserve as designated in the General Plan. The Conservation Easement shall provide for the preservation of the designated area in perpetuity and shall include such terms, conditions, and financial endowments for monitoring and management deemed necessary by the County to ensure the long term preservation of the oak woodland within the easement area. The Conservation Easement shall be in favor of the County or a County approved conservation organization.

8. Ministerial Projects on Existing Legal Lots for which Previous Approvals or Determinations of Developable Area have been made by County Decision-Makers: Previously approved discretionary projects that have conditions of approval and/or mitigation measures specifying detailed oak tree protection and mitigation plans shall not be required to demonstrate further consistency with Policy 7.4.4.4. However, canopy that was required to be retained in prior approvals must continue to be retained, unless modified by the decision-making authority for the original protection plan. This provision does not apply to any development project whose approval has expired and a time extension is applied for.

Reasonable Use Provisions for Development on Existing Legal Lots

A. Reasonable Use Related to Oak Canopy Cover Retention:

For existing legal lots, where strict compliance with the oak canopy cover retention requirements of Policy 7.4.4.4 could preclude reasonable use of the property or cause substantial inconsistencies with other General Plan policies protective of the environment, due to factors which are unique to the proposed property, such as topographic constraints, configuration of the remaining area useable for development, access requirements, lot size, and/or other physical or environmental limitations, or conflict with the requirements of an approved Fire Safe Plan, the Development Services Director may grant relief as described below, or the Planning Commission may grant relief to the retention requirements of Policy 7.4.4.4 for the project if the ~~following~~ findings are made pursuant to a noticed public hearing:

Development Services Director Relief:

The Director may grant a reduction in the retention requirements by up to 50 percent of what is specified in the Option A Retention Table after meeting all the required findings herein (subsection i. through iv.) and meeting one of the following conditions.

- For existing legal lots ½ acre in size or less with up to 100 percent disturbed area proposed; or

- For existing legal lots greater than ½ acre up to one acre in size with not more than 20,000 square feet of development/disturbed area proposed; or

- For existing legal lots greater than one acre in size but not greater than five acres in size with not more than 25,000 square feet of development/disturbed area proposed, excluding driveway access removing oak canopy (intrusion of up to 25 percent of the dripline permitted).

- For existing legal lots greater than five acres with not more than 30,000 square feet of development/disturbed area proposed excluding driveway access removing oak canopy (intrusion of up to 25 percent of the dripline permitted).

If the lot is within an Important Biological Corridor or Ecological Preserve, relief may only be granted by the Planning Commission.

Planning Commission Relief:

Where the Director cannot grant relief, the Commission may grant relief when the following findings can be made.

i. The applicant demonstrates that the project is designed to maximize use of parcel area unconstrained by oak trees, unless precluded by other significant constraints such as steep slopes, streams, creeks, wetlands, or other sensitive environmental resources.

ii. The proposed project is limited to development and site disturbance that is typical and prevalent for the general area surrounding the project site.

iii. Soil disturbance and tree removal is minimized through the incorporation of some or all of the following measures into the project design:

   a. Stepped foundations are used on sloping areas rather than graded pads;
   b. Depth of excavation and/or fill outside of the building footprint is limited to no more than five feet measured vertically from the natural ground surface, except for grading necessary to install retaining walls designed to reduce the total area of tree canopy that will be removed and/or damaged;
   c. Structures and the configuration of the area of disturbance are designed to parallel the natural topographic contours to the greatest extent feasible;
   d. Patio decks are included in the design of dwellings to minimize the need for graded yard areas;

e. Design techniques such as clustering of buildings are proposed to take advantage of the portions of the property which are least constrained by oaks;

f. The project is designed to maximize consistency with all applicable policies of the El Dorado County General Plan. *It is recognized that more than one policy may have to be considered in the determination of reasonable use of a particular parcel.*

iv. If the project site is within ~~or directly adjacent to~~ an Important Biological Corridor Overlay or Ecological Preserve a Biological Resources Study and Important Habitat Mitigation Program have been prepared by a qualified professional and approved by the County and will be fully implemented by the applicant. The Study shall be prepared in accordance with the *Biological Resources Study and Important Habitat Mitigation Program Interim Guidelines*, adopted November 9, 2006.

Replacement of any oak tree canopy area allowed to be removed by the Planning Commission in excess of the retention standards in the General Plan shall be required. At a minimum, the replacement shall be completed in accordance with the tree replacement formula. Refer to the 1:1 Woodland Replacement definition. A 2:1 ratio or as otherwise specified by a qualified professional approved by the County, pursuant to the options and methods specified in these Guidelines, may be applied at the discretion of the Planning Commission. Further, for discretionary projects, any effects on biological resources will be analyzed in the environmental document and appropriate additional mitigation proposed as required by the California Environmental Quality Act, California Oak Woodlands Conservation Law and other applicable statutes.

B. Reasonable Use Related to Oak Corridor Retention:

In order to ensure that reasonable use of the property is provided, an applicant may request the Planning Commission to provide relief from the strict application of this corridor retention requirement (Policy 7.4.4.5) in the same manner as described above. In addition, for discretionary projects, any effects on biological resources will be analyzed in the environmental document and appropriate mitigation proposed as required by the California Environmental Quality Act, California Oak Woodlands Conservation Law and other applicable statutes.

GENERAL REQUIREMENTS APPLICABLE TO ALL PROJECTS

Compliance with the General Plan:

In addition to compliance with these guidelines for these Policies, the proposed development shall be in conformance with all other applicable policies of the County General Plan and any applicable Specific Plans and/or Development Agreements.

Compliance with the Zoning Ordinance and Grading Ordinance and Building Codes:

The proposed development shall be in compliance with all applicable requirements of the County Zoning Ordinance, Grading Ordinance, and Building Codes.

County, State, or Federal Agency Requirements:

County, State and Federal agencies have different jurisdictional authority which may result in different conditions for approval. In the event of multiple agency permit approval, the most restrictive set of conditions shall apply.

Important Biological Corridor Overlay Designation and Ecological Preserve Overlay Designation:

Proposals for removal of any oak canopy cover on property within or directly adjacent to an Important Biological Corridor Overlay (IBC) designation or Ecological Preserve Overlay (EP) designation pursuant to the General Plan shall require review by the Planning Commission to ensure consistency with the requirements of Policies 7.4.2.9 and 7.4.1.4. A Biological Resource Study and Important Habitat Mitigation Program shall be required.

SITE ASSESSMENT FORM REQUIREMENTS AND THE TREE SURVEY, PRESERVATION, AND REPLACEMENT PLAN REQUIREMENTS

The Site Assessment Form requirements are detailed in Attachment 1.

BIOLOGICAL RESOURCE STUDY AND IMPORTANT HABITAT MITIGATION PROGRAM REQUIREMENTS

Biological Resource Study and Important Habitat Mitigation Program requirements are detailed in Attachment 2.

ADMINISTRATION

The above guidelines are interim standards utilized by the Development Services Department of El Dorado County to provide for consistent review of projects for conformance with Policy 7.4.4.4 pending adoption of permanent regulations.

Penalties for Violation – ~~Pursuant to Policy 7.4.5.2 D,~~ If oak trees are removed prior to review by the County and without appropriate retention and replacement provisions implemented in anticipation of development of a site, the County may withhold and defer approval of any application for development of that property ~~for a period of up to five years. Additionally, fines may be applied as high as three times the current market value of replacement trees plus the cost of replacement, and/or replacement tree(s) may be required at a 3:1 ratio at sites approved by the County. The cost of maintenance, monitoring, and reporting of any replacement trees shall be paid for by the applicant.~~ until such time as the amount of oak tree canopy removed is determined and appropriate replacement and mitigation provisions are met in conformance with Policy 7.4.4.4 to the satisfaction of the Director.

INTERNET RESOURCES

California Department of Conservation, Office of Mine Reclamation, Fall 2005 SMARA Newsletter regarding the State Oak Woodlands Conservation Law
http://www.consrv.ca.gov/omr/smara/newsletter/Fall%202005.pdf

California Department of Forestry Fire Safe Plan
http://www.fire.ca.gov/php/education_100foot.php

California Department of Forestry Fire Safe Regulations
http://www.co.el-dorado.ca.us/building/FSArticle1.htm

California Licensed Foresters Association
http://www.clfa.org/registered_professional.htm

California Board for Professional Engineers and Land Surveyors:
http://www.dca.ca.gov/pels/

CDF General Guidelines for Creating Defensible Spaces
http://www.bof.fire.ca.gov/pdfs/4291finalguidelines2_23_06.pdf

El Dorado County Department of Forestry SRA Fire Safe Regulations
http://www.co.el-dorado.ca.us/building/PDF/Booklets/Fire_safe_regs.pdf

El Dorado County General Plan
http://www.co.el-dorado.ca.us/Planning/GeneralPlanAdopted.html

El Dorado County General Plan EIR
http://www.co.el-dorado.ca.us/Planning/GeneralPlanDraftEIR.htm

McCreary DD. 2001. *Regenerating rangeland oaks in California*. Berkeley (CA): University of California, Agriculture and Natural Resources. Communication Services Publication #21601. 62 p.

Standiford, Richard and Douglas McCreary and William Frost. 2002. *Modeling the Effectiveness of Tree Planting to Mitigate Habitat Loss in Blue Oak Woodlands.* USDA Forest Service Gen. Tech. Rep. PSW-GTR-184. Available at: http://danr.ucop.edu/ihrmp/proceed/standiford.pdf

Western Chapter – International Society of Arboriculture Publications (Guide for Plant Appraisal, Item # P1209, to determine market values of trees)
http://wcisa.wcainc.com/docs/Publication.pdf

ATTACHMENTS

Exhibit One	CDF Fire Safe Plan Brochure
Attachment 1	Site Assessment Form
Attachment 2	Biological Resources Study and Important Habitat Mitigation Program Requirements

APPENDIX E

DETERMINATION OF ELIGIBILITY AND EFFECT FOR CULTURAL RESOURCES WITHIN THE BASS LAKE ROAD EXTENSION PROJECT

DETERMINATION OF ELIGIBILITY AND EFFECT

FOR CULTURAL RESOURCES WITHIN

THE BASS LAKE ROAD EXTENSION PROJECT,

EL DORADO COUNTY, CALIFORNIA

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(Job #05-006)

INTRODUCTION

The current project involves improvements to Bass Lake Road and the extension of the road within section 32, Township 10 North Range 9 East, mapped on the Clarksville USGS topographic quadrangle (Map 1). This project is associated with the Silver Springs Project that involves the subdivision of a large tract of land that extends from Green Valley Road on the north southward to Bass Lake Road, and was the subject of a 1991 study by Peak & Associates.

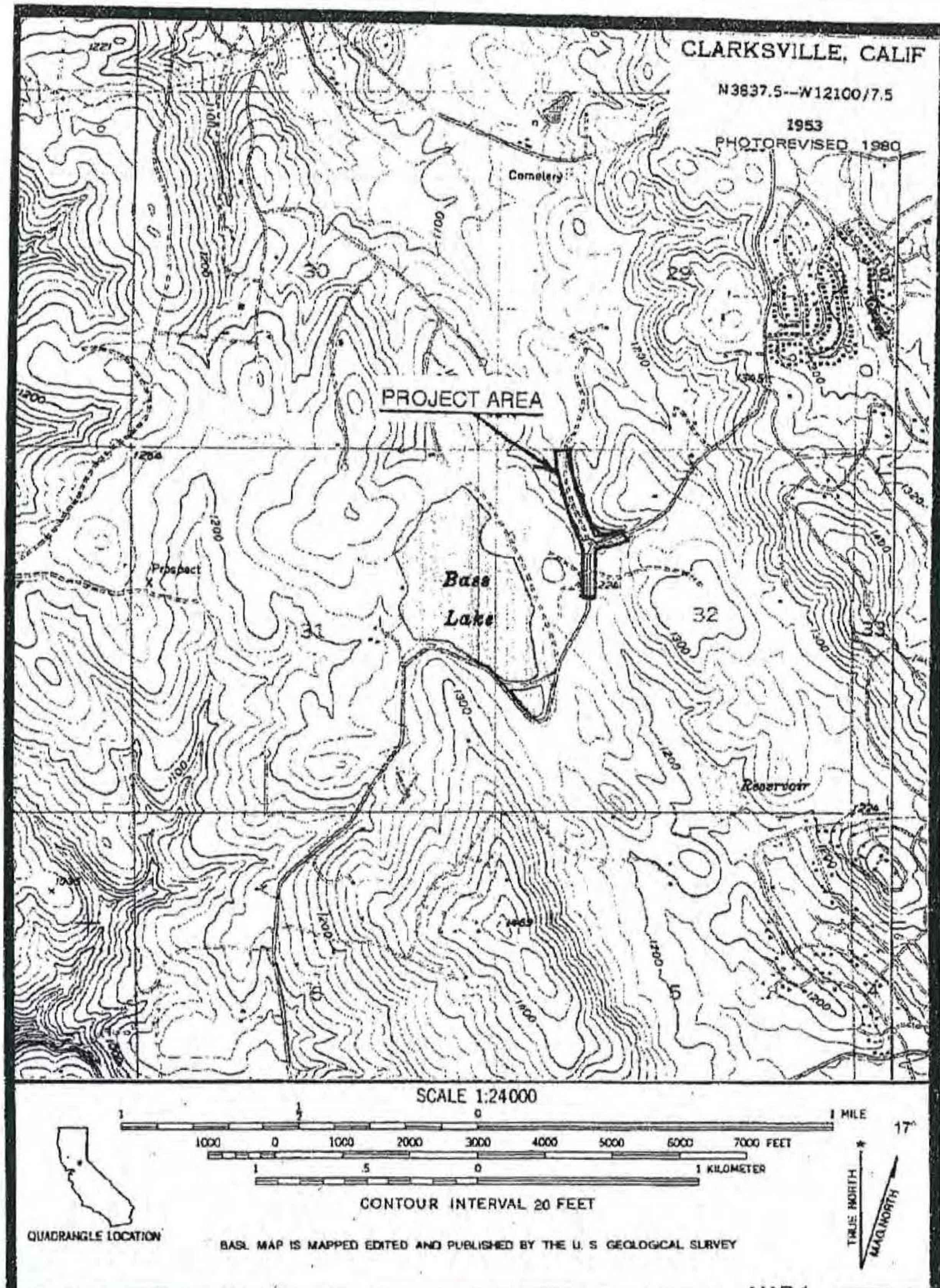
Because the proposed work will require Clean Water Act (CWA) permitting from the United States Army Corps of Engineers, the applicant will participate as a consulting party to assist the federal agency in demonstrating compliance with Section 106 of the NHPA (16 U.S.C. 470f; regulations codified at 36 CFR § 800).

Melinda Peak served as principal investigator for the current study, completing the field survey and report (resume, Appendix 1).

REGULATORY CONTEXT

The Section 106 review process is implemented using a five step procedure: 1) identification and evaluation of historic properties; 2) assessment of the effects of the undertaking on properties that are eligible for the NRHP; 3) consultation with the State Historic Preservation Office (SHPO) and other agencies for the development of a memorandum of agreement (MOA) that addresses the treatment of historic properties; 4) receipt of Advisory Council on Historic Preservation comments on the MOA or results of consultation; and 5) the project implementation according to the conditions of the MOA.

The Section 106 compliance process may not consist of all the steps above, depending on the situation. For example, if identification and evaluation result in the documented conclusion that no properties included in or eligible for inclusion are present, the process ends with the identification and evaluation step.


CLARKSVILLE, CALIF
N3837.5--W12100/7.5
1953
PHOTOREVISED 1980
Cemetery
PROJECT AREA
Prospect
Bass
Lake
Reservoir
SCALE 1:24000
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER
CONTOUR INTERVAL 20 FEET
QUADRANGLE LOCATION
BASE MAP IS MAPPED EDITED AND PUBLISHED BY THE U. S. GEOLOGICAL SURVEY
TRUE NORTH
MAG NORTH
17°
MAP 1

FRAMEWORK FOR EVALUATION

Decisions regarding management of cultural resources hinge on determinations of their significance (36 CFR 60.2). As part of this decision-making process the National Park Service has identified components which must be considered in the evaluation process, including:

- criteria for significance;
- historic context; and
- integrity.

Criteria for Significance

Significance of cultural resources is measured against the NRHP criteria for evaluation:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and,

(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) that are associated with the lives of persons significant in our past; or

(c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) that have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

Historic Context

The historic context is a narrative statement "that groups information about a series of historic properties based on a shared theme, specific time period, and geographical area" To evaluate resources in accordance with federal guidelines, these sites must be examined to determine whether they are examples of a defined "property type". The property type is a "grouping of individual properties based on shared physical or associative characteristics". Through this evaluation, each site is viewed as a representative of a class of similar properties rather than as a unique phenomenon.

A well developed historical context helps determine the association between property types and broad patterns of American history. Once this linkage is established, each resource's potential to address specific research issues can be explicated.

Integrity

For a property to be eligible for listing in the NRHP it must meet one of the criteria for significance (36 CFR 60.4 [a ,b, c, or d]) and retain integrity. Integrity is defined as "the authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's historic or prehistoric period".

The following discussion is derived from National Register Bulletin 15 ("How to Apply the National Register Criteria for Evaluation").

Within the concept of integrity, there are seven aspects or qualities that define integrity in various combinations. The seven aspects are: location, design, setting, materials, workmanship, feeling, and association. To retain historic integrity, a property will possess several or usually most of these aspects. The retention of specific aspects is necessary for a property to convey this significance. Determining which of the seven aspects are important involves knowing why, where and when the property is significant.

The prescribed steps in assessing integrity are as follows:

- define the essential physical features that must be present for a property to represent its significance;
- determine whether the essential physical features are visible enough to convey their significance;
- determine whether the property needs to be compared with similar properties; and,
- determine, based on the significance and essential physical features, which aspects of integrity are particularly vital to the property being nominated and if they are present.

Ultimately, the question of integrity is answered by whether or not the property retains the identity for which it is significant.

All properties change over time. It is not necessary for a property to retain all its historic physical features or characteristics. However, the property must retain the essential physical features that enable it to convey its historic identity. The essential physical features are those features that define why a property is significant.

A property's historic significance depends on certain aspects of integrity. Determining which of the aspects is most important to a particular property requires an understanding of the property's significance and its essential physical features. For example, a property's historic significance can be related to its association with an important event, historical pattern or person. A property that is significant for its historic association is eligible for listing if it retains the essential physical features that made up its character or appearance during the period of its association with the important event, historical pattern, or person.

A property important for association with an event, historical pattern, or person ideally might retain some features of all seven aspects of integrity. Integrity of design and workmanship, however, might not be as important to the significance, and would not be relevant if the property were an archeological site. A basic integrity test for a property associated with an important event or person is whether a historical contemporary would recognize the property as it exists today. For archeological sites that are eligible under Criteria a and b, the seven aspects of integrity can be applied in much the same way as they are to buildings, structures, or objects.

In sum, the assessment of a resource's NRHP eligibility hinges on meeting two conditions:

- the site must possess the potential to be eligible for listing in the NRHP under one of the evaluation criteria either individually or as a contributing element of a district based on the historic context that is established; and
- the site must possess sufficient integrity, i.e. it must retain the qualities that make it eligible for the NRHP.

For the NRHP, "a district possesses a significant concentration, linkage, or continuity of ... objects united historically or aesthetically by plan or physical development." The identity of a district derives from the relationship of its resources, which can be an arrangement of functionally related properties.

CULTURAL SETTING

Archeological Background

The Sacramento Delta was one of the first regions in California to attract intensive archeological fieldwork. Between 1893 and 1901, avocational archeologist J. A. Barr excavated many prehistoric mounds in the Stockton area. He collected nearly 2000 artifacts during the course of his investigations. H. C. Meredith was another avocational archeologist of the period who pursued collecting in the same Stockton locality. Meredith (1899, 1900) did publish a compilation of his own and Barr's findings, and these appear to constitute the earliest accounts of delta archeology. Holmes (1902), from the Smithsonian Institution, further elaborated on the delta or "Stockton District" archeology, presenting illustrations of artifacts collected by Meredith and Barr.

It was Elmer J. Dawson who first recognized culture changes through time in delta archeology. Though he was an amateur archeologist, Dawson understood the necessity of keeping accurate notes on grave associations and provenience of artifacts. He collaborated with W. E. Schenck to produce an overview of northern San Joaquin Valley archeology (Schenck and Dawson 1929). The overview contained information on more than 90 prehistoric sites as well as data on previous collectors.

By 1931, the focus of archeological work was directed toward the Cosumnes River locality, where survey and exploration were conducted by Sacramento Junior College (Lillard and Purves 1936). Excavations, especially at the stratified Windmiller mound (CA-SAC-107), suggested three temporally distinct cultural traditions: Early, Transitional, and Late. Information grew as a result of excavations at other mounds in the Delta and lower Sacramento Valley by Sacramento Junior College and the University of California, Berkeley.

Previous investigations in the project region have focused upon very detailed archival research of Spanish sources (Bennyhoff 1977), reexamination of earlier work (Ragir 1972; Schulz 1981; Doran 1980) and archeological investigations at a number of small sites (Schulz et al. 1979; Schulz and Simons 1973; Soule 1976). Several of the previously investigated sites probably represent satellite encampments or small villages associated with major villages. The majority of the sites appear to be relatively late in time, and probably represent Plains Miwok. The activities practiced are varied, but detailed studies on the faunal collection suggest seasonality of occupation and a focus on fish species other than the main channel varieties.

Writing the definitive summary of California archeology, Moratto (1984: 529-547) devoted an entire chapter to linguistic prehistory. For the Central Valley region, Moratto points out that some Early Horizon and Middle Horizon central California archeological sites appear at least in part, contemporaneous, based on existing radiocarbon dates. Cultural materials recovered from CA-SJO-68, an Early Horizon site, are thought to relate to date to 4350 $\pm$ 250 B.P or 2350 B.C. On the other hand, a Middle Horizon component at CA-CCO-308 dates to 4450 $\pm$ 400 B.P. or 2450 B.C. The antiquity of other Early and Middle Horizon sites demonstrate an overlap of the two horizons by a millennium or more.

One explanation proposes that the Middle Horizon represents an intrusion of ancestral Miwok speaking people into the lower Cosumnes, Mokelumne, and Sacramento River areas from the Bay Area. The Early Horizon may represent older Yokuts settlements or perhaps the speakers of a Utian language who were somehow replaced by a shift of population(s) from the bay.

Ethnological Background

The project area lies in the territory attributed to the Nisenan, a branch of the Maidu group of the Penutian language family. Tribes of this language family dominated the Central Valley, San Francisco Bay areas, and western Sierra Nevada foothills at the coming of the white man. The Nisenan controlled the drainages of the Yuba, Bear, and American rivers, along with the lower portion of the Feather River. The tribes of this whole region referred to themselves as Nisenan, meaning "people," in contrast to the surrounding tribes, in spite of close linguistic and cultural similarities. For this reason, they are usually named by this term rather than the more technical "Southern Maidu." In any event, the local main village was of more importance to the people than the tribal designation, and groups identified themselves by the name of the central village.

Their northern boundary has not been clearly established due to similarity in language to neighboring groups. The eastern boundary was the crest of the Sierra Nevada mountains. Probably a few miles south to the confluence of the American and Sacramento rivers on the valley floor was their southern boundary. The western boundary extended from this point upstream to the mouth of the Feather River.

The Valley Maidu settlement pattern was basically oriented to major river drainages, with ancillary villages located on tributary streams and sloughs. Major villages often supported a population exceeding five hundred people (Wilson and Towne 1978:389). The flat grasslands between water courses were used for collecting vegetable foods and hunting, but these activities leave little, if any, archeological evidence.

Both the valley and foothill Nisenan lived by hunting and gathering, with the latter being more important. Acorns in the forms of meal, soup or bread provided the staple diet, augmented by a wide variety of seeds and tubers. Hunting and fishing were regularly practiced, but provided less of the diet than vegetable foods. The bedrock mortar and pestle were employed to process the acorn meats into flour, and the mortar cups are frequently found throughout the range of oak trees. Both salmon and eel were caught at Salmon Falls near Folsom.

Religion was in the form of the "Kuksu Cult," a widespread pattern among the California Indians. Ceremonies congregated in the semi-subterranean dancehouse located at the central village and "cry sites" where the annual mourning ceremony for the dead took place. Later, the religious revival of the ghost dance also affected this area.

In 1833, the great epidemic swept through the Sacramento Valley. This epidemic has been attributed to malaria (Cook 1955:308), and is estimated to have killed seventy-five percent of the native population, leaving only a shadow of the original Maidu to face the intruding miners and settlers. The Nisenan of the mountain areas felt little of the impact of European settlement in California as compared to the Valley Nisenan, who were subjected to some missionization. The Mountain Nisenan, remote from these early impacts, were overwhelmed by the gold rush. Native ways of life were almost totally abandoned, and today only a few families in Placer, Nevada, Yuba, and El Dorado counties identify themselves as Nisenan and can speak the language (Wilson and Towne 1978).

Historical Background

Green Valley Road follows part of the route of the earliest and one of the most important Gold Rush era transportation routes in El Dorado County. This route led from Sutter's Fort to Coloma and was laid out by Sutter himself in 1847-48 as a route to his sawmill at Coloma (Hoover, Rensch and Rensch 1971:74). The route was adopted by the gold seekers pouring into the Coloma area and continued to be a major transportation corridor for many years. The road was used by the Pony Express in 1860-61, during the enterprise's brief but spectacular existence. It was also the route of the first stagecoach line in California, started in 1849 by James Birch (Hoover, Rensch and Rensch 1971:75).

Numerous way stations and inns were constructed along the route, but few of these are still in existence. One of the few is Pleasant Grove House, located directly across Green Valley Road from the project area. This is now a private residence and is State Historic Landmark 703. In addition to serving as a roadside inn, it was also a Pony Express remount station (California Department of Parks and Recreation 1990).

The project vicinity was not greatly affected by the Gold Rush except for the development of transportation routes. Mining was not intensive in this area, and the primary economic basis from the earliest days on was agriculture. In recent years, this has consisted primarily of stock raising. Earlier, fruit orchards and vineyards were prominent in the area (Sioli 1883:111).

Bass Lake is an early reservoir, appearing as early as the 1866 General Land Office plat of the township. By 1925, its ownership had passed to the Diamond Ridge Water Company. It is now operated by the El Dorado Irrigation District.

RESEARCH

A review of the files maintained at the North Central Information Center of the California Historical Resources Information System was conducted on 2005. The record search revealed that a number of surveys have been conducted in and near the project area. One site, CA-ELD-1198H has been recorded immediately east of the project area. The site is described as the remains of the Zimmelman ranch (Appendix 2).

NATIVE AMERICAN CONSULTATION

A letter was sent to the Native American Heritage Commission requesting a check of the Sacred Lands files. The NAHC responded on March 8, 2005, indicating that there are no reported Sacred Lands (Appendix 3). The NAHC provided a list of potential contacts. Letters were then sent to: Jeff Murray, Shingle Springs Rancheria, the El Dorado Indian Council, and Jeri Scambler, El Dorado Miwok Tribe, requesting information on site of concern in or near the project area. No replies have been received to date.

FIELD SURVEY

Although the project area has been partially covered by previous surveys, the surveys are more than 5 years old. A new survey of the entire project area was conducted. The project area was covered in narrow transects, allowing complete coverage. Where necessary, small scrapes were made with a trowel to expose the ground surface.

There is no evidence of prehistoric or historic resources in the project area

EFFECTS OF THE PROPOSED PROJECT

As a result of the identification and evaluation efforts, an agency official may find that there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them as defined in Section 800.16 (i).

If the agency official finds there are historic properties which may be affected by the undertaking, the agency official shall apply the criteria of adverse effect. "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association" (Section 800.5 (a)).

There are three possible findings:

- **Finding of no historic properties affected:** There is no effect of any kind on the historic properties.
- **Finding of no adverse effect:** There could be an effect, but the effect would not be harmful to the characteristics that qualify the property for inclusion in the National Register; or

- **Adverse effect:** There could be an effect, and that effect could diminish the integrity of such characteristics.

There were no historic properties recorded within the project area.

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APPENDIX 1

Resume

PEAK & ASSOCIATES, INC.
RESUME

MELINDA A. PEAK **January 2005**
Senior Historian/Archeologist
3941 Park Drive, Suite 20 #329
El Dorado Hills, CA 95762
(916) 939-2405

PROFESSIONAL EXPERIENCE

Ms. Peak has served as the principal investigator on a wide range of prehistoric and historic excavations throughout California. She has directed laboratory analyses of archeological materials, including the historic period. She has also conducted a wide variety of cultural resource assessments in California, including documentary research, field survey and report preparation.

In addition, Ms. Peak has developed a second field of expertise in applied history, specializing in site specific research. She is a registered professional historian and has completed a number of historical research projects. Ms. Peak has been a regular lecturer for courses in the Capital Campus Public History program (California State University, Sacramento), teaching cultural resource law and site specific research methods.

Through her education and experience, Ms. Peak meets the Secretary of Interior Standards for historian, architectural historian, prehistoric archeologist and historic archeologist.

EDUCATION

M.A. - History - California State University, Sacramento, 1989
Thesis: *The Bellevue Mine: A Historical Resources Management Site Study in Plumas and Sierra Counties, California*
B.A. - Anthropology - University of California, Berkeley, 1976

RECENT PROJECTS

In recent months, Ms. Peak has completed several determination of eligibility and effect documents in coordination with the Corps of Engineers for projects requiring federal permits, assessing the eligibility of a number of sites for the National Register of Historic Places. She has also completed historical research projects on a wide variety of topics for a number of projects including the development of navigation and landings on the Napa River, a farmhouse dating to the 1860s, an early roadhouse, and a section of an electric railway line. She also completed an NRHP evaluation of Folsom Dam for the Corps of Engineers.

In recent years, Ms. Peak has prepared a number of cultural resource overviews and predictive models for blocks of land proposed for future development for general and specific plans. She has been able to direct a number of surveys of these areas, allowing the model to be tested.

She served as principal investigator for the multi-phase Twelve Bridges Golf Club project in Placer County. She served as liaison with the various agencies, helped prepare the historic properties treatment plan, managed the various phases of test and data recovery excavations, and completed the final report on the analysis of the test phase excavations of a number of prehistoric sites. She is currently involved as the principal investigator for the Clover Valley Lakes project adjacent to Twelve Bridges in the City of Rocklin, coordinating contacts with Native Americans, the Corps of Engineers and the Office of Historic Preservation.

Ms. Peak has served as project manager for a number of major survey and excavation projects in recent years, including the many surveys and site definition excavations for the 172-mile-long Pacific Pipeline proposed for construction in Santa Barbara, Ventura and Los Angeles counties. She also completed an archival study in the City of Los Angeles for the project. She also served as principal investigator for the 1997 coaxial cable removal project for AT&T.

Additionally, she completed a number of small surveys, served as a construction monitor at several urban sites, and directed the excavations of several historic complexes in Sacramento, Placer and El Dorado Counties.

Ms. Peak is the author of a chapter and two sections of the recently published history (1999) of Sacramento County, *Sacramento: Gold Rush Legacy, Metropolitan Legacy*. She is currently preparing text for the second Sacramento County history volume, to be published by Heritage Media in 2005.

APPENDIX 2

Record Search

NORTH CENTRAL INFORMATION CENTER

CSU-SACRAMENTO - 6000 J STREET, ADAMS BDLG., #103, SACRAMENTO, CA 95819-6100
916-278-6217 FAX 916-278-5162

Summary of Results for Records Search

March 17, 2005 NCIC File No: ELD-05-46

Robert Gerry
Peak & Associates, Inc.
3941 Park Drive, Suite 20 #329
El Dorado Hills, CA 95762

From: Sally Torpy, Researcher

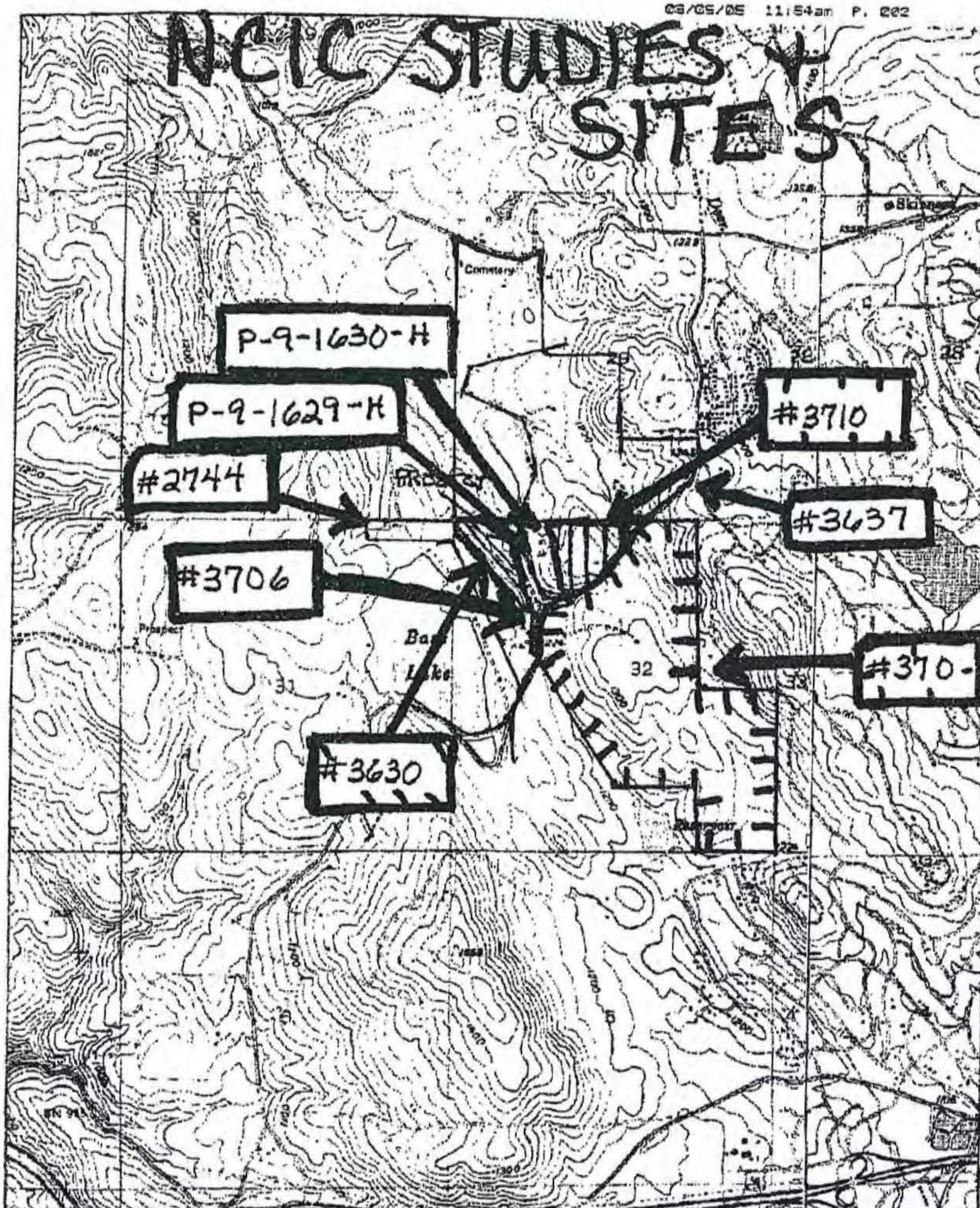
RE: Silver Springs Road Improvements,
T10N/R9E Section 32, Clarksville Quad., El Dorado County

- NCIC Sites Within/Adjacent to Project Area:
  CA-ELD-1198-H (P-9-1587)
  CA-ELD-1199-H (P-9-1588)
  P-9-1629-H
  P-9-1630-H
  Copies of site records enclosed.
- NCIC Studies Within/Adjacent to Project Area:

#370	(Jean E. Starns 1990)
#2744	(Peak & Associates, Inc. 1988)
#3630	(Dana E. Supernowicz 1998)
#3637	(Peak and Associates 1984)
#3706	(James Snoke 1985)
#3710	(Peak & Associates, Inc. 1989)

  Title pages and survey maps enclosed.
- National Register of Historic Places: Nothing Found
- OHP Historic Property Directory (HPD): Nothing Found
- California Inventory of Historic Resources (1976): Nothing Found
- California Dept. of Transportation Bridge Inventory (1987 and 2000): Nothing Found
- California State Historic Landmarks (1996): Nothing Found
- Points of Historical Interest (1992): Nothing Found
- California Gold Camps (Gudde, 1975): Nothing Found

As indicated on the attached agreement form, the charge for this record search is **$185.25.** Payment instructions are included at the bottom of the form. Please sign where indicated and return the **YELLOW** copy with your payment.



Name: CLARKSVILLE
Date: 3/5/2005
Scale: 1 inch equals 2000 feet

Location: 10 672413 E 4283118 N
Caption: Gibson ,Skordahl
Silver Springs Road Improvements

APPENDIX 3

Native American Consultation

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390
Web Site www.nahc.ca.gov

March 8, 2005

Robert Gerry
Peak & Asociates
3941 Park Drive, Suite 20
El Dorado Hills, CA 95762

Sent by Fax: 916-342-0273
Number of Pages: 4

RE: Proposed Sierra College Plaza commercial development, Placer County; Silver Springs residential subdivision, El Dorado County; Hwy 132 and Bird Road, San Joaquin County

Dear Mr. Gerry:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4038.

Sincerely,

Debbie Pilas-Treadway
Environmental Specialist III

Native American Contacts
El Dorado County
March 8, 2005

El Dorado County Indian Council
P.O. Box 564 Miwok
El Dorado , CA 95623 Maidu
(530) 647-0423

El Dorado Miwok Tribe
Jeri Scambler, Chairperson
PO Box 1284 Miwok
El Dorado , CA 95623
miwoktribe@hotmail.com
530-363-3257

El Dorado Miwok Tribe
Ernest Faircloth, Cultural Preservation
PO Box 258 Miwok
El Dorado , CA 95623
(530) 626-7572

El Dorado Miwok Tribe
Randy Yonemura
4305 - 39th Avenue Miwok
Sacramento , CA 95824
(916) 421-1600

Shingle Springs Band of Miwok Indians
Jeff Murray, Cultural Resources Manager
P.O. Box 1340 Miwok
Shingle , CA 95682 Maidu
shingle_springs_rancheria@ho
(530) 676-8010
(530) 676-8033 Fax

Shingle Springs Band of Miwok Indians
Nicholas Fonseca, Chairperson
P.O. Box 1340 Miwok
Shingle , CA 95682 Maidu
shingle_springs_rancheria@ho
(530) 676-8010
(530) 676-8033 Fax

Todd Valley Miwok-Maidu Cultural Foundation
Christopher Suehead, Cultural Representative
PO Box 1490 Miwok
Foresthill , CA 95631 Maidu
tvmmcf@foothill.net
(530) 367-3893 - Voice / Fax

United Auburn Indian Community of the Auburn
Jessica Tavares, Chairperson
575 Menlo Drive, Suite 2 Maidu
Rocklin , CA 95765 Miwok
916 663-3720
916 663-3727 - Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resource assessment for the proposed road improvements, Silver Springs residential subdivision, El Dorado County.

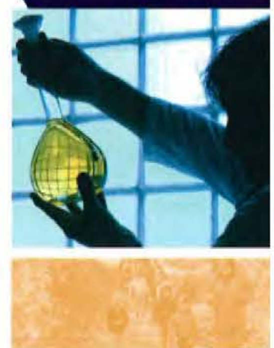
APPENDIX F

DRAINAGE REPORT SILVER SPRINGS PARKWAY-OFFSITE

DRAINAGE REPORT

SILVER SPRINGS PARKWAY – OFFSITE
El Dorado County

September 2008



Stantec

DRAINAGE REPORT

SILVER SPRINGS PARKWAY – OFFSITE
El Dorado County
September 2008

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Prepared for:
Silver Springs LLC
2999 Oak Road, Suite 400
Walnut Creek, CA 94597
(925) 933-1405

Prepared by:
Stantec Consulting Inc.
2590 Venture Oaks Way
Sacramento, CA 95833
(916) 569-2500 tel
(916) 921-9274 fax

Stantec

REGISTERED PROFESSIONAL ENGINEER
CARIANN ELIZABETH OLIVER
No. 62901
Exp. 6-30-10
CIVIL
STATE OF CALIFORNIA

SILVER SPRINGS LLC
SILVER SPRINGS PARKWAY - OFFSITE
DRAINAGE REPORT
February 2008

INTRODUCTION

This drainage report is specific to the Silver Springs Parkway Offsite (Project #66108) improvement plans to be developed in El Dorado County. Silver Springs Parkway Offsite is part of the larger overall Silver Springs development, which includes a total of 234 residential lots and improvements to Bass Lake Road, Green Valley Road/Deer Valley Road Intersection and Green Valley Road/Silver Springs Parkway Intersection. This offsite portion of Silver Springs Parkway is bounded on the east by APN 115-030-041 and 115-030-151 and on the west by APN 115-030-031. (See Site Map, Figure 1)

PURPOSE

The purpose of this report is to present the results of the hydrologic and hydraulic analyses performed to design and develop the proposed storm drain system at ultimate build out conditions. The storm drain system is designed to convey the anticipated 10-year flow through the pipe system. In addition, an "overland release path" has been considered to assure that flows in excess of the pipe system capacity are capable of being conveyed to an acceptable outlet point, without creating excessive depths.

The El Dorado County Drainage Manual was used for the analysis.

SITE CONDITIONS

The project is in the foothills of the Sierra Nevada, in Rescue, California. The existing ground surrounding Silver Springs Parkway Offsite is rolling hills with native grass ground cover. Oak trees and manzanita brush are interspersed along draws and hillsides. The terrain varies from gentle slopes to steeper hills with slopes as great as 2H:1V. The Silver Springs Parkway Offsite street grades will range from 0.5% to almost 5%. Catch slopes along the roadway will range from 2H:1V and flatter.

Per the 2004 General Plan parcels 115-030-041 and 115-030-151 are projected to have one dwelling unit per 5 acres and parcel 115-030-031 is projected to have 1-5 dwelling units per acre at ultimate build out. These projected dwelling units were used in order to design and develop the drainage network within and adjacent to the roadway.

METHODOLOGY

Per the El Dorado County Drainage Manual, the storm drain pipe system is to be designed to convey the 10-year design flows. The design flows were calculated using the Rational Method ($Q = C * I * A$).

The hydraulic analysis is based on Manning's equation. An "n-value" of 0.013 and 0.024 was used for all HDPE and corrugated metal pipes, respectively.

HYDROLOGY

The Silver Springs Parkway Offsite project is located within an area where the mean annual rainfall is 28-inches per year. (See Mean Annual Rainfall for El Dorado County, California image in Appendix). With a mean annual rainfall of 28-inches per year, the rainfall intensity was determined as follows based on the El Dorado County Drainage Manual rainfall intensity in inches per hour for return periods of 10-years and 100-years (see appendix for tables):

DEPTH-DURATION-INTENSITY (for 28-inches per year)

Duration (min)	10-year (in/hr)	100-year (in/hr)
10	1.80	2.55
15	1.48	2.09
30	1.06	1.50
60	0.76	1.07

The time of concentration is the time required for water to flow from the most remote part of the drainage area to a concentrated point. The time of concentration was computed for an overland flow (sheet flow) path and a shallow concentrated flow path. Time of concentration for sheet flow was calculated using a simplified form of Manning's kinematic solution:

$$T_{c(overland)} = \frac{(0.007)(L)^{0.8}(n)^{0.8}}{(P_2)^{0.5}(s)^{0.4}}$$

where L= length, n=0.15, s=slope and P_2 = 2.657 and is the Rainfall Depth in inches for Return Period of 2 years (See Figure 2-42 in appendix).

Time of concentration for shallow concentrated flow was calculated using the equation:

$$T_{c(shallow)} = (L/V)/60$$

where V= 20.3283 $(S)^{0.5}$and L=length.

The time of concentration inputted into the STORMCAD program was the sum of an initial time of concentration of 10 minutes plus the time of concentration for the overland flow plus the time of concentration for the shallow concentrated flow. A minimum time of concentration of 15 minutes was used for each inlet.

The Runoff Coefficient (C) is a function of land use, ground cover and soil imperviousness. In order to determine the runoff coefficient, C, a curve number, CN, was determined from Table

2.2.a-Runoff curve number for urban areas of the El Dorado County Drainage Manual (see appendix for table). For the parcels on the west side of Silver Springs Parkway Offsite, a CN=82 was used and a CN=87 was used for the parcel on the east side of Silver Springs Parkway. After determining the CN numbers, from Figure 2.5.3 Runoff Coefficients for 10-yr event below 1,640' (see appendix for figure), runoff coefficients of C=0.51 and C=0.61, respectively, were found.

HYDRAULICS

The drainage facilities for Silver Springs Parkway Offsite consist of a pipe network within the roadway right-of-way and drainage easements. Concrete lined ditches and the street curb section are designed to convey the flows to the drain inlets. Each drain inlet is sized and spaced to accommodate the 10-year flows based on the Manning's equation. The 10-year design flows and hydraulic grade lines are contained within the pipe and manhole system.

The concrete ditches along the roadway are sized to accommodate the flows from the adjacent properties. (See ditch capacity calculations in appendix.)

SUMMARY

This study has been completed in accordance with the El Dorado County Drainage Manual. The runoff flows for the 10-year and 100-year floods have been determined and analyzed for the proposed drainage network assuming ultimate build-out conditions surrounding Silver Springs Parkway Offsite. The maximum flows within the street are contained below the top of curb, and the concrete lined ditches along to the roadway will carry the flows from the adjacent properties. The storm drain system discharges to the existing drainage pipe network in Silver Springs Parkway - Onsite. Erosion control features will be provided at the outlets to protect both the outfall structures and the receiving channels. Water Quality features will be built into the street sections and downstream of the outfall points.

STORMCAD hydrologic and hydraulic summaries for each pipe system are provided in the appendix, along with a Drainage Shed Map showing each minor sub-shed and area contributing to the proposed system(s) (see EXHIBIT-1). Shed boundaries not included in the topography of EXHIBIT-1 are based on the QUAD Map shown in EXHIBIT-2, outlining the appropriate area of our project site.

SCALE: 1"=300'

Client/Project
SILVER SPRINGS LLC
SILVER SPRINGS PARKWAY OFFSITE

Figure No.
1.0

Title
SITE MAP

Stantec

SEPTEMBER 2008
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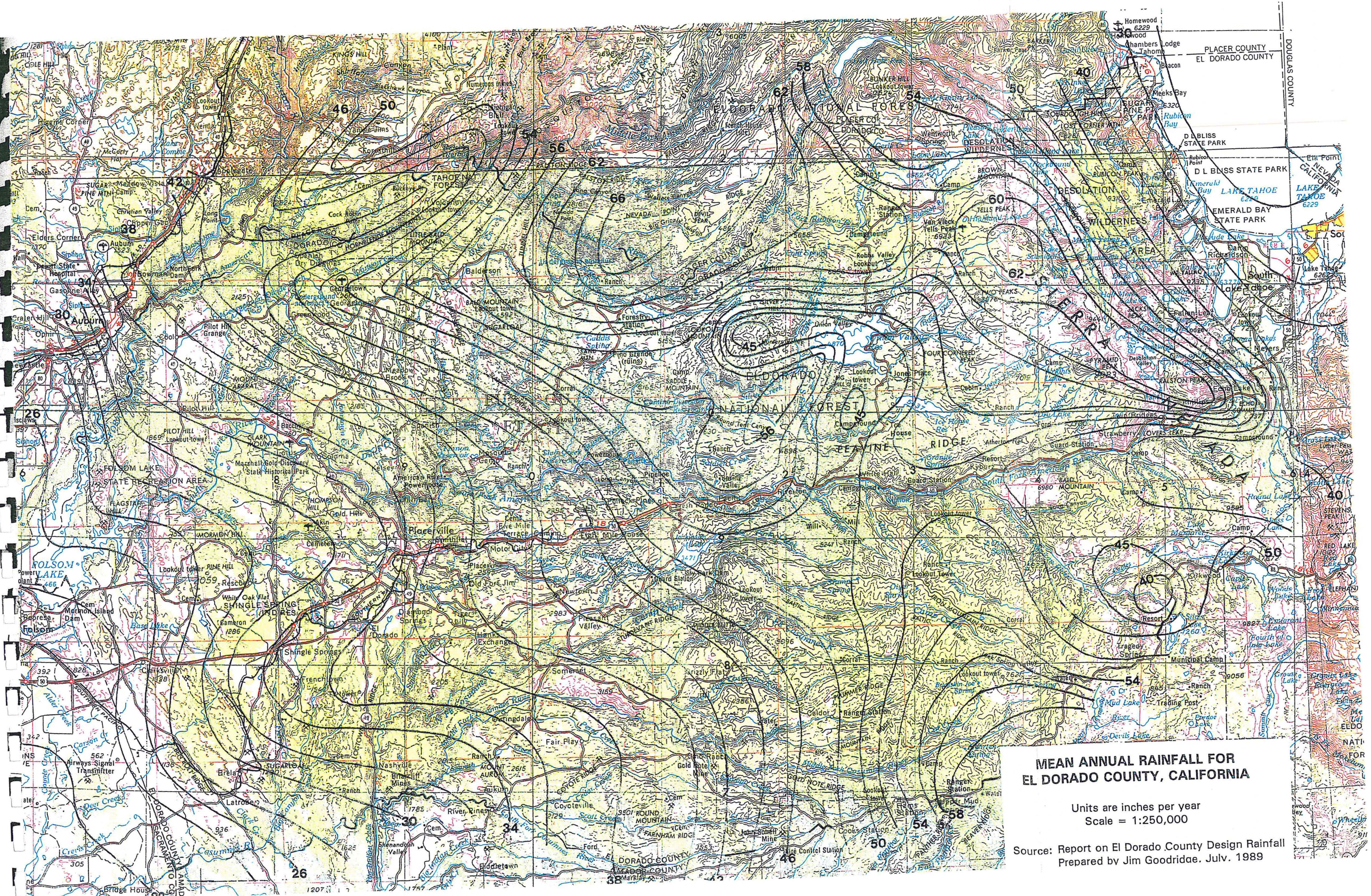
APPENDIX

Upstream Node	Down-stream Node	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Length (ft)	Constructed Slope (ft/ft)	Section Size	Rough-ness	System Flow Time (min)	Inlet C Co-efficient	Inlet Area (acres)	Upstream CA (acres)	Total CA (acres)	System Intensity (in/hr)	Discharge Q_{10} (cfs)	Discharge Q_{100} (cfs)	Full Capacity (cfs)	Upstream Ground Elevation (ft)	Upstream HGL_{10} (ft)	Change in Upstream GE and HGL_{10} (ft)	Upstream HGL_{100} (ft)	Change in Upstream GE and HGL_{100} (ft)	Downstream Ground Elevation (ft)	Down-stream HGL_{10} (ft)	Change in Downstream GE and HGL_{10} (ft)	Downstream HGL_{100} (ft)	Change in Downstream GE and HGL_{100} (ft)	$Velocity_{10}$ (ft/s)
Drain Network A																											
1A	5A	1,210.94	1,210.74	10	0.0200	36 inch	0.013	15	0.61	15	9.15	9.15	1.48	13.65	19.28	94.32	1,217.34	1,212.12	5.22	1,212.35	4.99	1,217.34	1,212.23	5.11	1,212.54	4.80	9.5
2A	3A	1,213.20	1,212.76	19	0.0232	18 inch	0.013	35	0.51	8.58	4.38	4.38	1.01	4.45	6.3	15.98	1,217.20	1,214.01	3.19	1,214.17	3.03	1,216.64	1,213.74	2.90	1,213.95	2.69	7.75
3A	5A	1,212.76	1,212.24	26	0.0200	18 inch	0.013	35.04	0.61	0.09	0.05	4.43	1.01	4.51	6.38	14.85	1,216.64	1,213.58	3.06	1,213.74	2.90	1,217.34	1,212.84	4.50	1,212.97	4.37	7.37
5A	15A	1,210.74	1,205.64	86	0.0593	36 inch	0.013	35.1	N/A	N/A	N/A	13.58	1.01	13.81	19.54	162.42	1,217.34	1,211.92	5.42	1,212.16	5.18	1,213.11	1,207.20	5.91	1,207.52	5.59	14.01
8A	10A	1,208.87	1,208.02	21	0.0405	18 inch	0.013	15	0.61	0.28	0.17	0.17	1.48	0.25	0.36	21.13	1,212.87	1,209.06	3.81	1,209.09	3.78	1,213.08	1,208.37	4.71	1,208.44	4.64	4.06
9A	10A	1,208.36	1,208.02	34	0.0100	18 inch	0.013	15	0.61	0.29	0.18	0.18	1.48	0.26	0.37	10.5	1,212.36	1,208.55	3.81	1,208.59	3.77	1,213.08	1,208.37	4.71	1,208.44	4.64	2.52
10A	15A	1,208.02	1,207.14	88	0.0100	18 inch	0.013	15.22	N/A	N/A	N/A	0.35	1.47	0.52	0.73	10.5	1,213.08	1,208.29	4.79	1,208.34	4.74	1,213.11	1,207.37	5.74	1,207.52	5.59	3.08
15A	20A	1,205.64	1,203.78	74	0.0251	36 inch	0.013	35.2	N/A	N/A	N/A	13.93	1.01	14.15	20.02	105.74	1,213.11	1,206.84	6.27	1,207.08	6.03	1,209.78	1,205.34	4.44	1,205.67	4.11	10.41
19A	20A	1,205.37	1,205.14	23	0.0100	12 inch	0.013	15	0.61	0.1	0.06	0.06	1.48	0.09	0.13	3.56	1,208.87	1,205.49	3.38	1,205.66	3.21	1,209.78	1,205.34	4.44	1,205.67	4.11	1.93
20A	25A	1,203.78	1,201.76	35	0.0577	36 inch	0.013	35.32	N/A	N/A	N/A	13.99	1.01	14.2	20.08	160.23	1,209.78	1,204.98	4.80	1,205.22	4.56	1,209.47	1,202.44	7.03	1,202.59	6.88	13.99
23A	24A	1,195.48	1,195.30	18	0.0100	24 inch	0.013	30	0.51	15.11	7.71	7.71	1.06	8.23	11.65	22.62	1,200.80	1,196.50	4.30	1,196.71	4.09	1,199.80	1,196.33	3.47	1,196.54	3.26	6.63
24A	25A	1,195.30	1,194.61	69	0.0100	24 inch	0.013	30.05	0.51	0.24	0.12	7.83	1.06	8.36	11.83	19.61	1,199.80	1,196.33	3.47	1,196.54	3.26	1,209.47	1,195.52	13.95	1,196.03	13.44	5.99
25A	30A	1,193.61	1,186.27	140	0.0524	36 inch	0.013	35.36	N/A	N/A	N/A	21.82	1.01	22.13	31.31	132.35	1,209.47	1,195.12	14.35	1,195.42	14.05	1,200.86	1,189.76	11.10	1,191.48	9.38	13.89
26A	27A	1,193.50	1,190.50	108	0.0278	12 inch	0.013	22	0.61	3.52	2.15	2.15	1.28	2.78	3.93	5.94	1,198.50	1,194.21	4.29	1,194.34	4.16	1,193.00	1,190.98	2.02	1,192.93	0.07	7.44
27A	28A	1,187.50	1,186.58	55	0.0167	36 inch	0.013	24	0.61	42.53	25.94	28.09	1.23	34.77	49.16	86.26	1,193.00	1,190.11	2.89	1,192.33	0.67	1,200.29	1,190.03	10.26	1,192.03	8.26	11.55
28A	30A	1,186.58	1,186.27	31	0.0100	36 inch	0.013	24.08	0.61	0.26	0.16	28.25	1.23	34.9	49.29	66.69	1,200.29	1,189.84	10.45	1,191.65	8.64	1,200.86	1,189.76	11.10	1,191.48	9.38	4.94
29A	30A	1,196.79	1,196.53	26	0.0100	12 inch	0.013	15	0.61	0.21	0.13	0.13	1.48	0.19	0.27	3.56	1,200.29	1,196.97	3.32	1,197.00	3.29	1,200.86	1,196.69	4.17	1,196.72	4.14	2.41
30A	35A	1,186.27	1,182.79	174	0.0200	36 inch	0.013	35.53	N/A	N/A	N/A	50.2	1.00	50.83	71.92	94.32	1,200.86	1,188.59	12.27	1,189.87	10.99	1,192.35	1,186.05	6.30	1,187.85	4.50	13.59
33A	34A	1,188.80	1,188.00	40	0.0200	12 inch	0.013	15	0.51	0.02	0.01	0.01	1.48	0.02	0.02	5.04	1,200.00	1,188.85	11.15	1,188.86	11.14	1,191.50	1,188.04	3.46	1,188.05	3.45	1.43
34A	35A	1,187.50	1,187.04	46	0.0100	18 inch	0.013	15.47	0.61	0.23	0.14	0.15	1.47	0.22	0.31	10.5	1,191.50	1,187.67	3.83	1,187.84	3.66	1,192.35	1,187.19	5.16	1,187.85	4.50	2.39
35A	40A	1,182.79	1,180.62	90	0.0241	36 inch	0.013	35.74	N/A	N/A	N/A	50.35	1.00	50.88	71.93	103.56	1,192.35	1,185.11	7.24	1,186.56	5.79	1,188.46	1,184.36	4.10	1,185.51	2.95	14.59
37A	38A	1,183.44	1,183.20	12	0.0200	18 inch	0.013	30	0.61	8.83	5.39	5.39	1.06	5.76	8.14	14.85	1,190.50	1,184.37	6.13	1,185.91	4.59	1,187.20	1,184.49	2.71	1,185.84	1.36	7.87
38A	40A	1,183.20	1,182.12	54	0.0200	18 inch	0.013	30.03	0.51	0	0	5.39	1.06	5.75	8.14	14.85	1,187.20	1,184.49	2.71	1,185.84	1.36	1,188.46	1,184.36	4.10	1,185.51	2.95	7.87
39A	40A	1,183.36	1,182.74	31	0.0200	18 inch	0.013	15	0.61	0.23	0.14	0.14	1.48	0.21	0.3	14.85	1,187.36	1,184.36	3.00	1,185.51	1.85	1,188.46	1,184.36	4.10	1,185.51	2.95	2.99
40A	45A	1,180.62	1,171.50	196	0.0465	36 inch	0.013	35.85	N/A	N/A	N/A	55.87	1.00	56.41	79.71	143.87	1,188.46	1,183.05	5.41	1,183.39	5.07	1,181.41	1,172.82	8.59	1,174.48	6.93	19.12
41A	42A	1,174.50	1,174.14	18	0.0200	12 inch	0.013	25	0.61	2.15	1.31	1.31	1.20	1.59	2.24	5.04	1,178.00	1,175.03	2.97	1,175.14	2.86	1,180.31	1,174.54	5.77	1,174.63	5.68	5.68
42A	45A	1,173.64	1,173.00	32	0.0200	18 inch	0.013	25.05	0.61	0.17	0.1	1.42	1.20	1.71	2.42	14.85	1,180.31	1,174.13	6.18	1,174.44	5.87	1,181.41	1,173.74	7.67	1,174.48	6.93	5.6
43A	45A	1,176.81	1,176.29	26	0.0200	12 inch	0.013	15	0.61	0.53	0.32	0.32	1.48	0.48	0.68	5.04	1,180.31	1,177.10	3.21	1,177.15	3.16	1,181.41	1,176.50	4.91	1,176.54	4.87	4.05
45A	50A	1,170.50	1,165.48	256	0.0196	48 inch	0.013	36.02	N/A	N/A	N/A	57.61	1.00	58.06	82.06	201.14	1,181.41	1,172.79	8.62	1,173.25	8.16	1,175.97	1,168.99	6.98	1,169.83	6.14	13.84
46A	47A	1,171.10	1,170.50	30	0.0200	18 inch	0.013	24	0.61	10.89	6.64	6.64	1.23	8.22	11.62	14.85	1,175.50	1,172.21	3.29	1,172.40	3.10	1,174.00	1,171.35	2.65	1,171.56	2.44	8.62
47A	50A	1,170.00	1,167.48	53	0.0475	24 inch	0.013	24.06	0.51	1.63	0.83	7.47	1.23	9.24	13.06	49.33	1,174.00	1,171.09	2.91	1,171.30	2.70	1,175.97	1,168.99	6.98	1,169.83	6.14	12.03
48A	50A	1,169.00	1,167.98	51	0.0200	18 inch	0.013	25	0.61	2.14	1.31	1.31	1.20	1.58	2.23	14.85	1,173.00	1,169.47	3.53	1,169.80	3.20	1,175.97	1,168.99	6.98	1,169.83	6.14	5.47
50A	55A	1,165.48	1,161.90	244	0.0147	48 inch	0.013	36.33	N/A	N/A	N/A	66.39	1.00	66.7	94.29	173.98	1,175.97	1,167.95	8.02	1,168.42	7.55	1,173.65	1,165.46	8.19	1,166.31	7.34	12.93
51A	55A	1,168.55	1,167.91	32	0.0200	12 inch	0.013	15	0.61	1.47	0.9	0.9	1.48	1.34	1.89	5.04	1,172.55	1,169.04	3.51	1,169.14	3.41	1,173.65	1,168.26	5.39	1,168.34	5.31	5.42
52A	53A	1,166.50	1,164.90	83	0.0193	18 inch	0.013	15	0.51	0.93	0.47	0.47	1.48	0.71	1	14.58	1,170.50	1,166.81	3.69	1,166.87	3.63	1,172.55	1,165.40	7.15	1,166.32	6.23	4.26
53A	55A	1,164.90	1,164.40	25	0.0200	18 inch	0.013	15.32	0.61	0.58	0.35	0.83	1.47	1.23	1.73	14.85	1,172.55	1,165.40	7.15	1,166.32	6.23	1,173.65	1,165.46	8.19	1,166.31	7.34	5.08
55A	60A	1,161.90	1,159.40	275	0.0091	48 inch	0.013	36.64	N/A	N/A	N/A	68.12	0.99	68.22	96.46	136.95	1,173.65	1,164.40	9.25	1,164.88	8.77	1,171.30	1,161.40	9.90	1,161.88	9.42	10.89
Drain Network B																											
1B	5B	1,207.00	1,201.00	101	0.0594	24 inch	0.013	23	0.61	13.23	8.07	8.07	1.26	10.22	14.44	55.14	1,207.00	1,208.14	-1.14	1,208.37	-1.37	1,201.00	1,201.58	-0.58	1,201.70	-0.70	13.41



MEAN ANNUAL RAINFALL FOR EL DORADO COUNTY, CALIFORNIA

Units are inches per year
Scale = 1:250,000

Source: Report on El Dorado County Design Rainfall
Prepared by Jim Goodridge, July, 1989

Rainfall Intensity in inches per hour for Return Period = 10 years

Mean Annual Percipitation	5Min	10Min	15Min	30Min	1Hr	2Hrs	3Hrs	6 Hrs	12Hrs	24 Hrs
20	2.004	1.434	1.179	.843	.603	.432	.355	.254	.182	.130
22	2.127	1.522	1.251	.895	.640	.458	.377	.270	.193	.138
24	2.255	1.613	1.326	.949	.679	.486	.399	.286	.204	.146
26	2.383	1.705	1.402	1.003	.718	.514	.422	.302	.216	.155
28	2.512	1.797	1.478	1.057	.756	.541	.445	.318	.228	.163
30	2.640	1.889	1.553	1.111	.795	.569	.468	.335	.239	.171
32	2.769	1.981	1.629	1.165	.834	.597	.490	.351	.251	.180
34	2.897	2.073	1.704	1.219	.872	.624	.513	.367	.263	.188
36	3.026	2.165	1.780	1.273	.911	.652	.536	.383	.274	.196
38	3.154	2.257	1.855	1.327	.950	.680	.559	.400	.286	.205
40	3.282	2.349	1.931	1.381	.988	.707	.581	.416	.298	.213
42	3.411	2.440	2.006	1.436	1.027	.735	.604	.432	.309	.221
44	3.539	2.532	2.082	1.490	1.066	.763	.627	.449	.321	.230
46	3.668	2.624	2.157	1.544	1.104	.790	.650	.465	.333	.238
48	3.796	2.716	2.233	1.598	1.143	.818	.672	.481	.344	.246
50	3.925	2.808	2.309	1.652	1.182	.846	.695	.497	.356	.255
52	4.053	2.900	2.384	1.706	1.221	.873	.718	.514	.368	.263
54	4.181	2.992	2.460	1.760	1.259	.901	.741	.530	.379	.271
56	4.310	3.084	2.535	1.814	1.298	.929	.763	.546	.391	.280
58	4.438	3.176	2.611	1.868	1.337	.956	.786	.563	.402	.288
60	4.567	3.267	2.686	1.922	1.375	.984	.809	.579	.414	.296
62	4.695	3.359	2.762	1.976	1.414	1.012	.832	.595	.426	.305
64	4.824	3.451	2.837	2.030	1.453	1.039	.854	.611	.437	.313
66	4.952	3.543	2.913	2.084	1.491	1.067	.877	.628	.449	.321
68	5.081	3.635	2.989	2.138	1.530	1.095	.900	.644	.461	.330
70	5.209	3.727	3.064	2.192	1.569	1.122	.923	.660	.472	.338
72	5.337	3.819	3.140	2.246	1.607	1.150	.945	.676	.484	.346
74	5.466	3.911	3.215	2.300	1.646	1.178	.968	.693	.496	.355
76	5.594	4.003	3.291	2.354	1.685	1.205	.991	.709	.507	.363
78	5.723	4.095	3.366	2.409	1.723	1.233	1.014	.725	.519	.371
80	5.851	4.186	3.442	2.463	1.762	1.261	1.036	.742	.531	.380
82	5.980	4.278	3.517	2.517	1.801	1.288	1.059	.758	.542	.388
84	6.108	4.370	3.593	2.571	1.839	1.316	1.082	.774	.554	.396
86	6.236	4.462	3.668	2.625	1.878	1.344	1.105	.790	.566	.405
88	6.365	4.554	3.744	2.679	1.917	1.371	1.127	.807	.577	.413
90	6.493	4.646	3.820	2.733	1.955	1.399	1.150	.823	.589	.421

7/24/89 Note older versions are superseded
12:08 PM Prepared by Jim Goodridge 916 345 3106

El Dorado Design Rainfall

Rainfall Depth in Inches for Return Period = 2.33 years

Mean Annual Precipitation	5 Min	10 Min	15 Min	30 Min	1 Hr	2 Hrs	3 Hrs	6 Hrs	12 Hrs	24 Hrs
20	0.113	0.162	0.200	0.286	0.410	0.587	0.723	1.035	1.481	2.120
22	0.120	0.172	0.212	0.304	0.435	0.623	0.768	1.099	1.572	2.249
24	0.128	0.183	0.225	0.322	0.461	0.660	0.814	1.165	1.667	2.385
26	0.135	0.193	0.238	0.341	0.488	0.698	0.860	1.231	1.762	2.521
28	0.142	0.203	0.251	0.359	0.514	0.735	0.907	1.298	1.857	$\boxed{2.657}$
30	0.149	0.214	0.264	0.377	0.540	0.773	0.953	1.364	1.952	2.793
32	0.157	0.224	0.277	0.396	0.566	0.810	1.000	1.430	2.047	2.929
34	0.164	0.235	0.289	0.414	0.593	0.848	1.046	1.497	2.142	3.065
36	0.171	0.245	0.302	0.433	0.619	0.886	1.092	1.563	2.237	3.200
38	0.179	0.256	0.315	0.451	0.645	0.923	1.139	1.629	2.332	3.336
40	0.186	0.266	0.328	0.469	0.671	0.961	1.185	1.696	2.426	3.472
42	0.193	0.276	0.341	0.488	0.698	0.998	1.231	1.762	2.521	3.608
44	0.200	0.287	0.354	0.506	0.724	1.036	1.278	1.828	2.616	3.744
46	0.208	0.297	0.366	0.524	0.750	1.074	1.324	1.895	2.711	3.880
48	0.512	0.308	0.379	0.543	0.777	1.111	1.370	1.961	2.806	4.016
50	0.222	0.318	0.392	0.561	0.803	1.149	1.417	2.027	2.901	4.152
52	0.229	0.328	0.405	0.579	0.829	1.186	1.463	2.094	2.996	4.287
54	0.237	0.339	0.418	0.598	0.855	1.224	1.510	2.160	3.091	4.423
56	0.244	0.349	0.431	0.616	0.882	1.262	1.556	2.226	3.186	4.559
58	0.251	0.360	0.443	0.634	0.908	1.299	1.602	2.293	3.281	4.695
60	0.259	0.370	0.456	0.653	0.934	1.337	1.649	2.359	3.376	4.831
62	0.266	0.380	0.469	0.671	0.960	1.374	1,695	2.425	3.471	4.967
64	0.273	0.391	0.482	0.690	0.987	1.412	1.741	2.492	3.566	5.103
66	0.280	0.401	0.495	0.708	1.013	1.450	1.788	2.558	3.661	5.238
68	0.288	0.412	0.508	0.726	1.039	1.487	1.834	2.625	3.756	5.374
70	0.295	0.422	0.520	0.745	1.066	1.525	1.880	2.691	3.851	5.510
72	0.302	0.432	0.533	0.763	1.092	1.562	1.927	2.757	3.946	5.646
74	0.309	0.443	0.546	0.781	1.118	1.600	1.973	2.824	4.040	5.782
76	0.317	0.453	0.559	0.800	1.144	1.638	2.020	2.890	4.135	5.918
78	0.324	0.464	0.572	0.818	1.171	1.675	2.066	2.956	4.230	6.054
80	0.331	0.474	0.585	0.836	1.197	1.713	2.112	3.023	4.325	6.189
82	0.339	0.484	0.597	0.855	1.223	1.750	2.159	3.089	4.420	6.325
84	0.346	0.495	0.610	0.873	1.250	1.788	2.205	3.155	4.515	6.461
86	0.353	0.505	0.623	0.892	1.276	1.826	2.251	3.222	4.610	6.597
88	0.360	0.516	0.636	0.910	1.302	1.863	2.298	3.288	4.705	6.733
90	0.368	0.526	0.649	0.928	1.328	1.901	2.344	3.354	4.800	6.869

Source: Design Rainfall Tables for El Dorado County, prepared by Jim Goodridge, July 29, 1989

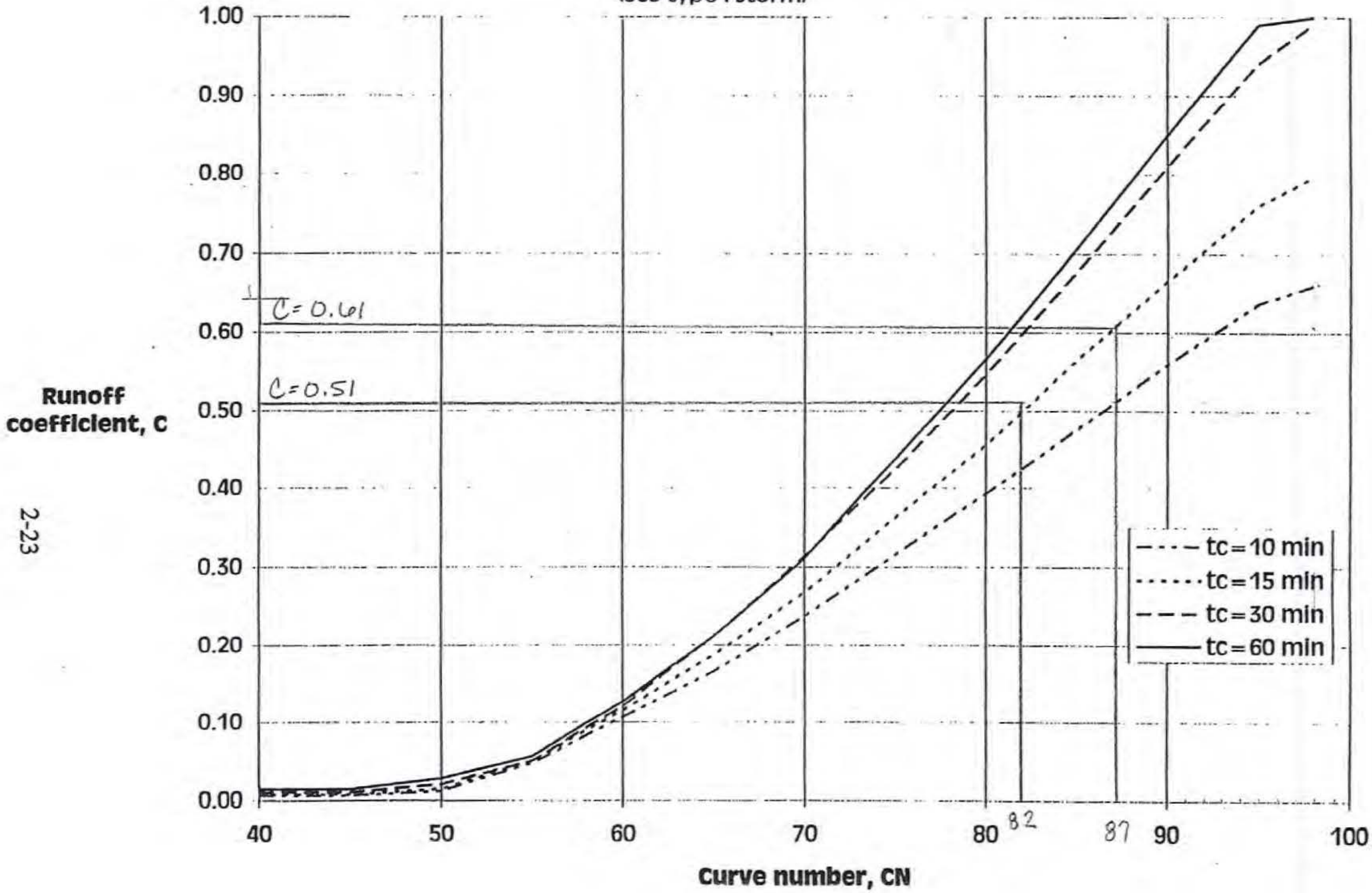
Table 2-2a.—Runoff curve numbers for urban areas[1]

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1]Average runoff condition, and $I_a = 0.2S$.
[2]The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
[3]CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
[4]Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
[5]Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Fig. 2.5.3 Runoff Coefficients for 10-yr Event below 1,640'

(SCS type I storm)



Project No.: 66108
Description: Silver Springs Offsite: Silver Springs/Bass lake Rd I/S
Input By: MPedigo
Date: updated Feb 21, 2008 (previous revision Sept 11, 2007)

Subject: Determine travel time for drainage shed upstream of existing 12" storm drain across Bass Lake Rd (east) about 300 ft west of Magnolia Hills Dr and upstream of the Hill parcel. This pipe is also about 1000' east of ex 36" pipe crossing bass Lake Rd just east of proposed Silver Springs Pkwy.

EDC Drainage Manual, eqn 2.4.7 — sheet flow (sf) — (Tt) overland= $\frac{(0.007(L)^{0.8}(n)^{.8})}{((P2)^{0.5}(s)0.4)}$ hours

EDC Drainage Manual, eqn 2.4.9 — shallow concentrated flow (scf) — (Tt)=20.3283(S)^0.5 feet/sec

pipe flow (pipe) — (Tt) pipe= (L/V)/60 minutes — Street & Highway Drainage, Vol 2, pipe tables for V (assuming pipes flowing full)

Subdivision Name/ Street Name (pipe size)	Parcel No.	Flow Type	L	n	P2 (inches)	h (feet)	s (ft/ft)	Velocity (fps)	Tt (minutes)	Sum Tt (minutes)	
Alternative 1											
BLV 4	16	sf	130	0.15	2.657	4	0.030769		11.16437837	11.16438	includes 0 min initial Tc, per EDC Standards
Mag H Dr/12" RCP/122LF	5	pipe	360	0.015			0.0048	6	1	12.16438	
BLV 2											
Mag H Dr/18" RCP/70LF	8	pipe	20	0.015			0.005	5	0.066666667	12.23105	
Mag H Dr/18" RCP/135LF	8	pipe	350	0.015			0.005	5	1.166666667	13.39771	
Mag H Dr/18" RCP/70LF	44	pipe	70	0.015			0.0271	11	0.106060606	13.50377	
Mag H Dr/18" RCP/215LF	29	pipe	140	0.015			0.0512	15	0.155555556	13.65933	
Mag H Dr/18" RCP/100LF	28	pipe	210	0.015			0.0389	14	0.25	13.90933	
BLV1											
Mag H Dr/18" RCP/50LF	10	pipe	50	0.015			0.01	6	0.138888889	14.04822	
Cora B L/18" CSP/245LF	8	pipe	140	0.024			0.01	3.3	0.707070707	14.75529	
Lot33/30" CSP/145LF	33	pipe	180	0.024			0.02	6.5	0.461538462	15.21683	
Lot38/30"CSP/140LF	38	pipe	100	0.024			0.0236	6.5	0.256410256	15.47324	
LotA/30" RCP/200LF	A	pipe	210	0.015			0.05	20	0.175	15.64824	
Ex48"RCP/100LF@BLR		pipe	90	0.015			0.014	12	0.125	15.77324	differ to Tt=16 minutes

BLV #=Bass Lake Village Unit #

"Street and Highway Drainage" Vols 1 & 2, by Naydo, Ross and Rowe, published in 1982 by UC Berkeley ITS

Project No.: 66108
Description: Silver Springs Offsite: Silver Springs/Bass lake Rd I/S
Input By: MPedigo
Date: revised Feb 21, 2008(last revision Sept 11, 2007)

Subject: Determine travel time for drainage shed upstream of existing 12" storm drain across Bass Lake Rd (east) at station 11+90.

EDC Draiange Manual, eqn 2.4.7 — sheet flow (sf) — $(Tt)\ overland= \frac{(0.007(L)^{0.8}(n)^{.8})}{((P2)^{0.5}(s)^{0.4})}$ hours

EDC Draiange Manual, eqn 2.4.9 — shallow concentrated flow (scf) — $V=20.3283(S)^{0.5}$ ft/sec

pipe flow (pipe) — (Tt) pipe= (L/V)/60 — Street & Highway Drainage, Vol 2, pipe tables for V

Subdivision Name/ Street Name (pipe size)	Parcel No.	flow type	L	n	P2 (inches)	h (feet)	s (ft/ft)	Velocity (fps)	Tt (minutes)	Sum Tt (minutes)
Alternative 1										
BLV 4	8	sf	200	0.15	2.657	8	0.04		14.18817447	14.18817
BLV 2	15	sf	110	0.15	2.657	15	0.136364		5.384696612	19.57287
BLV 14	13	scf	110	0.15	2.657	6	0.054545	4.747668	0.386154492	19.95903
Kirkwood Dr/360LF	13,14	scf	360	0.016	2.657	35	0.097222	6.338461	0.946601999	20.90563
Kirkwood Dr/DI/18"/20LF		pipe	20	0.024			0.05	6	0.055555556	20.96118
Jasmine Circle/18"/350LF		pipe	350	0.024		18	0.051429	8	0.729166667	21.69035
BLV 6										
Jasmine Circle/18"/140LF		pipe	140	0.024		8	0.057143	8.5	0.274509804	21.96486
Rock lined ditch/210LF	228	scf	210	0.028	2.657	13	0.061905	5.057817	0.691998183	22.65686
Alternative 2										
BLV 14	1	sf	140	0.15	2.657	16	0.114286		0.116810241	0.11681
Kirkwood Ct/180LF		sf	180	0.016	2.657	3	0.016667		0.05148453	0.168295
Kirkwood Ct/DI/12"/100LF		pipe	100	0.024		2	0.02	4	0.416666667	0.584961
bet parcels 6&5/12"/210LF		pipe	210	0.024		28	0.133333	10	0.35	0.934961
Jasmine Circle/18"/90LF		pipe	90	0.024		5	0.055556	8	0.1875	1.122461
BLV 6										
Jasmine Circle/18"/140LF		pipe	140	0.024		8	0.057143	8.5	0.274509804	1.396971
Rock lined ditch	228	scf	210	0.028	2.657	13	0.061905	5.057817	0.691998183	2.088969

Alternative 1, BLV 4: includes 0 min initial Tc, per EDC Standards

Alternative 1, Rock lined ditch/210LF: differ to Tt=23 minutes
use this as the total time for entire shed to drain to culvert

Alternative 2, BLV 14: includes 0 min initial Tc, per EDC Standards

Alternative 2, Rock lined ditch: differ to Tt=5 minutes per EDC min Tc standards

BLV #=Bass Lake Village Unit #

Street & Highway Draiange" vols 1 and 2, by Nayo, Ross and Rowe, published in March 1982 by UC Berkeley ITS

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TIME OF CONCENTRATION CALCULATIONS

· NODE 2A ·

A = 8.58 acres

$n = 0.15$
$L = 300$
$P_2 = 2.657$

$S = (1242.5 - 1236.9)/300$
$S = 0.0187$

$$T_{(SHEET)} = \frac{0.007(n)^{0.8}(L)^{0.8}}{(P_2)^{0.5}(S)^{0.4}}$$

$$T_{(SHEET)} = \frac{(0.007)(0.15)^{0.8}(300)^{0.8}}{(2.657)^{0.5}(0.0187)^{0.4}}$$

$$= 0.44 \text{ hr} \sim 26.60 \text{ min}$$

$$T_{(SHALLOW)} = \frac{(L/V)}{60}$$

$$V = 20.3283(S)^{0.5}$$
$$= 20.3283(0.0141)^{0.5}$$
$$= 2.41 \text{ FT/SEC}$$

$S = (1236.9 - 1217.2)/1400$
$S = 0.0141$

$$T_{(SHALLOW)} = \frac{(1400/2.41)}{60} = 9.68 \text{ min}$$

$$\boxed{T_t = 26.60 \text{ min} + 9.68 \text{ min} = 36.28 \text{ min}}$$

$$\boxed{\text{USE } 35 \text{ min}}$$

Designed by: Checked by:

· NODE 24A ·

$$T_{(SHEET)} = \frac{0.007\,(n)^{0.8}\,(L)^{0.8}}{(P_2)^{0.5}\,(S)^{0.4}}$$

$n = 0.15$
$L = 300$
$P_2 = 2.657$

$S = (1240 - 1235)/300$
$S = 0.0167$

$$= \frac{(0.007)(0.15)^{0.8}(300)^{0.8}}{(2.657)^{0.5}(0.0167)^{0.4}}$$

$T_{(SHEET)} = 0.46 \text{ hr} = 27.83 \text{ min}$

$$T_{(SHALLOW)} = \frac{(L/V)}{60}$$

$V = (20.3283)(S)^{0.5}$

$S = (1235 - 1199.8)/575$
$S = 0.0612$

$= (20.3283)(0.0612)^{0.5}$

$V = 5.03 \text{ FT/SEC}$

$$T_{(SHALLOW)} = \frac{(575/5.03)}{60} = 1.91 \text{ min}$$

$$\boxed{T_t = 27.83 + 1.91 \text{ min} = 29.74 \text{ min}}$$

$\boxed{\text{USE } 30 \text{ min}}$

Designed by: Checked by:

• NODE 26A •

$$T_{(SHEET)} = \frac{0.007(n)^{0.8}(L)^{0.8}}{(2.657)^{0.5}(S)^{0.4}}$$

$n = 0.15$
$L = 300$
$S = (1270-1259.3)/300 = 0.0357$

$$= \frac{(0.007)(0.15)^{0.8}(300)^{0.8}}{(2.657)^{0.5}(0.0357)^{0.4}}$$

$T_{(SHEET)} = 0.34\ hr = 20.54\ min$

$$T_{(SHALLOW)} = \frac{(L/V)}{60}$$

$S = (1257.3 - 1198.50)/600$

$V = 20.3283(S)^{0.5}$

$S = 0.1013$

$V = (20.3283)(0.1013)^{0.5}$

$V = 6.47$ FT/SEC

$$T_{(SHALLOW)} = \frac{(600/6.47)}{60} = 1.55\ min.$$

$\boxed{T_t = 20.54\ min + 1.55\ min = 22.09\ min}$

$\boxed{\text{USE } 22\ min}$

Designed by: Checked by:

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• NODE 27A •

T_C TO NODE 1B = 23 min PER M. PEDIGO CALCULATION (SEE TABLE)

$$T_{(PIPE)} = \frac{(L/V)}{60}$$

$$V = \frac{1.49}{n}\left(\frac{A}{P}\right)^{2/3} S^{1/2}$$

$n = 0.022$
$A = \pi(1.0')^2 = 3.142\ FT^2$
$P = (\tfrac{1}{2})2\pi(1.0) = 3.142\ FT$
$S = (1208-1201)/113 = 0.0619$

$$V = \frac{1.49}{0.022}\left(\frac{3.142}{3.142}\right)^{2/3}(0.0619)^{1/2}$$

$$V = 16.85\ FT/SEC$$

$$T_{(PIPE)} = \frac{(101/16.85)}{60} = 0.10\ min$$

$$T_{(SHALLOW)} = \frac{(L/V)}{60}$$

$$V = 16.1345(S)^{1/2}$$

$S = (1201-1187.5)/209$
$S = 0.0646$

$$V = 16.1345(0.0646)^{1/2}$$

$$V = 4.10\ FT/SEC$$

$$T_{(SHALLOW)} = \frac{(209/4.10)}{60} = 0.85\ min$$

$$\boxed{T_t = 23\ min + 0.10\ min + 0.85\ min = 23.95}$$

$\boxed{\text{USE 24 min}}$

Designed by: Checked by:

· NODE 38A ·

$$T_{(SHEET)} = \frac{0.007\,(nL)^{0.8}}{(P_2)^{0.5}\,(S)^{0.4}}$$

$n = 0.15$
$L = 300$
$P_2 = 2.657$

$S = (1240 - 1235)/300$
$S = 0.0167$

$$= \frac{(0.007)((0.15)(300))^{0.8}}{(2.657)^{0.5}(0.0167)^{0.4}}$$

$T_{(SHEET)} = 0.46 \text{ hr} = 27.83 \text{ min}$

$$T_{(SHALLOW)} = \frac{(L/V)}{60}$$

$V = 20.3283\,(S)^{0.5}$
$= (20.3283)(0.0636)^{0.5}$

$S = (1235 - 1189.2)/720$
$S = 0.0636$

$V = 5.12$ FT/SEC

$$T_{(SHALLOW)} = \frac{(720/5.12)}{60} = 2.34 \text{ min}$$

$\boxed{T_t = 27.83 \text{ min} + 2.34 \text{ min} = 30.17 \text{ min}}$

$\boxed{\text{USE } 30 \text{ min}}$

· NODE 41A ·

$n = 0.15$
$L = 300$
$P_2 = 2.657$

$$T_{(SHEET)} = \frac{0.007\,(nL)^{0.8}}{(P_2)^{0.5}(S)^{0.4}}$$

$S = (1272.5 - 1264.5)/300$
$S = 0.0267$

$$= \frac{(0.007)(0.15)^{0.8}(300)^{0.8}}{(2.657)^{0.5}(0.0267)^{0.4}}$$

$$T_{(SHEET)} = 0.38\ hr = 23.07\ min$$

$$T_{(SHALLOW)} = \frac{(L/V)}{60}$$

$V = 20.3283\,(S)^{1/2}$

$S = (1264.5 - 1174.5)/656$
$S = 0.1372$

$V = (20.3283)(0.1372)^{1/2}$

$V = 7.53\ FT/SEC$

$$T_{(SHALLOW)} = \frac{(656/7.53)}{60} = 1.45\ min$$

$$\boxed{T_t = 23.07\ min + 1.45\ min = 24.52\ min}$$

$$\boxed{USE\ 25\ min}$$

Designed by: Checked by:

Stantec

· NODE 46A ·

$n = 0.15$
$L = 300$
$P_2 = 2.657$

$S = (1240 - 1230)/300$
$S = 0.0333$

$$T_{(SHEET)} = \frac{0.007\,(n)^{0.8}\,(L)^{0.8}}{(P_2)^{0.5}\,(S)^{0.4}}$$

$$= \frac{(0.007)(0.15)^{0.8}(300)^{0.8}}{(2.657)^{0.5}(0.033)^{0.4}}$$

$$T_{(SHEET)} = 0.35\ hr = 21.12\ min$$

$$T_{(SHALLOW)} = \frac{(L/V)}{60}$$

$S = (1230 - 1175.5)/767$
$S = 0.0711$

$$V = 20.3283\,(S)^{1/2}$$

$$= (20.3283)(0.0711)^{1/2}$$

$$V = 5.42\ FT/SEC$$

$$T_{(SHALLOW)} = \frac{(767/5.42)}{60} = 2.36\ min$$

$$\boxed{T_t = 21.12\ min + 2.36\ min = 23.48\ min}$$

$$\boxed{\text{USE } 24\ min}$$

Designed by: Checked by:

• NODE 47A •

use for ultimate build out condition

$n = 0.15$

$P_2 = 2.657$

$S = (1225-1201)/300 = 0.08$

$L = 300$ FT

$$T_{(SHEET)} = \frac{0.007(n)^{0.8}(L)^{0.8}}{(P_2)^{0.5}(S)^{0.4}}$$

$$= \frac{(0.007)(0.15)^{0.8}(300)^{0.8}}{(2.657)^{0.5}(0.08)^{0.4}}$$

$T_{(SHEET)} = 0.25$ hrs => 14.87 min

$L = 288$ FT

$S = (1201-1173)/288 = 0.0972$

$$T_{(SHALLOW)} = \frac{(L/V)}{60}$$

$$V = 20.3283\,(S)^{0.5}$$

$$= 20.3283\,(0.0972)^{0.5}$$

$V = 6.34$ FT/SEC

$T_{(SHALLOW)} = (288/6.34)/60 = 0.76$ min

$T_t = 14.87$ min $+ 0.76$ min

$\boxed{T_t = 15.63 \text{ min}}$

$\boxed{\text{USE 16 min}}$

· NODE 48 A ·

$$T_{(SHEET)} = \frac{0.007(n)^{0.8}(L)^{0.8}}{(P_2)^{0.5}(S)^{0.4}}$$

$n = 0.15$
$L = 300$
$P_2 = 2.657$

$$= \frac{(0.007)(0.15)^{0.8}(300)^{0.8}}{(2.657)^{0.5}(0.025)^{0.4}}$$

$S = (1272.5 - 1265)/300$
$S = 0.025$

$T_{(SHEET)} = 0.39\ hr = 23.68\ min$

$$T_{(SHALLOW)} = \frac{(L/V)}{60}$$

$V = (20.3283)(S)^{1/2}$

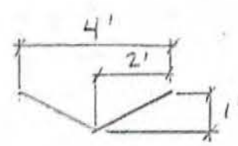
$S = (1265 - 1177)/690$
$S = 0.1275$

$= (20.3283)(0.1275)^{1/2}$

$V = 7.26\ FT/SEC$

$$T_{(SHALLOW)} = \frac{(690/7.26)}{60} = 1.58\ min$$

$$T_{(CHANNEL)} = \frac{(L/V)}{60}$$



$$V = \frac{1.49}{n}\left(\frac{A}{P}\right)^{2/3}(S)^{1/2}$$

$n = 0.015$
$A = 1/2(4)(1) = 2\ FT^2$
$P = 4.47$

$$= \frac{1.49}{0.015}\left(\frac{2}{4.47}\right)^{2/3}(0.0354)^{1/2}$$

$S = (1177 - 1173)/113$
$S = 0.0354$

$= 10.90\ FT/SEC$

$$T_{CHANNEL} = \frac{(113/10.90)}{60} = 0.17\ min$$

$\boxed{T_t = 23.68\ min + 1.58\ min + 0.17\ min = 25.43\ min}$

Designed by: Checked by: $\boxed{\text{USE } 25\ min}$

· NODE S2A ·

$$T_{(SHEET)} = \frac{0.007(n)^{0.8}(L)^{0.8}}{(P_2)^{0.5}(S)^{0.4}}$$

$n = 0.15$
$L = 300$
$P_2 = 2.657$

$$= \frac{(0.007)(0.15)^{0.8}(300)^{0.8}}{(2.657)^{0.5}(0.0893)^{0.4}}$$

$S = (1215 - 1188.2)/300$
$S = 0.0893$

$$= 0.24 \text{ hr} = 14.23 \text{ min}$$

$$T_{(SHALLOW)} = \frac{(L/V)}{60}$$

$$V = 20.3283(S)^{0.5}$$

$$V = 20.3283(0.1269)^{0.5}$$

$$V = 7.24 \text{ FT/SEC}$$

$S = (1188.2 - 1171.7)/130$
$S = 0.1269$

$$T_{(SHALLOW)} = \frac{(130/7.24)}{60}$$

$$= 0.30 \text{ min}$$

$$T_{(CHANNEL)} = \frac{(L/V)}{60} = \frac{(37/10.4)}{60} = 0.06 \text{ min}$$

$S = (1171.7 - 1170.5)/37$
$S = 0.0324$

$A = 1/2(4)(1) = 2 \text{ FT}^2$

$P = 4.47 \text{ FT}$

$n = 0.015$

$$V = \frac{1.49}{n}\left(\frac{A}{P}\right)^{2/3} S^{1/2}$$

$$V = \frac{1.49}{0.015}\left(\frac{2}{4.47}\right)^{2/3}(0.0324)^{1/2}$$

$$= 10.4 \text{ FT/SEC}$$

$$\boxed{T_t = 14.23 + 0.30 + 0.06 = 14.59 \text{ min}}$$

Designed by:

Checked by:

$\boxed{\text{USE 15 min}}$

· NODE 24A TO 38A ·

$L = 400$ FT
$ELEV_1 = 1199.8$
$ELEV_2 = 1187.2$
$S = 0.0315$

$n = 0.013$ (CONCRETE - TROWL FINISH)
$b = 0$
$Z = 2:1$
$d = 1$

$$Q = \frac{1.49}{n}(A)(r_H)^{2/3}(S)^{1/2}$$

$A = 1/2(4)(1) = 2\ FT^2$
$P = 4.47$
$r_H = \frac{A}{P} = \frac{2}{4.47} = 0.447$

$$Q = \frac{1.49}{0.013}(2)(0.447)^{2/3}(0.0315)^{1/2}$$

$Q = 23.72$ cfs

$$V = \frac{Q}{A} = \frac{23.72\ cfs}{2\ FT^2} = 11.86\ FT/SEC$$

$$\boxed{\begin{array}{l} Q = 23.72\ cfs \\ V = 11.86\ FT/SEC \end{array}}$$

· NODE 38A TO 47A ·

$L = 452$ FT
$ELEV_1 = 1187.2$
$ELEV_2 = 1176.5$
$S = 0.0237$

$n = 0.013$ (CONCRETE - TROWL FINISH)
$A = 2\ FT^2$
$P = 4.47$
$r_H = 0.447$

$$Q = \frac{1.49}{0.013}(2)(0.447)^{2/3}(0.0237)^{1/2} = 20.58\ CFS$$

$$V = \frac{20.58\ CFS}{2\ FT^2} = 10.28\ FT/SEC$$

$$\boxed{\begin{array}{l} Q = 20.58\ CFS \\ V = 10.28\ FT/SEC \end{array}}$$

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• NODE 47A TO 52A •

$L = 173$ FT
$ELEV_1 = 1176.5$
$ELEV_2 = 1170.5$
$S = 0.0347$

$n = 0.013$ (CONCRETE - TROWL FINISH)
$A = 2 FT^2$
$P = 4.47$
$r_H = 0.447$

$$Q = \frac{1.49}{0.013}(2)(0.447)^{2/3}(0.0347)^{1/2} = 24.90 \text{ CFS}$$

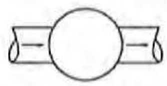
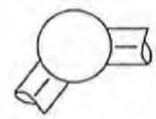
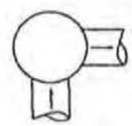
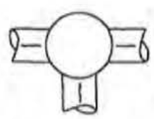
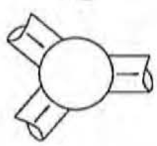
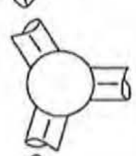
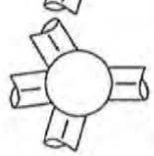
$$V = \frac{24.90 \text{ CFS}}{2 \text{ FT}^2} = 12.45 \text{ FT/SEC}$$

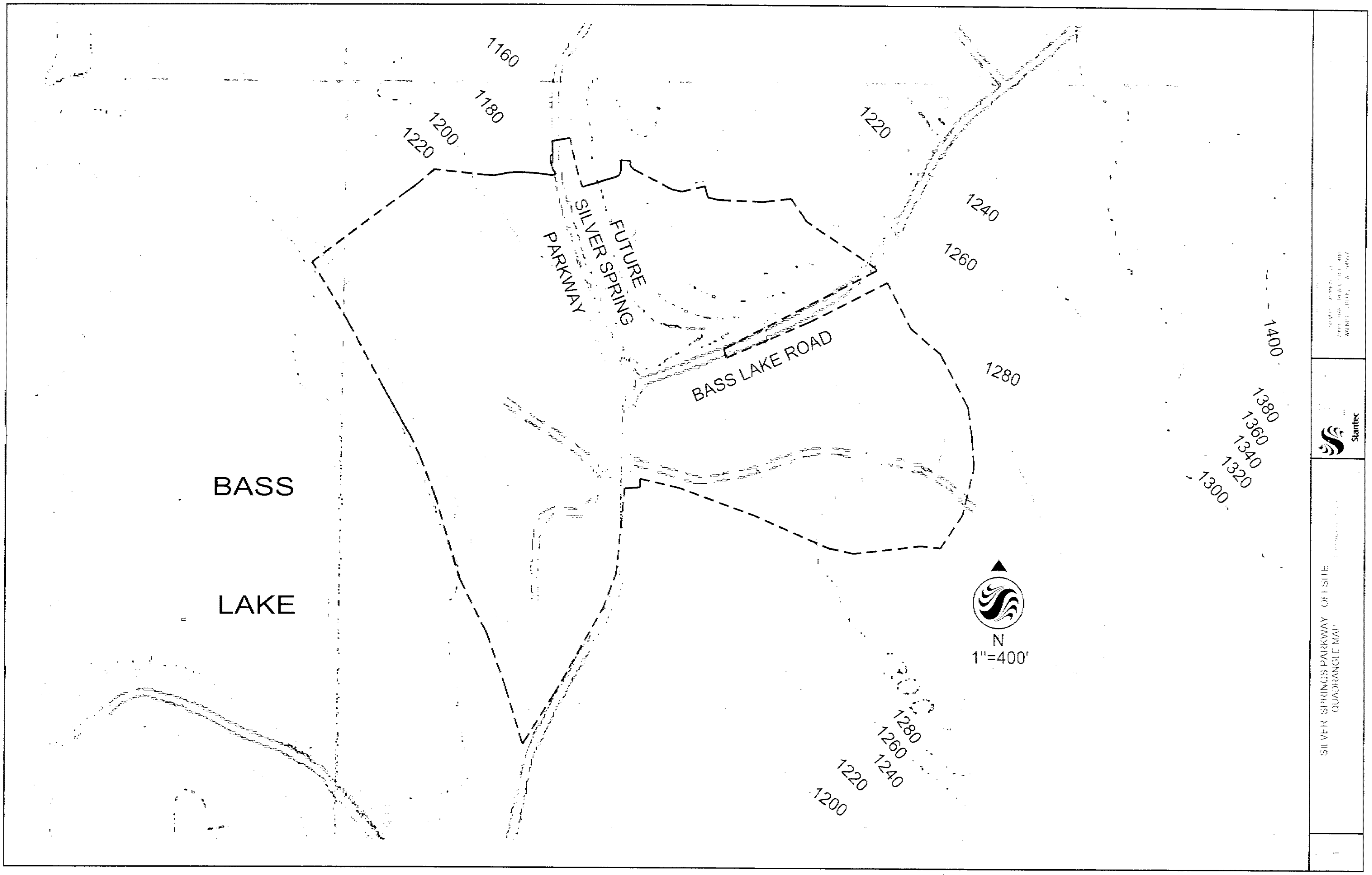
Q = 24.90 CFS
V = 12.45 FT/SEC

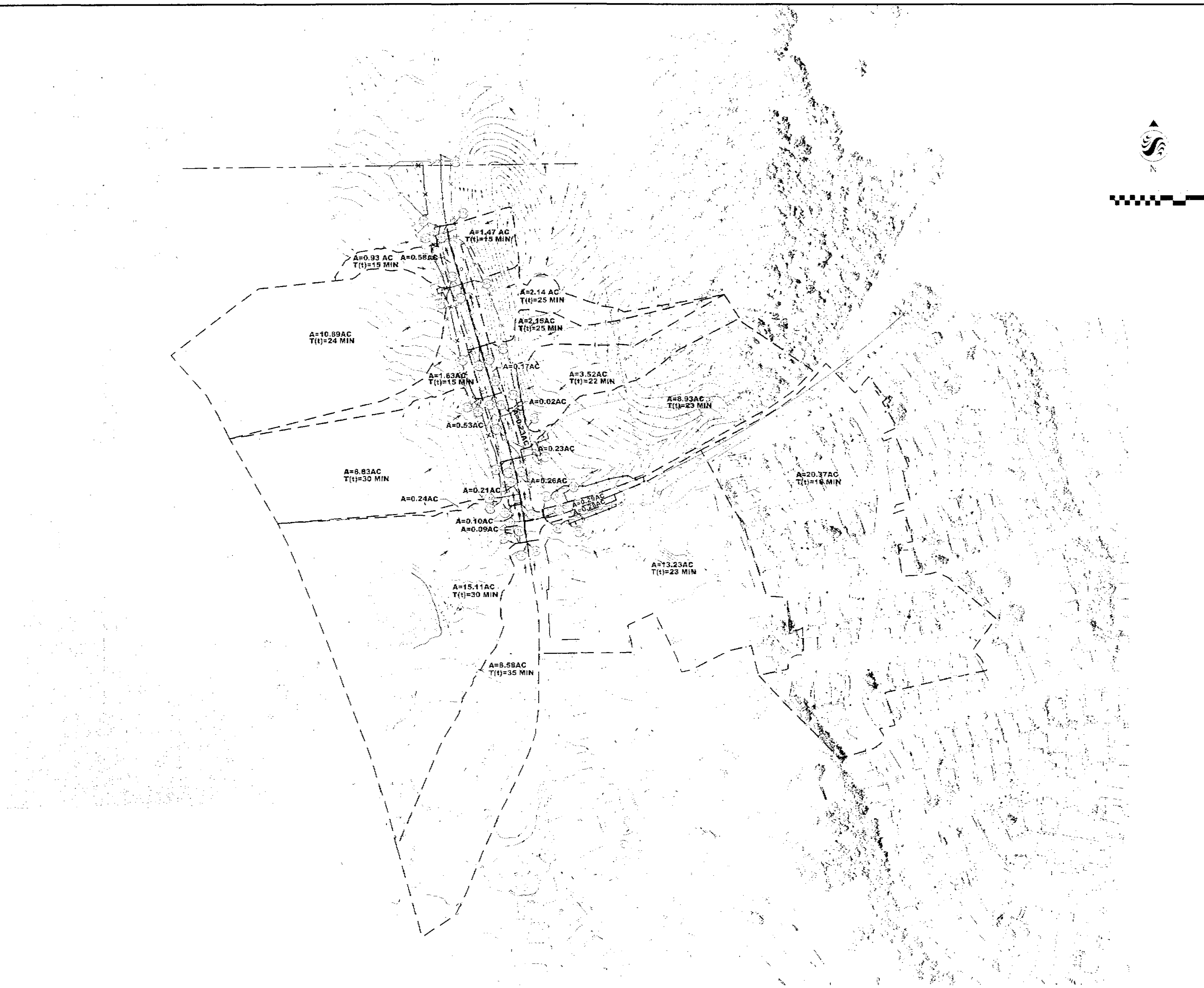
Designed by: Checked by:

Headloss Coefficients for Manholes and Junctions

These are typical headloss coefficients used in the standard method for estimating headloss through manholes and junctions.

Type of Manhole	Diagram	Headloss Coefficient
Trunkline only with no bend at the junction		0.5
Trunkline only with 45 degree bend at junction		0.6
Trunkline only with 90 degree bend at junction		0.8
Trunkline with one lateral		Small 0.6 Large 0.7
Two roughly equivalent entrance lines with angle of < 90 degrees between lines		0.8
Two roughly equivalent entrance lines with angle of > 90 degrees between lines		0.9
Three or more entrance lines		1.0


1160
1180
1200
1220
1220
1240
1260
1280
FUTURE
SILVER SPRING
PARKWAY
BASS LAKE ROAD
BASS
LAKE
1400
1380
1360
1340
1320
1300
N
1"=400'
1280
1260
1240
1220
1200
Stantec
SILVER SPRINGS PARKWAY OFFSITE
QUADRANGLE MAP



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SILVER SPRINGS PARKWAY - OFFSITE
DRAIN STUDY

1

APPENDIX G
SILVER SPRINGS PARKWAY
TO BASS LAKE ROAD *(SOUTH SEGMENT)*
EL DORADO COUNTY GENERAL PLAN
POLICY CONSISTENCY REVIEW

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT
APPENDIX G
SILVER SPRINGS PARKWAY TO BASS LAKE ROAD (SOUTH SEGMENT)
EL DORADO COUNTY GENERAL PLAN POLICY CONSISTENCY REVIEW

The following table lists the goals, objectives and policies of the 2004 El Dorado County General Plan, as amended through December 16, 2014, identified for the purposes of the land use plan consistency review as having potential applicability to the Silver Springs Parkway to Bass Lake Road (South Segment) project (Project). A discussion of the Project's consistency with each policy is provided. When necessary, reference to the specific section of the Draft Subsequent Environmental Impact Report (DSEIR) is provided where more detailed analysis of the pertinent policy issues is included.

Silver Springs Parkway to Bass Lake Road (South Segment)
Consistency with Potentially Applicable Policies of the
2004 El Dorado County General Plan, as Amended

Goal/Objective/Policy	Discussion
Goal 2.3: Natural Landscape Features: Maintain the characteristic natural landscape features unique to each area of the County.	Goal provided for context. See specific policies below.
Objective 2.3.1: Topography and Native Vegetation: Provide for the retention of distinct topographical features and conservation of the native vegetation of the County.	Objective provided for context. See specific policies below.
Objective 2.3.2: Hillsides and Ridge Lines: Maintain the visual integrity of hillsides and ridge lines.	Consistent. The Project alignment is not located on a hillside o ridgeline. Visual impacts of the project, including impacts associated with cut and fill required for the project, are discussed in Section 3.2 of the SEIR.
Policy 2.3.2.1: Disturbance of slopes thirty (30) percent or greater shall be discouraged to minimize the visual impacts of grading and vegetation removal.	Consistent. Minimal slope disturbance and grading/vegetation would occur and would have limited visibility. Visual impacts of the Project are discussed in Section 3.2 of the DSEIR.
Goal 2.6: Corridor Viewsheds: Protection and improvement of scenic values along designated scenic road corridors.	Goal provided for context. See specific policies below.
Objective 2.6.1: Scenic Corridor Identification: Identification of scenic and historical roads and corridors.	Objective provided for context. See specific policies below.
Policy 2.6.1.2: Until such time as the Scenic Corridor Ordinance is adopted, the County shall review all projects within designated State Scenic Highway corridors for compliance with State criteria.	Consistent. The project is not located within a State Scenic Highway corridor.
Policy 2.6.1.5: All development on ridgelines shall be reviewed by the County for potential impacts on visual resources. Visual impacts will be assessed and may require methods such as setbacks, screening, low-glare or directed lighting, automatic light shutoffs, and external color schemes that blend with the surroundings in order to avoid visual breaks to the skyline.	Consistent. The Project is not located on a ridgeline. Visual impacts of the Project are discussed in Section 3.2 of the DSEIR.

Silver Springs Parkway to Bass Lake Road (South Segment) Consistency with Potentially Applicable Policies of the 2004 El Dorado County General Plan, as Amended	
Goal/Objective/Policy	**Discussion**
Goal 2.8: Lighting: Elimination of high intensity lighting and glare consistent with prudent safety practices.	Goal provided for context. See objective below.
Objective 2.8.1: Lighting Standards: Provide standards, consistent with prudent safety practices, for the elimination of high intensity lighting and glare.	Consistent. No street lighting is proposed for the Project. Visual impacts of the Project, including those associated with light and glare, are discussed in Section 3.2 of the DSEIR.
Goal TC-1: To plan for and provide a unified, coordinated, and cost-efficient countywide road and highway system that ensures the safe, orderly, and efficient movement of people and goods.	Goal provided for context. See specific policies below.
Policy TC-1a: The County shall plan and construct County-maintained roads as set forth in Table TC-1. Road design standards for County-maintained roads shall be based on the American Association of State Highway and Transportation Officials (AASHTO) standards, and supplemented by California Department of Transportation (Caltrans) design standards and by County Department of Transportation standards. County standards include typical cross sections by road classification, consistent with right-of-way widths summarized in Table TC-1. Table TC-1 identifies the following general standards for the *Major Two-Lane Road* in a *Community Region* functional class: • Intersection Spacing (minimum): ¼ mile; • Abutting Property Driveways and Private Roads: Limited; • Cross Section ROW: 60 feet; • Cross Section Roadway Width: 40 feet. Table TC-1 also specifies the following relevant footnotes: 2. Notwithstanding these highway specifications, additional right-of-way may be required for any classification when a road coincides with an adopted route for an additional public facility (e.g., transit facilities, bikeways, or riding and hiking trails), or a scenic highway. 3. The County may deviate from the adopted standards in circumstances where conditions warrant special treatment of the road. [Typical circumstances not listed here.] 4. Travel ways for all highways should be 12 feet wide. Turning lanes should be 12 feet wide, but may be reduced to 10 feet based on topographical or right-of-way constraints. All travel ways on roads should be paved.	Consistent. The Project design is consistent with the access control and cross-section requirements set forth in Policy TC-1a and Table TC-1 of the General Plan. The design is also in compliance with AASHTO, Caltrans and County standards. For this purposes of this consistency review and based on the functional class listings in Table TC-1, the Project segment of Silver Springs Parkway is considered to be a *Major Two-Lane Road* in a *Community Region*, subject to the general standards listed in to the left. Access to private driveways is provided as needed to maintain residential property access, and right-of-way and roadway widths exceed those specified but are consistent with the additional right-of-way provisions pursuant to Table TC-1 footnote 2.
Policy TC-1b: In order to provide safe, efficient roads, all roads should incorporate the cross sectional road features set forth in Table TC-1.	Consistent. See above.
Policy TC-1p: The County shall encourage street designs for interior streets within new subdivisions that minimize the intrusion of through traffic on pedestrians and residential uses while providing efficient connections between neighborhoods and communities.	Consistent. The Project does not involve roadway intrusion or through traffic within an existing residential subdivision. The Project would provide a new through connection between Bass Lake Road and Green Valley Road for vehicles, bicycles, and pedestrians, and would provide access to the proposed/approved Silver Springs Residential subdivision.

Silver Springs Parkway to Bass Lake Road (South Segment) Consistency with Potentially Applicable Policies of the 2004 El Dorado County General Plan, as Amended	
Goal/Objective/Policy	**Discussion**
Policy TC-1q: The County shall utilize road construction methods that seek to reduce air, water, and noise pollution associated with road and highway development.	Consistent. The analysis in the DSEIR identifies impacts associated with air, water and noise pollution associated with the construction and operation of the proposed project. Standard construction practices and Project-specific mitigation measures identified in the EIR would reduce the air, water, noise and other environmental effects of the Project.
Policy TC-1t: The County shall identify locations of needed future road rights-of-way, consistent with Figure TC-1, through analysis and adoption of road alignment plan lines where appropriate. Circumstances where road alignment plan line analysis and adoption are acceptable shall include the following: A. Where major roads or corridors are expected to require additional through lanes within a 20-year planning horizon; B. Where the future alignment is expected to deviate from the existing alignment, or to be developed asymmetrically about the existing section or centerline; C. Where the adjacent properties are substantially undeveloped, so that property owners may benefit from prior knowledge of the location of rights-of-way of planned roads before constructing improvements or developing property in a way that may ultimately conflict with identified transportation needs; and D. Future facilities as identified in Figure TC-1.	Consistent. The Project is identified in the County General Plan Circulation Element and Circulation Map (General Plan Figure TC-1).
Goal TC-X: To coordinate planning and implementation of roadway improvements with new development to maintain adequate levels of service on County roads.	Goal provided for context. See specific policies below.
Policy TC-Xa: The following policies shall remain in effect until December 31, 2018: 1. Traffic from single-family residential subdivision development projects of five or more parcels of land shall not result in, or worsen, Level of Service F (gridlock, stop-and-go) traffic congestion during weekday, peak-hour periods on any highway, road, interchange or intersection in the unincorporated areas of the county. *2.* *Not applicable.* *3.* 3. Developer-paid traffic impact fees combined with any other available funds shall fully pay for building all necessary road capacity improvements to fully offset and mitigate all direct and cumulative traffic impacts from new development upon any highways, arterial roads and their intersections during weekday, peak-hour periods in unincorporated areas of the county.	Consistent. The Project is a planned improvement in the El Dorado County General Plan Circulation Element and is a condition of approval of the Silver Springs development project, which meets the criteria of a *family residential subdivision development projects of five or more parcels of land* noted at Policy TC-Xa(1). The Project would not result in or worsen LOS F conditions and the developer is required to fund the component of the Project cost attributable to the direct and cumulative impacts of the Silver Springs development project.
Policy TC-Xd: Level of Service (LOS) for County-maintained roads and state highways within the unincorporated areas of the county shall not be worse than LOS E in the Community Regions or LOS D in the Rural Centers and Rural Regions except as specified in Table TC-2. The volume to capacity	Consistent. The traffic study conducted for the Project during preparation of this DSEIR provides an assessment of projected levels of service, including evaluation of weekday average daily traffic (ADT), AM peak-hour traffic and PM peak-hour traffic volumes and levels of service.

Silver Springs Parkway to Bass Lake Road (South Segment) Consistency with Potentially Applicable Policies of the 2004 El Dorado County General Plan, as Amended	
Goal/Objective/Policy	**Discussion**
ratio of the roadway segments listed in Table TC-2 shall not exceed the ratio specified in that table. Level of Service will be as defined in the latest edition of the Highway Capacity Manual (Transportation Research Board, National Research Council) and calculated using the methodologies contained in that manual. Analysis periods shall be based on the professional judgment of the Department of Transportation which shall consider periods including, but not limited to, Weekday Average Daily Traffic (ADT), AM Peak Hour, and PM Peak hour traffic volumes.	See DSEIR Section 3.12 for additional discussion of the traffic study and conclusions.
Policy TC-2d: The County shall encourage the development of facilities for convenient transfers between different transportation systems (e.g., rail-to-bus, bus-to-bus).	Consistent. The proposed project does not include develop of transportation system transfer facilities, but the project would not preclude or restrict the development of such facilities. The project would provide an additional option for local transit (bus service) between areas south of the Project site and Green Valley Road.
Goal TC-3: To reduce travel demand on the County's road system and maximize the operating efficiency of transportation facilities, thereby reducing the quantity of motor vehicle emissions and the amount of investment required in new or expanded facilities.	Goal provided for context. See specific policies below.
Policy TC-3a: The County shall support all standards and regulations adopted by the El Dorado County Air Quality Management District governing transportation control measures and applicable state and federal standards.	Consistent. The Project would comply with all County AQMD control measure requirements and applicable state and federal standards. The Project is consistent with the future roadway system anticipated in the County General Plan Circulation Element and, therefore, the air quality impact assessment conducted for the General Plan Environmental Impact Report. The Project is also included in the Regional Transportation Plan (RTP) and the Regional Transportation Improvement Plan (RTIP).
Policy TC-3b: The County shall consider Transportation Systems Management measures to increase the capacity of the existing road network prior to constructing new traffic lanes. Such measures may include traffic signal synchronization and additional turning lanes.	Consistent. The Project proposes a two-lane road and additional lanes are not projected as needed to accommodate future traffic volumes.
Policy TC-3d: Signalized intersections shall be synchronized where possible as a means to reduce congestion, conserve energy, and improve air quality.	Consistent. The Project does not include installation of traffic signals. However, consistent with Policy TC-3d and Policy 6.7.2.3, the County will review and adjust traffic signal timing/synchronization if necessary at the Silver Springs Parkway / Green Valley Road intersection and other nearby traffic signals to adjust these signals appropriately to best accommodate traffic patterns once the Project segment of Silver Springs Parkway is completed and open for public use.
Goal TC-4: To provide a safe, continuous, and easily accessible non-motorized transportation system that facilitates the use of the viable alternative transportation modes.	Goal provided for context. See specific policies below.
Policy TC-4a: The County shall implement a system of recreational, commuter, and inter-community bicycle routes in accordance with the County's *Bikeway Master Plan*. The plan should designate bikeways connecting residential areas to retail, entertainment, and employment centers and near	Consistent. The Project would provide Class II bicycle lanes resulting in a new bicycle route options between Bass Lake Road and Green Valley Road. The currently applicable bicycle transportation plan in the County is the 2010 El Dorado County Bicycle Transportation Plan

Silver Springs Parkway to Bass Lake Road (South Segment) Consistency with Potentially Applicable Policies of the 2004 El Dorado County General Plan, as Amended	
Goal/Objective/Policy	**Discussion**
major traffic generators such as recreational areas, parks of regional significance, schools, and other major public facilities, and along recreational routes.	prepared by the El Dorado County Transportation Commission (EDCTC 2010). The 2010 Bicycle Transportation Plan identifies planned Class II bicycle lanes on Bass Lake Road within the Project vicinity. The Project would not preclude the future construction of Class II bicycle lanes on Bass Lake Road.
Policy TC-4b: The County shall construct and maintain bikeways in a manner that minimizes conflicts between bicyclists and motorists.	Consistent. Project construction practices and the use of Silver Springs Parkway by vehicles and bicyclists would not create the potential for conflicts between bicyclists and motorists in excess of those normally anticipated. Class II bicycle lanes along the new Silver Springs Parkway would minimize potential conflicts.
Policy TC-4c: The County shall give priority to bikeways that will serve population centers and destinations of greatest demand and to bikeways that close gaps in the existing bikeway system.	Consistent. Class II bicycle lanes along Silver Springs Parkway would provide a new connection between areas south of the Project site and the Green Valley Road corridor to the north. This connectivity is currently available via the use of Bass Lake Road, but has limited sight distances and narrow or non-existent shoulders.
Policy TC-4d: The County shall develop and maintain a program to construct bikeways, in conjunction with road projects, consistent with the County's Bikeway Master Plan, taking into account available funding for construction and maintenance.	Consistent. See discussion of Policy TC-4a, above. The Project will be partially funded by developer fees associated with the Silver Springs Subdivision development and conditions of approval.
Policy TC-4f: The County shall sign and stripe Class II bicycle routes, in accordance with the County's *Bikeway Master Plan*, on roads shown on Figure TC-1, when road width, safety, and operational conditions permit safe bicycle operation.	Consistent. Class II bicycle lanes along Silver Springs Parkway would be striped and signed consistent with County standards.
Policy TC-4g: The County shall support development of facilities that help link bicycling with other modes of transportation.	Consistent. The installation of Class II bicycle lanes along Silver Springs Parkway would provide connectivity for bicycle use between areas south of the Project site and the Green Valley Road corridor.
Goal TC-5: To provide safe, continuous, and accessible sidewalks and pedestrian facilities as a viable alternative transportation mode.	Consistent. Sidewalks/walkways would be installed along both sides of the Project segment of Silver Springs Parkway.
Goal 5.4: Storm Drainage: Manage and control storm water runoff to prevent flooding, protect soils from erosion, prevent contamination of surface waters, and minimize impacts to existing drainage infrastructure.	Goal provided for context. See specific policies below.
Policy 5.4.1.1: Require storm drainage systems for discretionary development that protect public health and safety, preserve natural resources, prevent erosion of adjacent and downstream lands, prevent the increase in potential for flood hazard or damage on either adjacent, upstream or downstream properties, minimize impacts to existing facilities, meet the National Pollution Discharge Elimination System (NPDES) requirements, and preserve natural resources such as wetlands and riparian areas.	Consistent. All final drainage design for the proposed project would be consistent with County storm drainage system requirements. See Chapter 2 and Section 3.8 of the EIR for additional discussion of stormwater runoff and control measures.
Goal 6.3: Geologic and Seismic Hazards Minimize the threat to life and property from seismic and geologic hazards.	Goal provided for context. See specific policies below.

Silver Springs Parkway to Bass Lake Road (South Segment) Consistency with Potentially Applicable Policies of the 2004 El Dorado County General Plan, as Amended	
Goal/Objective/Policy	**Discussion**
Objective 6.3.1: Building and Site Standards Adopt and enforce development regulations, including building and site standards, to protect against seismic and geologic hazards.	Objective provided for context. See specific policies below.
Policy 6.3.1.1: The County shall require that all discretionary projects and all projects requiring a grading permit, or a building permit that would result in earth disturbance, that are located in areas likely to contain naturally occurring asbestos (based on mapping developed by the California Department of Conservation [DOC]) have a California-registered geologist knowledgeable about asbestos-containing formations inspect the project area for the presence of asbestos using appropriate test methods. The County shall amend the Erosion and Sediment Control Ordinance to include a section that addresses the reduction of thresholds to an appropriate level for grading permits in areas likely to contain naturally occurring asbestos (based on mapping developed by the DOC). The Department of Transportation and the County Air Quality Management District shall consider the requirement of posting a warning sign at the work site in areas likely to contain naturally occurring asbestos based on the mapping developed by the DOC.	Consistent. The Project site is located within an area mapped as "more likely to contain naturally occurring asbestos" by the County (El Dorado County, 2005) based on mapping developed Department of Conservation. Section 3.3, Air Quality and Greenhouse Gases, of the DSEIR provides further evaluation of the potential for naturally occurring asbestos within the project area and requirements for compliance with all applicable AQMD rules associated with potential disturbance of naturally occurring asbestos during project construction.
Goal 6.5: Acceptable Noise Levels: Ensure that County residents are not subjected to noise beyond acceptable levels.	Goal provided for context. See specific policies below.
Objective 6.5.1: Protection of Noise-Sensitive Development: Protect existing noise-sensitive developments (e.g., hospitals, schools, churches and residential) from new uses that would generate noise levels incompatible with those uses and, conversely, discourage noise-sensitive uses from locating near sources of high noise levels.	Objective provided for context. See specific policies below.
Policy 6.5.1.2: Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 6-2 at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.	Consistent. An acoustical analysis has been prepared for the Project. The results of the analysis, potential project noise impacts and proposed mitigation measures are presented in Section 3.11 of the DSEIR.
Policy 6.5.1.3: Where noise mitigation measures are required to achieve the standards of Tables 6-1 and 6-2, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings.	Consistent. An acoustical analysis has been prepared for the Project. The results of the analysis, potential project noise impacts and proposed mitigation measures are presented in Section 3.11 of the DSEIR. No noise barriers are proposed or identified as necessary to reduce project noise impacts.
Policy 6.5.1.9: Noise created by new transportation noise sources, excluding airport expansion but including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 6-1 at existing noise-sensitive land uses.	Consistent. An acoustical analysis has been prepared for the Project. Noise impacts and proposed mitigation measures are presented in Section 3.11 of the DSEIR. The project noise impact analysis utilizes General Plan Table 6-1 noise standards as a threshold of impact significance. No exceedance associated traffic on the Project segment of Silver Springs Parkway is predicted to occur as a result of the project.

Silver Springs Parkway to Bass Lake Road (South Segment) Consistency with Potentially Applicable Policies of the 2004 El Dorado County General Plan, as Amended	
Goal/Objective/Policy	**Discussion**
Policy 6.5.1.11: The standards outlined in Tables 6-3, 6-4, and 6-5 shall apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally-recognized holidays. Exceptions are allowed if it can be shown that construction beyond these times is necessary to alleviate traffic congestion and safety hazards.	Consistent. An acoustical analysis has been prepared for the Project. Construction noise impacts and mitigation measures are presented in Section 3.11 of the DSEIR, and the analysis concludes that the impact associated with construction noise would be less than significant.
Goal 6.6: Management of Hazardous Materials. Recognize and reduce the threats to public health and the environment posed by the use, storage, manufacture, transport, release, and disposal of hazardous materials.	Goal provided for context. See specific policies below.
Objective 6.6.1: Regulation of Hazardous Materials. Regulate the use, storage, manufacture, transport and disposal of hazardous materials in accordance with State and Federal regulations.	Objective provided for context. See specific policies below.
Policy 6.6.1.2: Prior to the approval of any subdivision of land or issuing of a permit involving ground disturbance, a site investigation, performed by a Registered Environmental Assessor or other person experienced in identifying potential hazardous wastes, shall be submitted to the County for any subdivision or parcel that is located on a known or suspected contaminated site included in a list on file with the Environmental Management Department as provided by the State of California and federal agencies. If contamination is found to exist by the site investigations, it shall be corrected and remediated in compliance with applicable laws, regulations, and standards prior to the issuance of a new land use entitlement or building permit.	**Consistent.** Access to properties from which right-of-way would be required for the Project was unavailable at the time this DSEIR was prepared and a site investigation for hazard wastes has not been conducted (see Impact 3.7-2 in the DSEIR). DSEIR Mitigation Measure 3.7-2 requires that the County conduct a Phase 1 Environmental Site Assessment (Phase I ESA) of the Project study area and that the County implement appropriate remediation to ensure worker and public safety in the event that hazardous materials or conditions are identified. Implementation of Mitigation measure 3.7-2 would ensure consistency with this policy.
Goal 6.7: Air Quality Maintenance: A. Strive to achieve and maintain ambient air quality standards established by the U.S. Environmental Protection Agency and the California Air Resources Board. B. Minimize public exposure to toxic or hazardous air pollutants and air pollutants that create unpleasant odors.	Goal 6.7 provided for context. See discussion of specific policies below.
Policy 6.7.2.3: To improve traffic flow, synchronization of signalized intersections shall be encouraged as a means to reduce congestion, conserve energy, and improve air quality.	Consistent. The Project does not include installation of traffic signals. However, consistent with Policy TC-3d and Policy 6.7.2.3, the County will review and adjust traffic signal timing/synchronization if necessary at the Silver Springs Parkway / Green Valley Road intersection and other nearby traffic signals to adjust these signals appropriately to best accommodate traffic patterns once the Project segment of Silver Springs Parkway is completed and open for public use.
Policy 6.7.2.5: Upon reviewing projects, the County shall support and encourage the use of, and facilities for, alternative-fuel vehicles to the extent feasible. The County shall develop language to be included in County contract procedures to give preference to contractors that utilize low-emission heavy-duty vehicles.	Consistent. The County will include contract provisions that require contractors to utilize low-emission heavy-duty trucks as applicable and required pursuant to County contract procedures.

Silver Springs Parkway to Bass Lake Road (South Segment) Consistency with Potentially Applicable Policies of the 2004 El Dorado County General Plan, as Amended	
Goal/Objective/Policy	**Discussion**
Policy 6.7.7.1: The County shall consider air quality when planning the land uses and transportation systems to accommodate expected growth, and shall use the recommendations in the most recent version of the El Dorado County Air Quality Management (AQMD) *Guide to Air Quality Assessment: Determining Significance of Air Quality Impacts Under the California Environmental Quality Act*, to analyze potential air quality impacts (e.g., short-term construction, long-term operations, toxic and odor-related emissions) and to require feasible mitigation requirements for such impacts. The County shall also consider any new information or technology that becomes available prior to periodic updates of the Guide. The County shall encourage actions (e.g., use of light-colored roofs and retention of trees) to help mitigate heat island effects on air quality.	Consistent. The air quality impacts of the Project have been evaluated based on the recommendations of the AQMD CEQA Guide. See Section 3.3 of the DSEIR for additional discussion.
Policy 7.1.2.2: Discretionary and ministerial projects that require earthwork and grading, including cut and fill for roads, shall be required to minimize erosion and sedimentation, conform to natural contours, maintain natural drainage patterns, minimize impervious surfaces, and maximize the retention of natural vegetation. Specific standards for minimizing erosion and sedimentation shall be incorporated into the Zoning Ordinance.	Consistent. An erosion control plan will be prepared for the Project (may be integrated with Construction Stormwater Water Pollution Prevention Plan) and specific best management practices will be implemented to minimize the potential for erosion and sedimentation due to stormwater runoff from or through the Project site. See Section 3.8 of the DSEIR for additional discussion of water quality impacts and mitigation measures.
Goal 7.3: Water Quality And Quantity: Conserve, enhance, and manage water resources and protect their quality from degradation.	Goal 7.3 provided for context. See discussion of specific policies below.
Objective 7.3.1: Water Resource Protection: Preserve and protect the supply and quality of the County's water resources including the protection of critical watersheds, riparian zones, and aquifers.	Objective 7.3.1 provided for context. See discussion of specific policies below.
Policy 7.3.1.1: Encourage the use of Best Management Practices, as identified by the Soil Conservation Service, in watershed lands as a means to prevent erosion, siltation, and flooding.	Consistent. An erosion control plan will be prepared for the project and specific best management practices will be implemented to minimize the potential for erosion and sedimentation due to stormwater runoff from or through the project site. See Section 3.8 of the DSEIR for additional discussion of water quality impacts and mitigation measures.
Objective 7.3.2: Water Quality: Maintenance of and, where possible, improvement of the quality of underground and surface water.	Objective 7.3.2 provided for context. See discussion of specific policies below.
Policy 7.3.2.1: Stream and lake embankments shall be protected from erosion, and streams and lakes shall be protected from excessive turbidity.	Consistent. The EIR identifies water drainages within the Project area and identifies measures for the protection of stormwater quality. An erosion control plan will be prepared for the Project and specific best management practices will be implemented to minimize the potential for erosion and sedimentation due to stormwater runoff from or through the project site. See Section 3.8 of the DSEIR for additional discussion of water quality impacts and mitigation measures.

Silver Springs Parkway to Bass Lake Road (South Segment) Consistency with Potentially Applicable Policies of the 2004 El Dorado County General Plan, as Amended	
Goal/Objective/Policy	**Discussion**
Policy 7.3.2.2: Projects requiring a grading permit shall have an erosion control program approved, where necessary.	Consistent. An erosion control plan will be prepared for the Project and specific best management practices will be implemented to minimize the potential for erosion and sedimentation due to stormwater runoff from or through the Project site. See Section 3.8 of the DSEIR for additional discussion of water quality impacts and mitigation measures.
Objective 7.3.3: Wetlands: Protection of natural and man-made wetlands, vernal pools, wet meadows, and riparian areas from impacts related to development for their importance to wildlife habitat, water purification, scenic values, and unique and sensitive plant life.	Objective 7.3.3 provided for context. See discussion of specific policies below.
Policy 7.3.3.1: For projects that would result in the discharge of material to or that may affect the function and value of river, stream, lake, pond, or wetland features, the application shall include a delineation of all such features. For wetlands, the delineation shall be conducted using the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual.	Consistent. A delineation of waters of the U.S., including wetlands, was conducted for the 1992 Bass Lake Road Realignment EIR and submitted to the U.S. Army Corps of Engineers (USACE). As discussed in Section 3.4 of the DSEIR, property access was not available during the preparation of the DSEIR and, therefore, a formal updated wetlands delineation has not yet been prepared for the project. However, based on review of the previous delineation and recent aerial photographs, the DSEIR provides an estimate of the potential types and amount of water of the U.S., including wetlands, that may be affected by the Project and identifies mitigation requirements. A delineation will be completed once property access is obtained and submitted to the USACE for verification and permitting prior to Project construction.
Objective 7.3.4: Drainage: Protection and utilization of natural drainage patterns.	Objective 7.3.4 provided for context. See discussion of specific policies below.
Policy 7.3.4.2: Modification of natural stream beds and flow shall be regulated to ensure that adequate mitigation measures are utilized.	Consistent. Project drainage will be designed to ensure that post-construction stormwater flows and water quality are protected consistent with Objective 7.3.4.
Goal 7.4: Wildlife And Vegetation Resource: Identify, conserve, and manage wildlife, wildlife habitat, fisheries, and vegetation resources of significant biological, ecological, and recreational value.	Goal 7.4 provided for context. See discussion of specific policies below.
Objective 7.4.1: Rare, Threatened, And Endangered Species: The County shall protect State and Federally recognized rare, threatened, or endangered species and their habitats consistent with Federal and State laws.	Objective 7.4.1 provided for context. See discussion of specific policies below.
Policy 7.4.1.6: All development projects involving discretionary review shall be designed to avoid disturbance or fragmentation of important habitats to the extent reasonably feasible. Where avoidance is not possible, the development shall be required to fully mitigate the effects of important habitat loss and fragmentation. Mitigation shall be defined in the Integrated Natural Resources Management Plan (INRMP).	Consistent. The Project will result in the permanent loss of an estimated approximately 2.09 acres of wetlands and 5.37 acres of oak woodlands canopy. Section 3.4 of the DSEIR provides an analysis of Project impacts to important habitats and identifies mitigation to reduce the impact to less than significant.

<table>
<tr><th colspan="2">Silver Springs Parkway to Bass Lake Road (South Segment)
Consistency with Potentially Applicable Policies of the
2004 El Dorado County General Plan, as Amended</th></tr>
<tr><th>Goal/Objective/Policy</th><th>Discussion</th></tr>
<tr><td>Objective 7.4.4: Forest and Oak Woodland Resources: Protect and conserve forest and woodland resources for their wildlife habitat, recreation, water production, domestic livestock grazing, production of a sustainable flow of wood products, and aesthetic values.</td><td>Objective 7.4.4 provided for context. See discussion of specific policies below.</td></tr>
<tr><td>Policy 7.4.4.4: For all new development projects (not including agricultural cultivation and actions pursuant to an approved Fire Safe Plan necessary to protect existing structures, both of which are exempt from this policy) that would result in soil disturbance on parcels that (1) are over an acre and have at least 1 percent total canopy cover or (2) are less than an acre and have at least 10 percent total canopy cover by woodlands habitats as defined in this General Plan and determined from base line aerial photography or by site survey performed by a qualified biologist or licensed arborist, the County shall require one of two mitigation options: (1) the project applicant shall adhere to the tree canopy retention and replacement standards described below; or (2) the project applicant shall contribute to the County's Integrated Natural Resources Management Plan (INRMP) conservation fund described in Policy 7.4.2.8.
Option A
The County shall apply the following tree canopy retention standards:
<table>
<tr><th>Percent Existing Canopy Cover</th><th>Canopy Cover to be Retained</th></tr>
<tr><td>80–100</td><td>60% of existing canopy</td></tr>
<tr><td>60–79</td><td>70% of existing canopy</td></tr>
<tr><td>40–59</td><td>80% of existing canopy</td></tr>
<tr><td>20–39</td><td>85% of existing canopy</td></tr>
<tr><td>10-19</td><td>90% of existing canopy</td></tr>
<tr><td>1-9 for parcels > 1 acre</td><td>90% of existing canopy</td></tr>
</table>
Under Option A, the project applicant shall also replace woodland habitat removed at 1:1 ratio. Impacts on woodland habitat and mitigation requirements shall be addressed in a Biological Resources Study and Important Habitat Mitigation Plan as described in Policy 7.4.2.8. Woodland replacement shall be based on a formula, developed by the County, that accounts for the number of trees and acreage affected.</td><td>Potentially Inconsistent. The Project would result in the removal of approximately 5.37 acres of oak canopy which would result in the removal of oak canopy in excess of the Policy 7.4.4.4 Option A oak canopy retention standard. The Board of Supervisors is currently considering an amendment to the General Plan that would replace the existing Oak Woodland Management Plan with an Oak Resources Management Plan. As envisioned at the time of preparation of this Draft SEIR (November 2015) the amendments would eliminate the on-site canopy retention requirements currently specified in Policy 7.4.4.4. In the event the Project were to proceed in advance of an amendment modifying or eliminating the current canopy retention requirements of Policy 7.4.4.4, the Project would be inconsistent with the policy. Mitigation Measure 3.9-1 requires that the County not advertise for construction bids for the Project until such time as the County determines that the Project's oak tree removal can be undertaken in a manner deemed consistent with the County General Plan. Implementation of Mitigation Measure 3.9-1 would ensure consistency with the General Plan.</td></tr>
<tr><td>Objective 7.4.5: Native Vegetation and Landmark Trees: Protect and maintain native trees including oaks and landmark and heritage trees.</td><td>Objective 7.4.5 provided for context. See discussion of specific policies below.</td></tr>
<tr><td>Goal 7.5: Cultural Resources: Ensure the preservation of the County's important cultural resources.</td><td>Goal 7.5 provided for context. See discussion of specific policies below.</td></tr>
<tr><td>Policy 7.5.1.3: Cultural resource studies (historic, prehistoric, and paleontological resources) shall be conducted prior to approval of discretionary projects. Studies may include, but are not limited to, record searches through the North Central Information Center at California State University, Sacramento, the Museum of Paleontology, University of California, Berkeley, field surveys, subsurface testing, and/or salvage excavations. The avoidance and protection of sites shall be encouraged.</td><td>Consistent. In association with the Project environmental review, a cultural resources evaluation has been conducted to determine the potential presence of cultural resources within the project area. See Section 3.5 of the DSEIR for additional discussion.</td></tr>
</table>

Silver Springs Parkway to Bass Lake Road (South Segment) Consistency with Potentially Applicable Policies of the 2004 El Dorado County General Plan, as Amended	
Goal/Objective/Policy	**Discussion**
Policy 7.5.1.6: The County shall treat any significant cultural resources (i.e., those determined California Register of Historical Resources/National Register of Historic Places eligible and unique paleontological resources), documented as a result of a conformity review for ministerial development, in accordance with CEQA standards.	Consistent. There are no identified cultural resources within the Project site. See Section 3.5 of the EIR for additional discussion and mitigation associated with potential discover of cultural resources or human remains during Project construction.
Objective 7.5.2: Visual Integrity: Maintenance of the visual integrity of historic resources.	Objective 7.5.2 provided for context. See discussion of specific policy below.
Policy 7.5.2.4: The County shall prohibit the modification of all National Register of Historic Places (NRHP)/California Register of Historical Resources (CRHR) listed properties that would alter their integrity, historic setting, and appearance to a degree that would preclude their continued listing on these registers. If avoidance of such modifications on privately owned listed properties is deemed infeasible, mitigation measures commensurate with NRHP/CRHR standards shall be formulated in cooperation with the property owner.	Consistent. There are no identified listed historic properties or resources within the Project site.
Objective 9.1.2: County Trails: Provide for a County-wide, non-motorized, multi-purpose trail system and trail linkages to existing and proposed local, State, and Federal trail systems. The County will actively seek to establish trail linkages between schools, parks, residential, commercial, and industrial uses and to coordinate this non-motorized system with the vehicular circulation system.	Objective 9.1.2 provided for context. See discussion of specific policy below.
Policy 9.1.2.8: Integrate and link, where possible, existing and proposed National, State, regional, County, city and local hiking, bicycle, and equestrian trails for public use.	Consistent. The Project would provide Class II bicycle lanes between areas along Bass Lake Road south of the Project site and the Green Valley Road corridor to the north.
Objective 10.2.3: Coordination Of Public Improvements: Cooperate with other jurisdictions to promote the most cost-effective methods of providing civic, public and community facilities, and basic infrastructure necessary for supporting the economic, social, and environmental well being of the County and its residents.	Objective 10.2.3 provided for context. See discussion of specific policy below.
Policy 10.2.3.1: Coordinate major infrastructure construction within the County, particularly the transportation system network and extension of sewer and water service, to assure consistency of these improvements with the General Plan. Where it has legal authority to do so, the County, through its membership on LAFCO or otherwise, should deny proposals by special districts found to be inconsistent with the County's General Plan. Program 10.2.3.1.1: Government Code Section 65401 authorizes the County to obtain lists of all capital projects planned by public agencies within the County. Proposed capital improvements found inconsistent with the County's General Plan can be protested to the sponsoring agency. As part of its annual review of the Capital Improvement Program, the County should include a Section 65401 review which lists all capital projects sponsored by other jurisdictions during the following year and makes a finding relative to the consistency of each project	Consistent. Silver Springs Parkway is a planned roadway improvement identified in the El Dorado County General Plan and would improve traffic circulation within western El Dorado County.

Silver Springs Parkway to Bass Lake Road (South Segment) Consistency with Potentially Applicable Policies of the 2004 El Dorado County General Plan, as Amended	
Goal/Objective/Policy	**Discussion**
with the County's General Plan. Program 10.2.3.1.2: As part of an effort to maintain high quality services and implement the General Plan, the County should maintain an effective liaison and improve cooperation with the cities and special districts serving the County.	

Appendix H

Environmental Noise Assessment
Silver Springs Parkway
to Bass Lake Road *(South Segment)*

Environmental Noise Assessment

Silver Springs Parkway to Bass Lake Road (South Segment) Draft Subsequent EIR

El Dorado County, California

BAC Job # 2014-030

Prepared For:

Benchmark Resources

Mr. Bob Delp
2515 East Bidwell Street
Folsom, CA 95630

Prepared By:

Bollard Acoustical Consultants, Inc.

Paul Bollard

Paul Bollard, President

September 11, 2015

BOLLARD
Acoustical Consultants

Introduction

The proposed Silver Springs Parkway to Bass Lake Road (South Segment) Project (project) would provide a new arterial connection between the existing southern terminus of Silver Springs Parkway and Bass Lake Road. The project would construct a new Bass Lake Road and Silver Springs Parkway intersection and would make improvements to Bass Lake Road immediately south and east of the new intersection. Figure 1 shows the vicinity map of the project corridor, and Figure 2 shows the proposed improvements.

This Noise Study Report provides technical information to support the preparation of an Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA), for which the County of El Dorado is the lead agency. The noise assessment evaluates the potential noise impacts associated with the proposed improvements. The analysis quantifies the baseline (2014) and future (2035) traffic noise levels at existing noise-sensitive receptor locations (residences) located along the project corridor. The traffic data used to model existing and future condition traffic noise levels is contained in the "Silver Springs Parkway to Bass Lake Road (South Segment) Transportation Impact Analysis" prepared for the project by Fehr & Peers Transportation Consultants. The noise impact evaluation has been conducted in accordance with current standards and conventions in environmental noise assessment under CEQA, Accordingly, impacts are identified at noise-sensitive locations if the project would result in a significant increase over the existing (ambient) noise levels or if the project would result in noise level impacts that would exceed the noise level standards contained in the El Dorado County General Plan. The specific purposes of this report are as follows:

- To identify the noise-sensitive existing land uses located within the project study limits.
- To quantify the existing and future traffic noise environments at those sensitive land uses with and without the project.
- To quantify the extent by which the project would result in changes in noise levels within the study area.
- To identify potentially significant noise impacts due to the project.
- To develop noise mitigation measures where potentially significant noise impacts are identified.
- To evaluate the potential for vibration-related impacts associated with the project.

Project Summary and Evaluation Scenarios

The project would construct a new segment of Silver Springs Parkway north of Bass Lake Road, and would reconstruct portions of Bass Lake Road south and east of the Silver Springs Parkway intersection. The project would extend Silver Springs Parkway as a two-lane road south from the southern terminus of the recently constructed northern segment of Silver Springs Parkway to Bass Lake Road. The project would also realign Bass Lake Road from south of the Bass Lake Road/Madera Way intersection north to the new intersection that would be constructed at Bass Lake Road/Silver Springs Parkway. The project includes installation of Class II bicycle lanes and concrete sidewalks on both sides of the parkway, and a center median with turn pockets for driveway access. The Project segment of Silver Springs Parkway is approximately 1,400 feet in length, and the reconstructed segments of Bass Lake Road south and east of the new intersections are approximately 800 and 500 feet in length, respectively. Portions of the reconstructed segment of Bass Lake Road east of the new intersection would be at slightly increased elevations (up to approximately 3 feet) as compared to the roadway's current profile. One or more of three potential construction staging areas may be used during construction; two of these are located west of and adjacent to Bass Lake Road in the southern portion of the project site, and one is located west of and adjacent to the existing segment of Silver Springs Parkway approximately 1,000 feet north of the northern terminus of the project segment of Silver Springs Parkway.

The noise impacts analysis considers potential impacts during the construction phase of the project and evaluates impact associated with traffic noise under existing (2014) conditions with and without the project and future (2035) conditions with and without the project.

Environmental Setting

Fundamentals of Traffic Noise

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz). For analysis purposes, the frequency of traffic noise is commonly considered to be 550 Hz.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel (dB) scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in sound levels correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by the A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported herein are in terms of A-weighted levels. Table 1 shows typical noise levels associated with common activities. Table 2 provides acoustical terminology.

Figure 1

Silver Springs Parkway to Bass Lake Road (South Segment) Project - El Dorado County, California
Project Area and Noise Measurement Locations

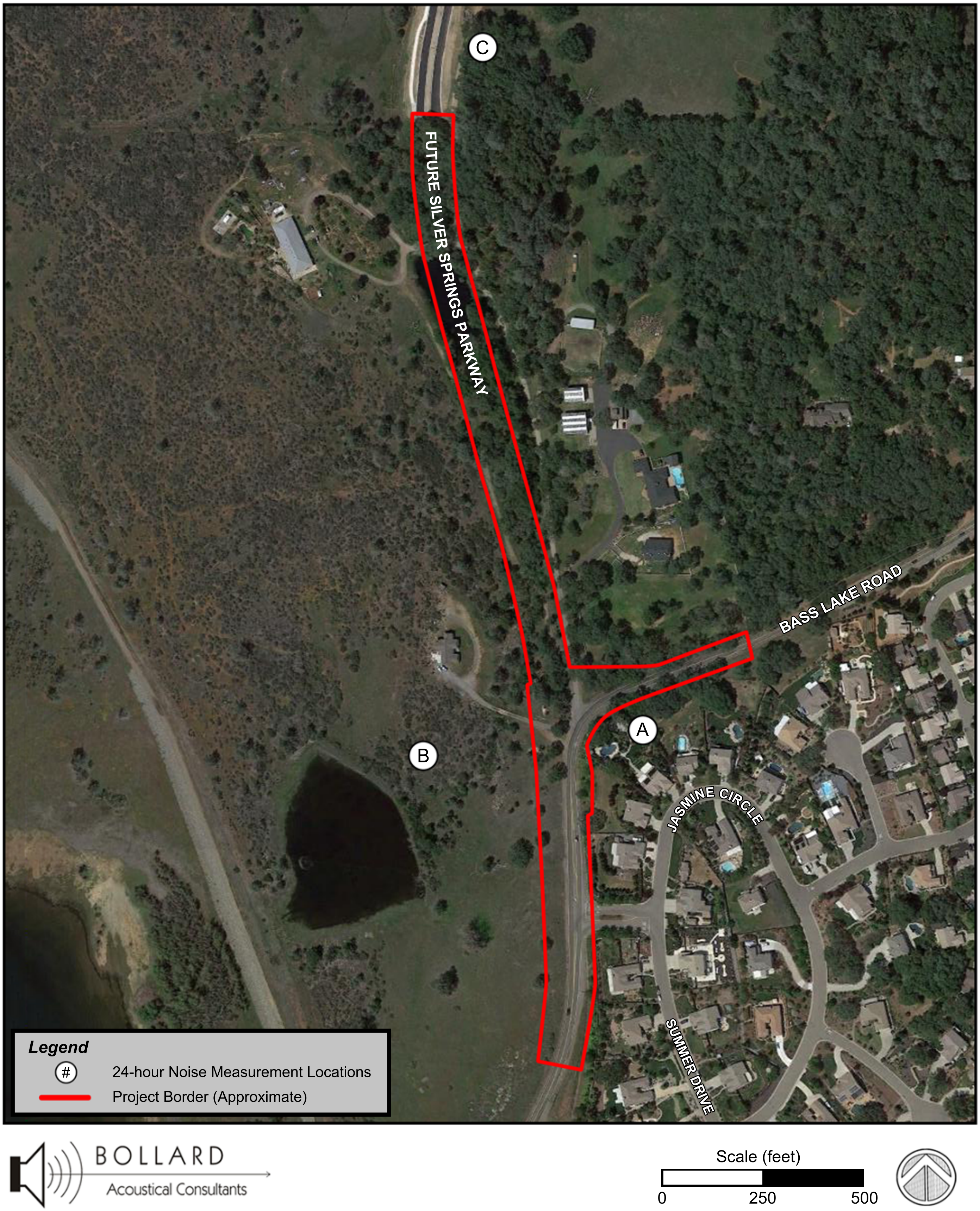

Figure 2

Silver Springs Parkway to Bass Lake Road (South Segment) Project - El Dorado County, California
Construction Area and Residential Receivers Analyzed

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Scale (feet)
0 250 500

Table 1
Noise Levels Associated with Common Activities

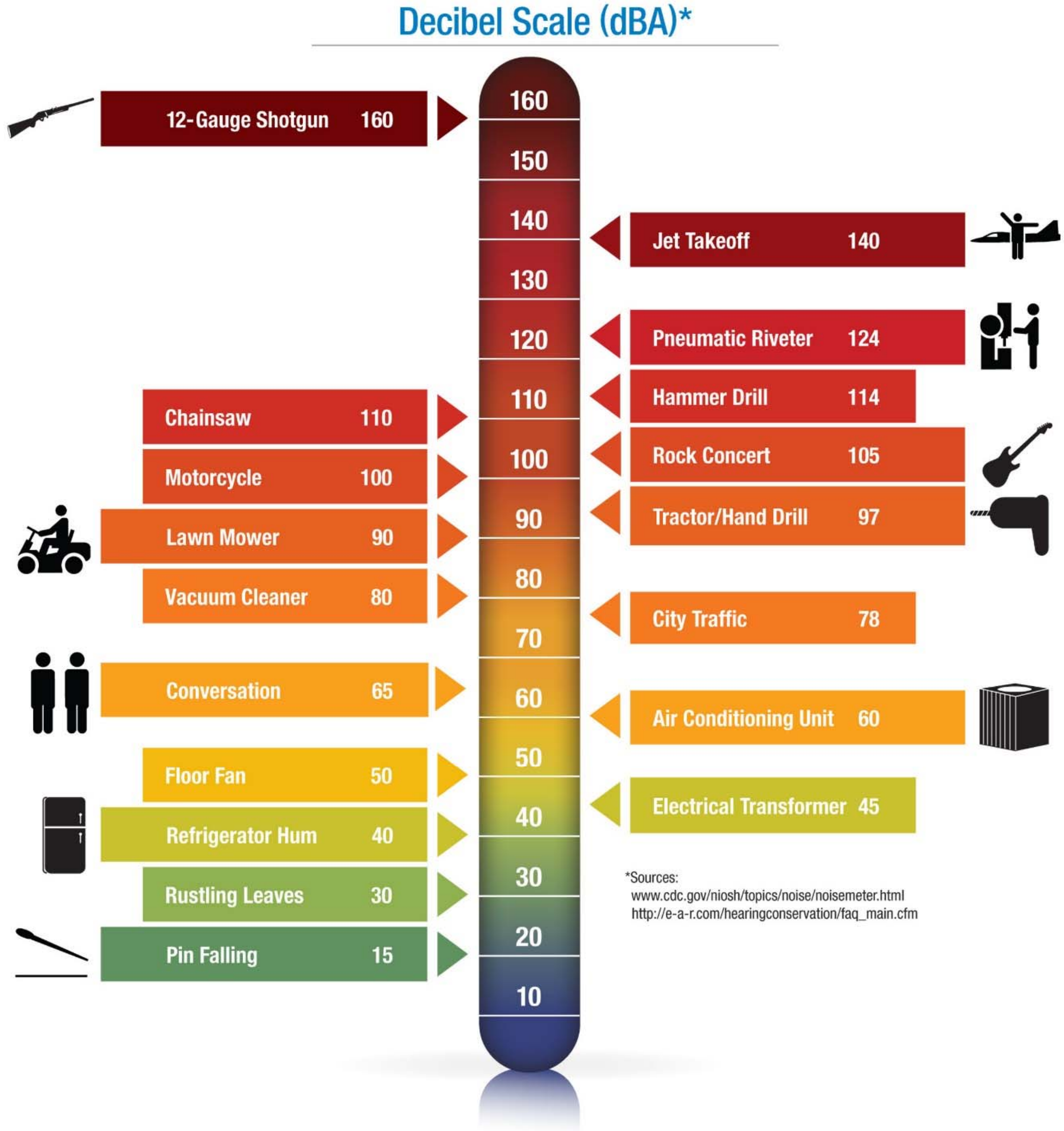

Table 2
Acoustical Terminology

Term	Definition
Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	A fundamental unit of sound, a Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A decibel is one-tenth of a Bell.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Masking	The amount (or the process) by which the threshold of audibility for one sound is raised by the presence of another (masking) sound.
Noise	Unwanted sound.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.

Existing Noise-Sensitive Receptors

Figure 2 shows an overview of the project improvements. As indicated on Figure 2, six (6) representative residential receptors were selected for analysis of potential noise impacts associated with the project. Descriptions of each receptor analyzed in this study are provided in Table 3. Ambient noise conditions monitored at ambient noise measurement locations A through C are presented in Table 4 in the subsequent section.

Table 3
Representative Noise Sensitive Receivers Along the Silver Springs Parkway to Bass Lake Road (South Segment) Project Corridor Analyzed within this Noise Study

Receiver (See Figure 2)	Description
1	This residence is located on the west side of the proposed Silver Springs Parkway extension at APN 115-030-04. This is the northernmost residential receiver along the project study corridor and is, therefore, located the furthest from Bass Lake Road. Based on the distance between this residence and Bass Lake Road and the absence of obvious or known adjacent active land uses, this residential receptor is expected to have the lowest existing ambient noise conditions of any residences analyzed in this study. This residential structure is located approximately 365 feet from the future Silver Springs Parkway centerline. The primary outdoor activity area of this residence is identified through review of aerial imagery as the backyard / swimming pool area (west of the residential structure), which is located approximately 480 feet from the future roadway centerline and partially shielded from view of the proposed extension by the residential structure. Access to this property was not available for conducting ambient noise monitoring for this study. As discussed in a subsequent section of this report, ambient conditions at this receptor were assumed to be generally representative of conditions at ambient noise measurement location C.
2	This residence is located on the east side of the proposed Silver Springs Parkway extension, approximately midway along the extension, at APN 115-030-03. This residential structure is located approximately 310 feet from the future Silver Springs Parkway centerline. The primary outdoor activity area of this residence is identified through review of aerial imagery as the backyard / swimming pool area (east of the residential structure), which is located approximately 390 feet from the future roadway centerline and substantially shielded from view of the proposed extension by the residential structure. Access to this property was not available for conducting ambient noise monitoring for this study. Ambient conditions at this receptor were assumed to be generally representative of conditions at ambient noise measurement location B.
3	This residence is located on the west side of the proposed Silver Springs Parkway extension at APN 115-030-15. This residential receiver is northeast of the future intersection of Silver Springs Parkway and Bass Lake Road. This residential structure is located approximately 240 feet from the future Silver Springs Parkway centerline. No clearly defined primary outdoor activity area could be identified for this residence from

Table 3
Representative Noise Sensitive Receivers Along the Silver Springs Parkway to Bass Lake Road (South Segment) Project Corridor Analyzed within this Noise Study

Receiver (See Figure 2)	Description
	review of aerial imagery. As a result, the outdoor activity area was assumed to be within a 100 foot radius of this residence, or within approximately 140 feet from the future Silver Springs Parkway centerline. Ambient conditions at this receptor were assumed to be generally representative of conditions at ambient noise measurement location B.
4	This residence is located on the south side of Bass Lake Road at APN 115-310-22. It is considered to be generally representative of the noise exposure of the residence to the immediate west. Neither this residence, nor the residence to the immediate west, have noise barriers along Bass Lake Road. This residential structure is located approximately 210 feet from the centerline of Bass Lake Road. The primary outdoor activity area of this residence is identified as the backyard / swimming pool area, which is located approximately 190 feet from the Bass Lake Road centerline. Ambient conditions at this receptor were assumed to be generally representative of conditions at ambient noise measurement location A.
5	This residence is located on the south side of Bass Lake Road at APN 115-310-03. It is considered to be generally representative of the noise exposure at the neighboring residences to the west. This residence is partially shielded from existing Bass Lake Road traffic noise levels by an existing noise barrier along a portion of the property. That barrier, which starts at this residence, continues westerly to the end of the project study corridor (with a break at Madera Way). This residential structure is located approximately 240 feet from the future (realigned) centerline of Bass Lake Road. The primary outdoor activity area of this residence is identified as the backyard / swimming pool area, which is located approximately 85 feet from the Bass Lake Road centerline. Ambient conditions at this receptor are represented by ambient noise measurement location A.
6	This residence is located at the southeast corner of the intersection of Bass Lake Road and Madera Way, at APN 115-310-06. This residential structure is located approximately 95 feet from the future centerline of Bass Lake Road. The primary outdoor activity area of this residence is identified as the rear and side yards, which are located approximately 85+ feet from the Bass Lake Road centerline. Ambient conditions at this receptor are represented by ambient noise measurement location A.

Source: Bollard Acoustical Consultants, Inc. (BAC)

Existing Noise Environment

The existing traffic noise environment at the existing residences located in the immediate project vicinity is defined almost entirely by existing Bass Lake Road traffic noise. At the existing residences located to the north of Bass Lake Road, ambient conditions are also affected by natural sounds and may also be influenced to a small degree by other human activities such as general residential activities (e.g., lawn maintenance equipment), aircraft flight (including limited small craft flight associated with the Cameron Airport approximately 1.5 miles to the east. To quantify existing ambient noise conditions at locations representative of existing residences in the project vicinity, a long-term ambient noise survey was conducted on June 13-16, 2014. The noise measurement locations are shown in Figure 1.

Larson-Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used to complete the noise level measurements. The meters were calibrated before use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4). A summary of the ambient noise level measurement survey is provided below in Table 4. Graphs of the continuous noise measurement results are provided in Appendix B

Table 4
Ambient Noise Measurement Results
Silver Springs Parkway to Bass Lake Road (South Segment) Project Corridor Vicinity

		Daytime		Nighttime		
Site[1]	**Date**	**Leq**	**Lmax**	**Leq**	**Lmax**	**Ldn**
A	6/13/2014	58	91[2]	50	74	60
	6/14/2014	57	89	48	80	58
	6/15/2014	56	90	48	78	58
	6/16/2014	58	94	49	80	60
	Average:	**57**	**91**	**49**	**78**	**59**
B	6/13/2014	45	73	44	66	52
	6/14/2014	45	72	43	74	51
	6/15/2014	45	72	43	64	50
	6/16/2014	47	69	44	80	54
	Average:	**46**	**72**	**44**	**71**	**52**
C	6/13/2014	41	69	40	67	47
	6/14/2014	41	73	39	59	46
	6/15/2014	41	73	37	62	46
	6/16/2014	43	81	40	79	50
	Average:	**42**	**74**	**39**	**67**	**47**

Source: Bollard Acoustical Consultants, Inc. (BAC)
1. Noise measurement locations are shown on Figure 1.
2. Elevated maximum noise levels at Site A were believed to have been caused by periodic dog barking in close proximity to the noise meter. As indicated in Appendix B-1, this was a relatively infrequent occurrence which did not appreciably affect measured average hourly noise levels or computed Ldn values.

The noise survey results shown in Table 4 indicate that the lowest measured ambient conditions occurred at Site C, which was the furthest location from the Bass Lake Road. Conversely, Site A, which was in a residential backyard approximately 85 feet from the centerline of Bass Lake Road, exhibited the highest measured ambient conditions.

Discussion of Existing Bass Lake Road Noise Barrier

An existing sound barrier approximately 6 feet in height extends along Bass Lake Road from Bridlewood Drive south of the Project site to the eastern boundary of the residence at APN 115-310-03 (with a break at Madera Way). This residence is identified as Receptor 5 in Table 3 and also corresponds to ambient noise measurement Site C. Because the existing barrier intercepts line of sight between the existing configuration of Bass Lake Road and the adjacent residential outdoor activity areas, it is estimated to provide a 5 dB reduction in traffic noise at the majority of the shielded residences. The exception to this estimate occurs at Receptor 5, were the barrier terminates prior to reaching the east end of the Receptor 5 property and where Bass Lake Road is somewhat elevated relative to the base of barrier elevation. As a result, the noise reduction provided near the eastern boundary of Receptor 5 is estimated to be approximately 3 dB, rather than 5 dB.

The proposed improvements to Bass Lake Road resulting from the project would increase the elevation of Bass Lake Road adjacent to the Receptor 5 residential property by up to approximately 3 feet and would increase the elevation of Bass Lake Road adjacent to the residential property east of Receptor 5, where no noise barrier is present, by approximately 2 to 3 feet. The effect of the elevation change would be to moderately decrease the noise barrier effectiveness at Receptor 5. However, the effect would be limited to Receptor 5. Additional discussion of the effects of the proposed improvements on that existing noise barrier effectiveness at Receptor 5 are provided later in this analysis.

Regulatory Setting

The Public Health, Safety, and Noise Element of the El Dorado County General Plan (referenced herein as the “Noise Element”) contains goals and policies defining noise standards and thresholds applicable to construction and traffic noise associated with the project. Goal 6.5 of the Noise Element states “ensure that County residents are not subjected to noise beyond acceptable levels.” Objective 6.5.1 states “protect existing noise-sensitive developments (e.g., hospitals, schools, churches, and residential) from new uses that would generate noise levels incompatible with those uses and, conversely, discourage noise-sensitive uses from locating near sources of high noise levels.”

The Noise Element contains several policies geared toward the satisfaction of the stated goal and objective of the Noise Element. These policies pertain to the development of new noise-sensitive land uses or new noise-generating land uses. Policies 6.5.1.9, 6.5.1.11 and 6.5.1.12 are the policies in the Noise Element, which specifically apply to roadway improvement projects, and they are reproduced below:

Policy 6.5.1.9 Noise created by new transportation noise sources, excluding airport expansions, but including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 6-1 (of the Noise Element) at existing noise-sensitive land uses. (Table 6-1 of the County Noise Element is reproduced below as Table 5).

Table 5
Maximum Allowable Noise Exposure for Transportation Noise Sources
(Table 6-1 of El Dorado County General Plan Noise Element)

Land Use	Outdoor Activity Areas[1] Ldn, dB	Interior Spaces Ldn, dB	Interior Spaces Leq, dB[2]
Residential	60[3]	45	
Transient Lodging	60[3]	45	
Hospitals, Nursing Homes	60[3]	45	
Theaters, Auditoriums, Music Halls			35
Churches, Meeting Halls, Schools	60[3]		40
Office Buildings			45
Libraries, Museums			45
Playgrounds, Neighborhood Parks	70		

Notes:

1 - In Communities and Rural Centers, where the location of outdoor activity areas is not clearly defined, the exterior noise level standard shall be applied to the property line of the receiving land use. For residential uses with front yards facing the identified noise source, an exterior noise level criterion of 65 dB L_{dn} shall be applied at the building facade, in addition to a 60 dB L_{dn} criterion at the outdoor activity area. In Rural Regions, an exterior noise level criterion of 60 dB L_{dn} shall be applied at a 100 foot radius from the residence unless it is within Platted Lands where the underlying land use designation is consistent with Community Region densities in which case the 65 dB L_{dn} may apply. The 100-foot radius applies to properties which are five acres and larger; the balance will fall under the property line requirement.

2 - As determined for a typical worst-case hour during periods of use.

3 - Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Policy 6.5.1.11. The standards outlined in County Noise Element Tables 6-3, 6-4, and 6-5 shall apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally-recognized holidays. Exceptions are allowed if it can be shown that construction beyond these times is necessary to alleviate traffic congestion and safety hazards. (The project is located in a Community Region and Table 6-3 of the Noise Element provides applicable noise exposure levels associated with construction activities. Table 6-3 of the Noise Element is reproduced below as Table 6.)

Table 6
Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Community Regions and Adopted Plan Areas – Construction Noise

Land Use Designation[1]	Time Period	Noise Level (dB) L_{eq}	L_{max}
Higher-Density Residential (MFR, HDR, MDR)	7 am – 7 pm	55	75
	7 pm – 10 pm	50	65
	10 pm – 7 am	45	60
Commercial and Public Facilities (C, R&D, PF)	7 am – 7 pm	70	90
	7 pm – 7 am	65	75
Industrial (I)	Any Time	80	90

[1] Adopted Plan areas should refer to those land use designations that most closely correspond to the similar General Plan land use designations for similar development.

Source: 2004 El Dorado County General Plan, Table 6-3.

Policy 6.5.1.12 When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration.

A. Where existing or projected future traffic noise levels are less than 60 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 5 dBA L_{dn} caused by a new transportation noise source will be considered significant;

B. Where existing or projected future traffic noise levels range between 60 and 65 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 3 dBA L_{dn} caused by a new transportation noise source will be considered significant; and

C. Where existing or projected future traffic noise levels are greater than 65 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 1.5 dBA L_{dn} caused by a new transportation noise will be considered significant.

Impacts and Mitigation Measures

Standards of Significance

CEQA (Appendix G) provides guidance that a project would have a significant effect on the environment if it would result in any of the following conditions:

a) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.

f) For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.

Regarding items e and f, the Project is located approximately 1.5 miles west of the Cameron Airport (a public-use airport, FAA Identifier: O61). However, the project will not result in exposure of people to excess noise levels associated with the airport, and these issues are not addressed further in this report.

Methodology

Two types of noise impacts are evaluated in this analysis. The first is related to project construction noise. The second is related to the change in traffic noise levels predicted to occur as a result of the project. The methodology utilized to assess each of these impacts is provided below.

Methodology for Assessing Construction Noise Levels

The Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) was utilized to model the various project equipment noise levels at the nearest noise-sensitive (residential) receptor locations. For modeling purposes, the project operations were divided into four separate construction phases as follows:

- Clearing
- Grading
- Drainage/Utility/Subgrade
- Paving

Table 7 shows the predicted construction-related average and maximum noise levels at noise sensitive exterior locations. Based on coordination with County Transportation staff during preparation of this noise study, short-term noise sources, such as those associated with construction activities, are considered less than significant unless noise levels are predicted to substantially exceed those typically generated during construction activities.

Table 7
Predicted Construction Noise Levels (Leq, dB)
Silver Springs Parkway to Bass Lake Road (South Segment) Project

Residence	Distance	Clearing Phase	Grading Phase	Drainage Utility / Subgrade	Paving Phase
1	480	64	71	71	63
2	390	65	72	73	65
3	140	74	81	82	74
4	190	72	79	79	71
5	125	75	82	83	75
6	95	78	85	85	77

Source: Bollard Acoustical Consultants, Inc. (BAC)

Methodology for Assessing Project-Related Traffic Noise Level Increases

To assess project-related traffic noise level increases resulting from the project, traffic noise levels for existing and future conditions with the project are compared, respectively, against existing and predicted future traffic noise levels without the project. Table 8 lists existing and prediction daily vehicle trips on study area road segments based on the project Transportation Impact Analysis (Fehr & Peers 2015).

Table 8
Daily Roadway Segment Traffic Volume Forecasts (Two-Way Total)

Roadway Segment	Existing	Existing Plus Project	Cumulative	Cumulative Plus Project
Green Valley Road				
County Line to Just West of Sophia Parkway	17,970	17,900	19,000	19,000
Just West of Sophia Parkway to Just East of Francisco Drive	21,140	21,000	21,500	21,600
Just East of Francisco Drive to El Dorado Hills Boulevard	11,210	11,100	15,300	15,400
El Dorado Hills Boulevard to Silva Valley Parkway	10,880	10,800	19,200	19,300
Silva Valley Parkway to Malcolm Dixon Road	9,870	9,800	16,000	16,400
Malcolm Dixon Road to Deer Valley Road	8,720	8,600	14,200	14,700
Deer Valley Road to Silver Springs Parkway	8,620	9,300	12,700	13,500
Silver Springs Parkway to Bass Lake Road	8,620	8,100	12,300	11,300
Bass Lake Road to Cameron Park Road	9,650	9,600	14,800	14,600
Bass Lake Road				
Green Valley Road to Silver Springs Parkway	5,380	4,600	8,300	7,000
Silver Springs Parkway to Serrano Parkway	7,720	7,800	12,000	12,600
Serrano Parkway to US 50	8,590	8,700	12,200	12,600
Silver Springs Parkway				
South of Green Valley	NA	1,400	1,000	3,200
Extension to Bass Lake Road	NA	1,400	NA	3,300

Source: Fehr & Peers, 2015

Because very limited vehicle use currently occurs along the alignment of the proposed Silver Springs Parkway (limited to access of the three existing residences), there is no appreciable existing vehicle noise level that can be established for that segment. Therefore, ambient noise levels are considered representative of existing and future conditions without the project for the three residences located along the project segment of Silver Springs Parkway (receptors 1-3 on Figure 2). To predict existing and future traffic noise levels at all other locations, the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (RD-77-108) was used. The FHWA model was developed to predict hourly Leq values for free-flowing traffic conditions, and reports noise levels in Leq. To compute traffic noise levels in terms of day-night average levels (Ldn), the day/night distribution of traffic is utilized as presented in the project transportation impact analysis.

A full discussion of the transportation impact analysis methods and assumptions is available in the Transportation Impact Analysis report and is not repeated here. However, it is important to note that the daily trips associated with future (2035) conditions include trips associated with the conditionally approved, but not yet constructed, Silver Springs residential development project located northeast of the project site. Occupancy of the Silver Springs residential development project is restricted to Phase I (53 single family dwelling units) until Silver Springs Parkway is completed. Therefore, the traffic analysis of future conditions without the project assumes occupancy and associated vehicle trips only for Phase I of the Silver Springs residential development project. The traffic analysis of future conditions with the project assumes occupancy and associated vehicle trips associated with Phase I as well as trips associated with Phase II (134 single-family dwelling units) and Phase III (47 single-family dwelling units) of the Silver Springs residential development project. Thus, the analysis of with project future conditions includes a greater number of vehicle trips (those associated with Silver Springs development Phases II and III) indicating increased traffic noise associated with trips from that development. This traffic noise analysis uses data from the traffic impact analysis and, therefore, evaluates future conditions based on these same assumptions.

The FHWA model was used with the inputs shown in Appendix C to predict existing and future traffic noise levels along all of the project-area roadways in the general project vicinity at a representative distance of 100 feet from the roadway centerlines. The 100 foot distance is used to standardize the analysis to a uniform reference distance. It is understood, however, that some residences may be closer than 100 feet from the roadway centerlines whereas others are located beyond that distance. However, the *relative changes* in traffic noise levels resulting from the project are not distance-dependent.

The purpose of this analysis was to identify the project-related *increases* in traffic noise levels at receptors located beyond the project construction corridor. (A separate analysis of existing future traffic noise levels and potential noise impacts at the six (6) representative residences located within the project construction corridor identified on Figure 2 is provided in the next section of this analysis). The predicted existing and future, project and no-project traffic noise levels at a representative distance of 100 feet from the roadway centerlines is provided in Table 9

Table 9
Predicted Traffic Noise Levels 100-feet from the Roadway Centerlines (L_{dn}, dB)
Silver Springs Parkway to Bass Lake Road (South Segment) Project Area Roadways

Segment	Roadway	Description	Existing	E+P	Change	Cumulative	C+P	Change
1	Green Valley Road	County Line to Sophia Pkwy	67	67	0.0	67	67	0.0
2	Green Valley Road	Sophia Pkwy to Francisco Dr	68	68	0.0	68	68	0.0
3	Green Valley Road	Francisco Dr to El Dorado Hills Blvd	65	65	0.0	66	66	0.0
4	Green Valley Road	El Dorado Hills Blvd to Silva Valley Pkwy	65	65	0.0	67	67	0.0
5	Green Valley Road	Silva Valley Parkway to Malcolm Dixon Rd	66	66	0.0	68	68	0.1
6	Green Valley Road	Malcolm Dixon Rd to Deer Valley Rd	65	65	-0.1	67	67	0.2
7	Green Valley Road	Deer Valley Rd to Silver Springs Pkwy	65	65	0.3	67	67	0.3
8	Green Valley Road	Silver Springs Pkwy to Bass Lake Rd	65	65	-0.3	67	66	-0.4
9	Green Valley Road	Bass Lake Rd to Cameron Park Rd	64	64	0.0	66	66	-0.1
10	Bass Lake Road	Green Valley Rd to Silver Springs Pkwy	60	59	-0.7	61	61	-0.7
11	Bass Lake Road	Silver Springs Pkwy to Serrano Pkwy	61	61	0.0	63	63	0.2
12	Bass Lake Road	Serrano Pkwy to US 50	62	62	0.1	63	63	0.2
13	Silver Springs Parkway	South of Green Valley Rd	47-52	52	0-5	48-53	56	3-8
14	Silver Springs Parkway	Extension to Bass Lake Rd	47-52	52	0-5	48-53	56	3-8

Source: FHWA-RD-77-108 with inputs provided in Appendix C and Noise Measurement Results from Appendix B for future extension of Silver Springs Parkway.

The Table 9 data provides a range of baseline noise levels for Silver Springs Parkway. This is because the roadway doesn't currently exist so no modelling of existing conditions could be conducted. Rather, the range of noise levels shown correspond to ambient noise levels measured at Sites B & C. To predict the actual changes in traffic noise levels that would occur at the outdoor activity areas of the three (3) nearest residences to the proposed extension of Silver Springs Parkway, as well as at existing residences located adjacent to Bass Lake Road within the project construction limits, additional modelling of traffic noise levels at the specific outdoor activity areas of those residences was conducted. The predicted traffic noise exposure was compared against the ambient noise levels reported in Table 4 for Receptors 1-3, and against modelled baseline noise levels without the project for Receptors 4-6. The results of this more focused analysis are provided in Table 10.

Table 10
Predicted Changes in Ambient Noise Levels
Outdoor Activity Areas of at Receivers 1 - 6

Receiver	Existing	Existing + Project	Change	Future	Future + Project	Change
1	47	48	1.2	48	50	2.1
2	52	53	0.6	53	54	1.0
3	52	54	2.2	53	56	3.5
4	55	53	-2.0	57	55	-2.1
5	58	56	-1.7	59	58	-1.7
6	57	56	-1.3	59	58	-1.1

Source: Bollard Acoustical Consultants

As noted in Table 10, traffic noise levels are predicted to decrease at residences adjacent to Bass Lake Road both south and east of the Silver Springs Parkway intersection (Receptors 4-6) as a result of the project. This decrease at residences east of this intersection (represented by Receptors 4 and 5) would result from both decreased traffic volumes and substantially decreased vehicle speeds and associated tire noise resulting from the installation of an all-way stop sign-controlled intersection at the Bass Lake Road and Silver Springs Parkway intersection. The decrease at residences south of the intersection (represented by Receptor 6) would occur as a result of decreased vehicle speeds and associated tire noise resulting from installation of the all-way stop sign-controlled intersection.

An existing sound barrier approximately 6 feet in height extends along Bass Lake Road (with a break at Madera Way) from Bridlewood Drive south of the Project site and ending prior to the eastern boundary of the residence at APN 115-310-03. This residence is identified as Receptor 5 in Table 3 and also corresponds to ambient noise measurement Site C. Because the existing barrier intercepts line of sight between the existing configuration of Bass Lake Road and the adjacent residential outdoor activity areas, it is estimated to provide a 5 dB reduction in traffic noise at the majority of the shielded residences. The exception to this estimate occurs at Receptor 5, were the barrier both terminates (it does not extend to the east of the Receptor 5 property) and where Bass Lake Road is somewhat elevated relative to the base of barrier elevation. As a result, the noise reduction provided near the eastern boundary of Receptor 5 is estimated to be approximately 3 dB, rather than 5 dB.

The improvements to Bass Lake Road resulting from the project would increase the elevation of Bass Lake Road adjacent to the Receptor 5 residential property by up to approximately 3 feet and would increase the elevation of Bass Lake Road adjacent to the residential property east of Receptor 5, where no noise barrier is present, by approximately 2 to 3 feet. The elevation change would moderately decrease the noise barrier effectiveness at Receptor 5. However, the slightly decreased performance of the existing noise barrier located at Receptor 5 resulting from the increased elevation of Bass Lake Road would be offset by the reduced traffic volumes and vehicle speeds passing that residence.

Specific Noise Impact and Mitigation Statements

Impact 1 - Changes in traffic noise levels due to the project under existing conditions.

The Table 9 data indicate that the proposed project would result in changes in traffic noise levels relative to existing conditions ranging from -0.7 to 5 dB along the project area roadways. A closer inspection of predicted traffic noise level increases at the three (3) residences located along the proposed project segment of Silver Springs Parkway, Receptors 1-3 shown in Table 10, indicates that the project would result in an increase ranging from 0.6 to 2.2 dB Ldn at the outdoor activity areas of those residences.

According to Policy 6.5.1.12 of the County Noise Element, a significant increase in traffic noise levels is defined as 1.5 to 5 dB, depending on no-project levels. With the exception of residential receptors 1, 2, and 3 which are adjacent to the project segment of Silver Springs Parkway, the projected change in traffic noise levels along study area segments would not exceed even the most restrictive threshold of 1.5 dB and the project change in noise levels would be less than significant at these locations. Existing ambient noise levels at Receptors 1-3 (see Figure 2) are below 60 dB L_{dn}, therefore, the threshold of significance for those receptors is 5 dB. As indicated in Table 10, the traffic noise level increases at the outdoor activity areas of those residences resulting from the project is predicted to range from 0.6 to 2.2 dB L_{dn}.

Also as noted in Table 10, the predicted noise level changes at residences along Bass Lake Road (represented by Receptors 4-6) decrease due to a combination of reduced vehicle trips (east of the Silver Springs Parkway/Bass Lake Road intersection) and reduced vehicle speeds (south and east of the Silver Springs Parkway/Bass Lake Road intersection). Because the predicted traffic noise level increases associated with the project under existing conditions with the project are below the El Dorado County thresholds of significance, this impact is considered **less than significant.**

Mitigation: None required.

Impact 2 – Assessment of traffic noise with the project against County Ldn Standards – existing conditions.

According to Policy 6.5.1.9 of the County Noise Element, noise created by roadway improvement projects shall be mitigated so as not to exceed 60 - 65 dB Ldn at existing noise-sensitive receptors. For this component of the analysis, project impacts are considered to only have the potential to occur at receptor locations along segments of new roadway or segments of roadway that would be modified as a result of the project. This policy would specifically pertain to representative Receptors 1-6. The Table 10 data indicate that the project would generate traffic noise levels ranging below the County's acceptable range of 60-65 dB Ldn at existing residences located adjacent to the project construction limits. Because traffic noise levels from the roadways being improved (segments of Silver Springs Parkway and Bass Lake Road) will be below the noise level limits identified in Policy 6.5.1.9, this impact is considered **less than significant.**

Mitigation: None required.

Impact 3 - Assessment of Construction Noise Impacts

During the construction phases of the project, noise from construction activities would increase the noise environment in the immediate area. Activities involved in construction would typically generate maximum noise levels ranging from 64 to 85 dB L_{eq} at the nearest residences, as indicated in Table 7.

Construction noise levels in this range would cause short-term variations in the ambient noise environment during construction in close proximity to existing residences. Because these noise levels would be short-term and are not expected to exceed those typically associated with construction, the impact associated with noise during Project construction is considered **less than significant**. Though not required, Mitigation Measure 1 below would further reduce the potential for construction-related noise impacts at sensitive receptor locations and is recommended for the County's consideration.

Mitigation Measure 1: Implement Construction Noise Control Measures

Construction activities shall comply with the following and be noted accordingly on construction contracts:

1. Construction activities and delivery of materials or equipment to the site shall be limited to the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday and between 9:00 a.m. to 5:00 p.m. on Saturdays. Construction shall not occur on Sundays or on any holiday recognized by El Dorado County.

2. Construction equipment powered by internal combustion engines shall be properly muffled and maintained.

3. Equipment and vehicles shall be turned off when not in use and unnecessary idling of internal combustion engines shall be prohibited.

4. Stationary noise-generating construction equipment, such as air compressors, shall be located as far as practicable from adjacent residences homes and shall be acoustically shielded when located within 100 feet of adjacent residences or outdoor activity areas.

5. To the extent feasible, quiet equipment, particularly air compressors, shall be utilized and motorized equipment shall be outfitted with proper mufflers in good working order.

6. Equipment storage locations shall be sited as far as practicable from nearby sensitive receptors.

7. The County shall designate a "noise disturbance coordinator" who shall be responsible for receiving and responding to any complaints about construction noise. The noise disturbance coordinator shall determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and require that reasonable measures warranted to correct the problem be implemented. The telephone number for the disturbance coordinator shall be conspicuously posted at the construction site. The noise disturbance coordinator may be the contractor or a contractor's representative. All noise complaints received and actions taken to resolve the complaints shall be reported to the County's construction contract supervisor.

Significance before and after Mitigation: *Less than Significant*.

Impact 4 - Assessment of potential impacts associated with vehicle-induced vibration

As a means of determining the potential for vibration impacts associated with the project, vibration measurement data collected for other roadway improvement projects in the region in recent years was reviewed. Those data indicate that peak particle velocity of less than five thousandths (0.005) of an inch per second were measured on sidewalks adjacent to the major roadways for which improvements were proposed. Based on research conducted by Caltrans, peak particle velocities of less than 0.005 inches per second are well below the thresholds of human perception and do not pose a threat to either humans or structures. As a result, this impact is considered **less than significant.**

Mitigation: None required

Impact 5 - Changes in traffic noise levels due to the project – future (2035) conditions

Under future (2035) conditions both with and without the project, development in the region will add traffic to the existing roadway network, thereby resulting in a higher overall traffic noise environment both with and without the project. It is likely that traffic noise will remain the dominant noise source in the immediate project vicinity. Table 9 shows the predicted future traffic noise levels for cumulative (year 2035) conditions. Examination of that table indicates that future traffic noise levels without the project are predicted to range from approximately 61 to 68 dB Ldn at a representative distance of 100 feet from the project area roadways. The Table 9 data indicate that the project would result in changes in traffic noise levels relative to future conditions ranging from -0.7 to 8 dB along the study area roadways. A closer inspection of predicted traffic noise level increases at the three (3) residences located along the proposed Silver Springs Extension, shown in Table 10, indicates that the project would result in an increase ranging from 1.0 to 3.5 dB L_{dn} at the outdoor activity areas of those residences.

According to Policy 6.5.1.12 of the County Noise Element, a significant increase in traffic noise levels is defined as 1.5 to 5 dB at a sensitive noise receptor, depending on no-project levels. Because none of the projected increases exceed even the most restrictive threshold of 1.5 dB for any of the roadways except the proposed extension of Silver Springs Parkway, the traffic noise increase on those roadways is considered to be less than significant. Furthermore, because the baseline noise levels at Receptors 1-3 (see Figure 2) are below 60 dB L_{dn}, the threshold of significance for those receptors is 5 dB. As indicated in Table 10, the projected traffic noise level increases at the outdoor activity areas of those residences resulting from the project is predicted to range from 1.0 to 3.5 dB L_{dn}. Because the project noise level increases are below the El Dorado County thresholds of significance, this impact is considered **less than significant.**

Mitigation: None required.

Appendix A
Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

Ldn Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

Leq Equivalent or energy-averaged sound level.

Lmax The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the Maximum level, which is the highest RMS level.

RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

Sabin The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.

SEL A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.

Threshold of Hearing The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.

Threshold of Pain Approximately 120 dB above the threshold of hearing.

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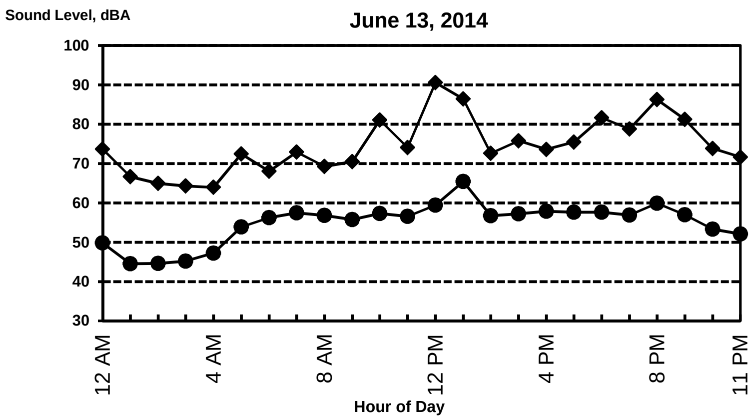
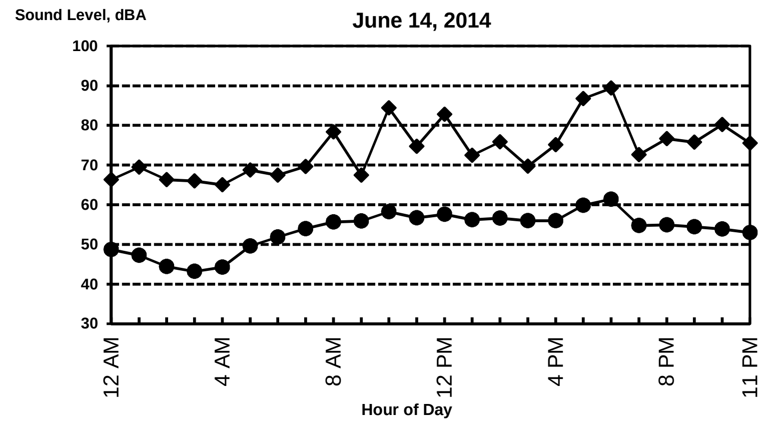
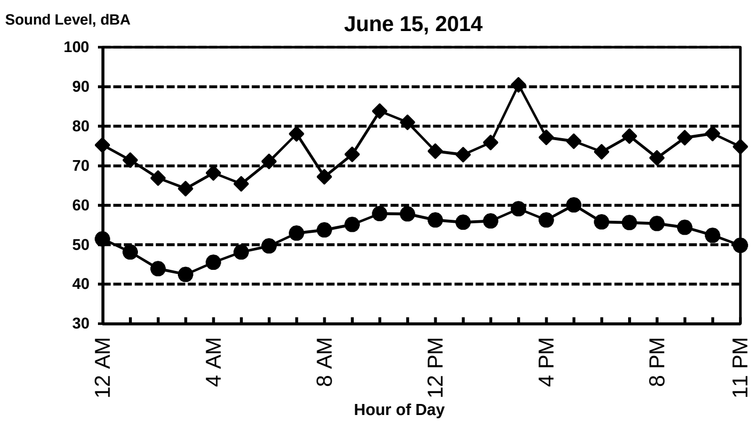
Appendix B-1
Silver Springs Parkway Realignment
Site A - June 13, 2014 to June 16, 2014



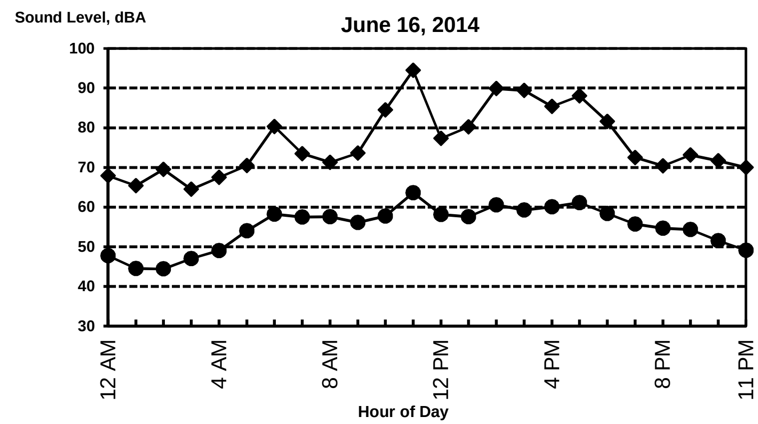
Ldn = 60 dB



Ldn = 58 dB



Ldn = 58 dB



Ldn = 60 dB

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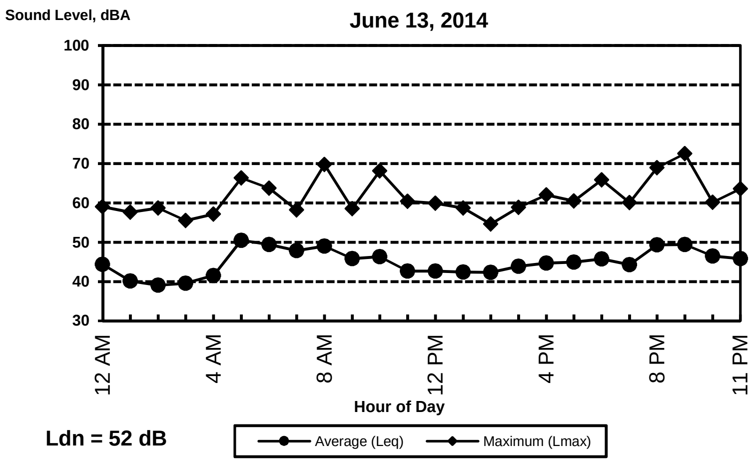
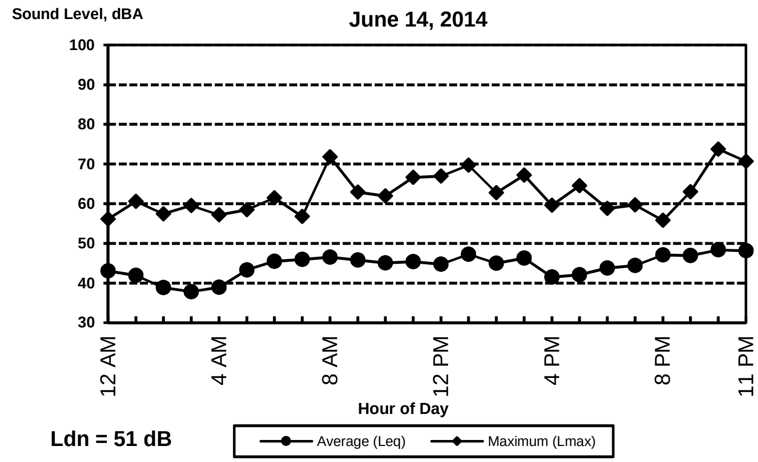
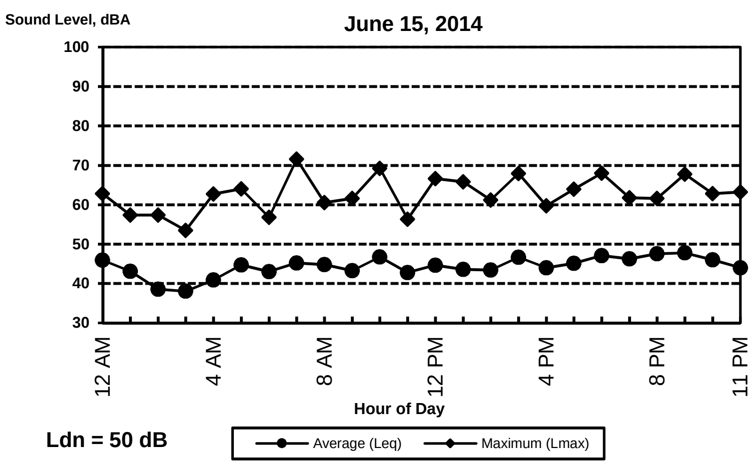
Appendix B-2
Silver Springs Parkway Realignment
Site B - June 13, 2014 to June 16, 2014



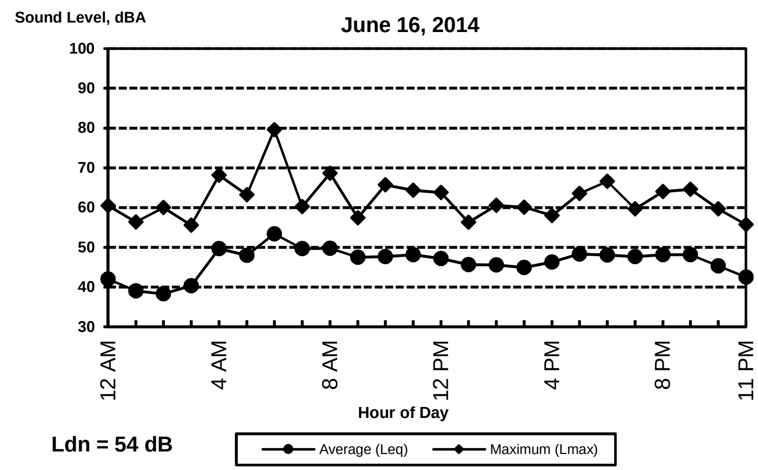
Ldn = 52 dB



Ldn = 51 dB



Ldn = 50 dB



Ldn = 54 dB

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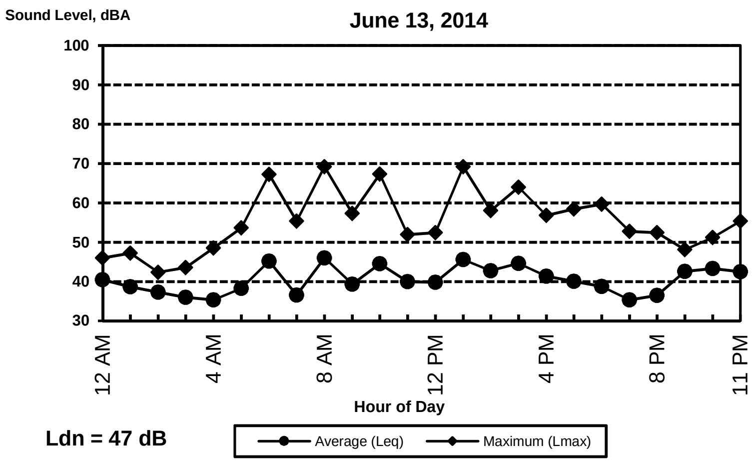
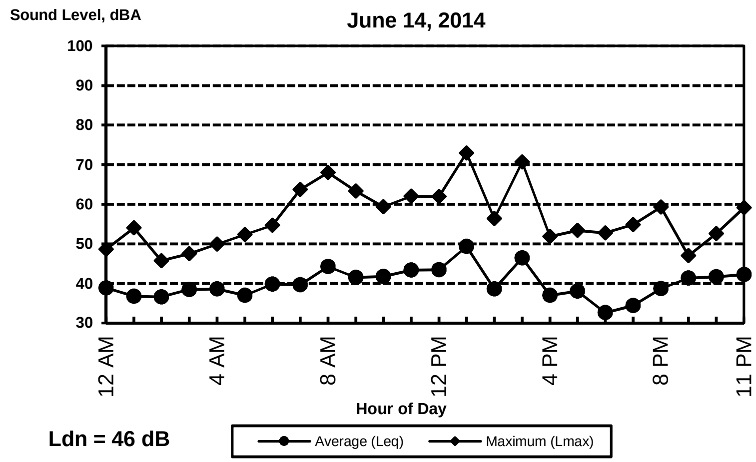
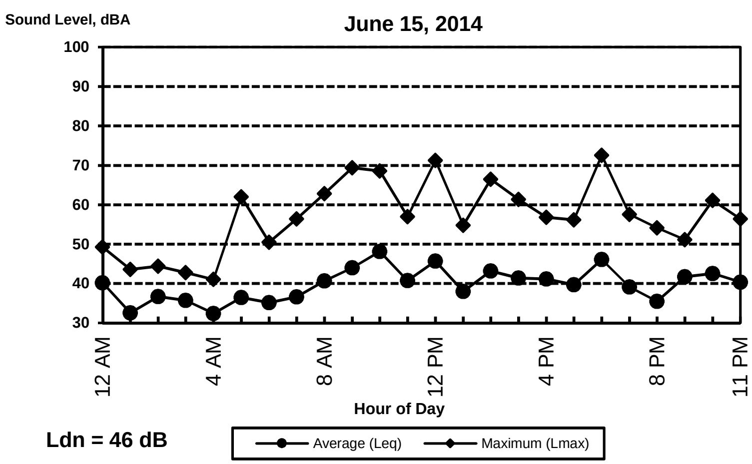
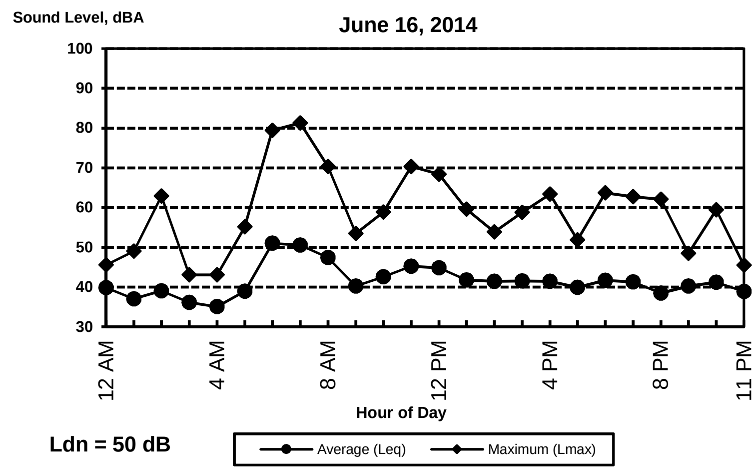
Appendix B-3
Silver Springs Parkway Realignment
Site C - June 13, 2014 to June 16, 2014









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Appendix C-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2014-030 Silver Springs Parkway Realignment
Description: Existing
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Green Valley Road	County Line to Sophia Pkwy	17,970	80		20	2	1	50	100	
2	Green Valley Road	Sophia Pkwy to Francisco Dr	21,140	80		20	2	1	50	100	
3	Green Valley Road	Francisco Dr to El Dorado Hills Blvd	11,210	80		20	2	1	50	100	
4	Green Valley Road	El Dorado Hills Blvd to Silva Valley Pkwy	10,880	80		20	2	1	50	100	
5	Green Valley Road	Silva Valley Parkway to Malcolm Dixon Rd	9,870	80		20	2	1	55	100	
6	Green Valley Road	Malcolm Dixon Rd to Deer Valley Rd	8,720	80		20	2	1	55	100	
7	Green Valley Road	Deer Valley Rd to Silver Springs Pkwy	8,620	80		20	2	1	55	100	
8	Green Valley Road	Silver Springs Pkwy to Bass Lake Rd	8,620	80		20	2	1	55	100	
9	Green Valley Road	Bass Lake Rd to Cameron Park Rd	9,650	80		20	2	1	50	100	
10	Bass Lake Road	Green Valley Rd to Silver Springs Pkwy	5,380	80		20	2	1	40	100	
11	Bass Lake Road	Silver Springs Pkwy to Serrano Pkwy	7,720	80		20	2	1	40	100	
12	Bass Lake Road	Serrano Pkwy to US 50	8,590	80		20	2	1	40	100	
13	Silver Springs Parkway	South of Green Valley Rd	0	80			2	1	35	100	
14	Silver Springs Parkway	Extension to Bass Lake Rd	0	80			2	1	35	100	

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Appendix C-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2014-030 Silver Springs Parkway Realignment
Description: Existing + Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Green Valley Road	County Line to Sophia Pkwy	17,900	80		20	2	1	50	100	
2	Green Valley Road	Sophia Pkwy to Francisco Dr	21,000	80		20	2	1	50	100	
3	Green Valley Road	Francisco Dr to El Dorado Hills Blvd	11,100	80		20	2	1	50	100	
4	Green Valley Road	El Dorado Hills Blvd to Silva Valley Pkwy	10,800	80		20	2	1	50	100	
5	Green Valley Road	Silva Valley Parkway to Malcolm Dixon Rd	9,800	80		20	2	1	55	100	
6	Green Valley Road	Malcolm Dixon Rd to Deer Valley Rd	8,600	80		20	2	1	55	100	
7	Green Valley Road	Deer Valley Rd to Silver Springs Pkwy	9,300	80		20	2	1	55	100	
8	Green Valley Road	Silver Springs Pkwy to Bass Lake Rd	8,100	80		20	2	1	55	100	
9	Green Valley Road	Bass Lake Rd to Cameron Park Rd	9,600	80		20	2	1	50	100	
10	Bass Lake Road	Green Valley Rd to Silver Springs Pkwy	4,600	80		20	2	1	40	100	
11	Bass Lake Road	Silver Springs Pkwy to Serrano Pkwy	7,800	80		20	2	1	40	100	
12	Bass Lake Road	Serrano Pkwy to US 50	8,700	80		20	2	1	40	100	
13	Silver Springs Parkway	South of Green Valley Rd	1,400	80		20	2	1	35	100	
14	Silver Springs Parkway	Extension to Bass Lake Rd	1,400	80		20	2	1	35	100	

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Appendix C-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2014-030 Silver Springs Parkway Realignment
Description: Cumulative
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Green Valley Road	County Line to Sophia Pkwy	19,000	80		20	2	1	50	100	
2	Green Valley Road	Sophia Pkwy to Francisco Dr	21,500	80		20	2	1	50	100	
3	Green Valley Road	Francisco Dr to El Dorado Hills Blvd	15,300	80		20	2	1	50	100	
4	Green Valley Road	El Dorado Hills Blvd to Silva Valley Pkwy	19,200	80		20	2	1	50	100	
5	Green Valley Road	Silva Valley Parkway to Malcolm Dixon Rd	16,000	80		20	2	1	55	100	
6	Green Valley Road	Malcolm Dixon Rd to Deer Valley Rd	14,200	80		20	2	1	55	100	
7	Green Valley Road	Deer Valley Rd to Silver Springs Pkwy	12,700	80		20	2	1	55	100	
8	Green Valley Road	Silver Springs Pkwy to Bass Lake Rd	12,300	80		20	2	1	55	100	
9	Green Valley Road	Bass Lake Rd to Cameron Park Rd	14,800	80		20	2	1	50	100	
10	Bass Lake Road	Green Valley Rd to Silver Springs Pkwy	8,300	80		20	2	1	40	100	
11	Bass Lake Road	Silver Springs Pkwy to Serrano Pkwy	12,000	80		20	2	1	40	100	
12	Bass Lake Road	Serrano Pkwy to US 50	12,000	80		20	2	1	40	100	
13	Silver Springs Parkway	South of Green Valley Rd	1,000	80		20	2	1	35	100	
14	Silver Springs Parkway	Extension to Bass Lake Rd	0	80			2	1	35	100	

Appendix C-4

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2014-030 Silver Springs Parkway Realignment
Description: Cumulative + Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Green Valley Road	County Line to Sophia Pkwy	19,000	80		20	2	1	50	100	
2	Green Valley Road	Sophia Pkwy to Francisco Dr	21,600	80		20	2	1	50	100	
3	Green Valley Road	Francisco Dr to El Dorado Hills Blvd	15,400	80		20	2	1	50	100	
4	Green Valley Road	El Dorado Hills Blvd to Silva Valley Pkwy	19,300	80		20	2	1	50	100	
5	Green Valley Road	Silva Valley Parkway to Malcolm Dixon Rd	16,400	80		20	2	1	55	100	
6	Green Valley Road	Malcolm Dixon Rd to Deer Valley Rd	14,700	80		20	2	1	55	100	
7	Green Valley Road	Deer Valley Rd to Silver Springs Pkwy	13,500	80		20	2	1	55	100	
8	Green Valley Road	Silver Springs Pkwy to Bass Lake Rd	11,300	80		20	2	1	55	100	
9	Green Valley Road	Bass Lake Rd to Cameron Park Rd	14,600	80		20	2	1	50	100	
10	Bass Lake Road	Green Valley Rd to Silver Springs Pkwy	7,000	80		20	2	1	40	100	
11	Bass Lake Road	Silver Springs Pkwy to Serrano Pkwy	12,600	80		20	2	1	40	100	
12	Bass Lake Road	Serrano Pkwy to US 50	12,600	80		20	2	1	40	100	
13	Silver Springs Parkway	South of Green Valley Rd	3,200	80		20	2	1	35	100	
14	Silver Springs Parkway	Extension to Bass Lake Rd	3,300	80		20	2	1	35	100	

BOLLARD
Acoustical Consultants

APPENDIX I

SILVER SPRINGS PARKWAY
TO BASS LAKE ROAD *(SOUTH SEGMENT)*
TRANSPORTATION IMPACT ANALYSIS

Silver Springs Parkway to Bass Lake Road (South Segment) Transportation Impact Analysis

Prepared for:
El Dorado County

August 2015

RS14-3234

Prepared by

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Table of Contents

LIST OF FIGURES

LIST OF TABLES

APPENDICES

1.0 INTRODUCTION

1.1 REPORT OVERVIEW

This study presents the results of a transportation impact analysis completed for the Silver Springs Parkway to Bass Lake Road (South Segment) project (project) in El Dorado County, California.

The purpose of this impact analysis is to identify potential impacts to transportation facilities and vehicle circulation as required by the California Environmental Quality Act (CEQA). This study was performed in accordance with the El Dorado County Department of Transportation's 2008 *Traffic Impact Study Protocols and Procedures*, and the scope of work developed in collaboration with County staff.

The remaining sections of this report document the proposed project, analysis methodolgies, impacts, and mitigations.

1.2 PROJECT DESCRIPTION

The proposed project would construct the southern segment of Silver Springs Parkway as a two-lane roadway connecting Bass Lake Road to the southern terminus of the northern segment of Silver Springs Parkway. The project would also construct an intersection at Bass Lake Road. The project is about one-quarter mile in length and includes Class II bicycle lanes and on-street sidewalks on both sides of the roadway. The project is identified in the 2013 El Dorado County Capital Improvement Program (CIP Project #76108).

1.3 PROJECT SEIR SCOPING

El Dorado County solicited public and agency input on the scope of the impact analysis for the Subsequent Environmental Impact Report (SEIR) that the County is preparing for the project. The County held a scoping meeting on May 13, 2014, during the 30-day comment period to allow stakeholders to provide oral comments to County staff and consultants. The transportation analysis presented in this report is informed by comments received during the SEIR scoping period.

2.0 REGULATORY SETTING

Existing transportation polices, laws, and regulations that would apply to the proposed project are summarized below. This information provides a context for the impact discussion related to the project's consistency with applicable regulatory conditions.

2.1 LOCAL

2.1.1 SACRAMENTO AREA COUNCIL OF GOVERNMENTS

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the six-county Sacramento Region. Its members include the counties of Sacramento, El Dorado, Placer, Sutter, Yolo, and Yuba, as well as 22 cities. SACOG provides transportation planning and funding for the region, and serves as a forum for the study and resolution of regional issues. In addition to preparing the region's long-range transportation plan, SACOG assists in planning for transit, bicycle networks, clean air, and airport land uses.

The *Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS) *for 2035* (SACOG 2012) is a federally mandated long-range fiscally constrained transportation plan for the six-county area. Most of this area is designated a federal non-attainment area for ozone, indicating that the transportation system is required to meet stringent air quality emissions budgets to reduce pollutant levels that contribute to ozone formation. To receive federal funding, transportation projects nominated by cities, counties, and agencies must be consistent with the MTP/SCS.

The *2013/16 Metropolitan Transportation Improvement Program* (MTIP) is a list of transportation projects and programs to be funded and implemented over the next 3 years. SACOG submits this document to Caltrans and amends the program on a quarterly cycle. Only projects listed in the MTP/SCS may be included in the MTIP.

2.1.2 EL DORADO COUNTY TRANSPORTATION COMMISSION (EDCTC)

The EDCTC is the Regional Transportation Planning Agency (RTPA) for El Dorado County, except for the portion of the County within the Tahoe Basin, which is under the jurisdiction of the Tahoe Regional Planning Agency (TRPA).

One of the fundamental responsibilities which results from RTPA designation is the preparation of the County's Regional Transportation Plan. The *El Dorado County Regional Transportation Plan 2010 – 2030* (RTP) is designed to be a blueprint for the systematic development of a balanced, comprehensive, multi-modal transportation system. The EDCTC submits the RTP to SACOG for inclusion in the MTP/SCS process.

The *El Dorado County Bicycle Transportation Plan - 2010 Update* provides a blueprint for the development of a bicycle transportation system on the western slope of El Dorado County. The plan updates the El Dorado County Bicycle Master Plan, which was adopted in January 2005.

In August 2008, the EDCTC adopted the *Coordinated Public Transit – Human Services Transportation Plan,* which is intended to improve mobility of individuals who are disabled, elderly, or of low-income status. The plan focuses on identifying needs specific to those population groups and identifying strategies to meet their needs.

2.1.3 COUNTY OF EL DORADO

The County of El Dorado provides for the mobility of people and goods within El Dorado Hills, which is an unincorporated area of the County. All of the study intersections are within the County's jurisdiction.

The Transportation and Circulation Element of the El Dorado County General Plan (amended January 2009) outlines goals and policies that coordinate the transportation and circulation system with planned land uses. The following goals and their associated policies are relevant to the project.

- GOAL TC-1: To plan for and provide a unified, coordinated, and cost-efficient countywide road and highway system that ensures the safe, orderly, and efficient movement of people and goods.
- GOAL TC-X: To coordinate planning and implementation of roadway improvements with new development to maintain adequate levels of service on County roads. (The LOS policy specific to this project is described in Section 4.2.)
- GOAL TC-2: To promote a safe and efficient transit system that provides service to all residents, including senior citizens, youths, the disabled, and those without access to automobiles that also helps to reduce congestion, and improves the environment.
- GOAL TC-3: To reduce travel demand on the County's road system and maximize the operating efficiency of transportation facilities, thereby reducing the quantity of motor vehicle emissions and the amount of investment required in new or expanded facilities.
- GOAL TC-4: To provide a safe, continuous, and easily accessible non-motorized transportation system that facilitates the use of the viable alternative transportation modes.

- GOAL TC-5: To provide safe, continuous, and accessible sidewalks and pedestrian facilities as a viable alternative transportation mode.

The El Dorado County Department of Transportation's 2008 *Traffic Impact Study Protocols and Procedures* sets forth the procedures for conducting transportation analysis in the County. This traffic analysis is consistent with the County-established methods.

2.1.4 EL DORADO COUNTY TRANSIT AUTHORITY

El Dorado County Transit Authority (EDCTA) operates El Dorado Transit, which provides public transit service within the project area. El Dorado Hills is currently served by El Dorado Transit Dial-A-Ride services, Commuter Service, and the Iron Point Connector Route.

The El Dorado Park-and-Ride Facilities Master Plan, November 2007 calls for constructing nine new facilities over 20 years. The plan calls for EDCTA to assume primary responsibility for existing Park-and-Ride facilities in the county and sets forth an annual program to fund the upkeep and operation. The plan reiterates that demand exceeds supply at the Park-and-Ride lot, referred to as the El Dorado Hills Multi-modal Facility, located in the northeast corner of the White Rock Road/Latrobe Road intersection. In particular, Table 2 of the Plan suggests that future (year 2027) deficiency at this location is 172 additional spaces. The plan identifies the construction of a 325-space multi-story parking garage with ground floor retail as priority project #12 in the Capital Improvement Program list. The proposed location is the existing Park-and-Ride lot located in the northeast corner of the White Rock Road/Latrobe Road intersection.

3.0 METHOD OF ANALYSIS

3.1 ANALYSIS PROCEDURES

Each study roadway facility was analyzed using the concept of Level of Service (LOS). LOS is a qualitative measure of traffic operating conditions whereby a letter grade, from A (the best) to F (the worst), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. In general, LOS A represents free-flow conditions with no congestion, and LOS F represents long delays and a facility that is operating at or near its functional capacity.

3.1.1 INTERSECTIONS

Traffic operations at the study intersections were analyzed using procedures and methodologies contained in the Highway Capacity Manual (HCM) and the Transportation Research Board, 2000 and 2010 (as confirmed with County staff). These methodologies were applied using the Synchro software packages (Version 8), developed by Trafficware. Table 1 displays the delay range associated with each LOS category for signalized and unsignalized intersections based on the HCM.

The HCM methodology determines the LOS at signalized intersections by comparing the average control delay (i.e., delay resulting from initial deceleration, queue move-up time, time actually stopped, and final acceleration) per vehicle at the intersection to the established thresholds. The LOS for traffic signal controlled and all-way stop controlled intersections is based on the average control delay for the entire intersection. For side-street stop-controlled intersections, the LOS is evaluated separately for each individual movement with delay reported for the critical (i.e., worst case) turning movement.

The following procedures and assumptions were applied for the analysis of existing and cumulative conditions:

- Roadway geometric data were gathered using field observations.
- Peak hour traffic volumes were entered according to the peak hour of each intersection.
- The peak hour factor (PHF) was calculated based on traffic counts and applied by approach.
- The counted pedestrian and bicycle volumes will be used with a minimum of two pedestrians per approach per peak hour.
- Heavy vehicle percentages were based on traffic counts and applied by movement.

- Signal phasing and timings were based on existing signal timing sheets provided by El Dorado County.
- Speeds for the model network were based on the posted speed limit.
- The PHF calculated for existing conditions was used for cumulative conditions.
- The existing heavy vehicle percentages were maintained for cumulative conditions.
- The existing pedestrian and bicycle volumes were maintained for cumulative conditions.
- The 2013 CIP projects were assumed to be in place for cumulative conditions.
- Traffic signals timings were optimized to serve future traffic volumes for cumulative conditions.

TABLE 1: INTERSECTION LEVEL OF SERVICE CRITERIA

Level-of-Service	Average Control Delay (seconds/vehicle)		Description
	Signalized	Stop Controlled	
A	< 10.0	< 10.0	Very low delay. At signalized intersections, most vehicles do not stop.
B	10.1 to 20.0	10.1 to 15.0	Generally good progression of vehicles. Slight delays.
C	>20.1 to 35.0	>15.1 to 25.0	Fair progression. At signalized intersections, increased number of stopped vehicles.
D	>35.1 to 55.0	>25.1 to 35.0	Noticeable congestion. At signalized intersections, large portion of vehicles stopped.
E	>55.1 to 80.0	>35.1 to 50.0	Poor progression. High delays and frequent cycle failure.
F	>80.0	>50.0	Oversaturation. Forced flow. Extensive queuing.

Source: Highway Capacity Manual (Transportation Research Board, 2010)

3.1.2 ROADWAY SEGMENTS

Roadway segment LOS was determined by comparing traffic volumes for selected roadway segments to the peak hour LOS capacity thresholds shown in Table 2. These thresholds were developed by El Dorado County Community Development Agency, Long Range Planning, using HCM 2010 methodologies.

TABLE 2: PEAK HOUR ROADWAY SEGMENT CAPACITIES BY FUNCTIONAL CLASSIFICATION AND LOS

Functional Classification	Lanes	Roadway Segment Capacity (Vehicles per Hour)				
		LOS A	LOS B	LOS C	LOS D	LOS E
Arterial (Divided)	4	Not Achievable		1,850	3,220	3,290
Arterial (Undivided)	2			850	1,540	1,650
	4			1,760	3,070	3,130

Source:
Peak hour roadway segment capacities based on the HCM 2010 and developed by El Dorado County Community Development Agency, Long Range Planning.

3.2 THRESHOLDS OF SIGNIFICANCE

In accordance with the California Environmental Quality Act (CEQA), the effects of a project are evaluated to determine if they will result in a significant adverse impact on the environment. Informed by the CEQA Statute and Guidelines, specifically Appendix G of the CEQA Guidelines, criteria have been established for this analysis to determine whether or not the project would have a significant impact on transportation and circulation.

The intent of CEQA Guidelines Section 15064 is for the responsible agency to establish the thresholds in the context of their specific values towards environmental resources or impacts. Therefore, the standards of significance in this analysis are based on the framework presented in CEQA Guidelines Appendix G and the current practice of the appropriate regulatory agencies. For most areas related to transportation and circulation, policies from the *2004 El Dorado County General Plan* (amended January 2009) and the El Dorado County Department of Transportation's 2008 *Traffic Impact Study Protocols and Procedures* were used. Implementation of the project would have a potentially significant impact on transportation and circulation if it causes any of the following outcomes:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness (MOEs) for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. The following specific MOEs, which have been generated by the regulatory agencies, are applicable to this project.

- General Plan Circulation Policy TC-Xd provides Level of Service standards for County-maintained roads and state highways as follows[1]:
    - Level of Service (LOS) for County-maintained roads and state highways within the unincorporated areas of the county shall not be worse than LOS E in the Community Regions or LOS D in the Rural Centers and Rural Regions except as specified in Table TC-2. The volume to capacity ratio of the roadway segments listed in Table TC-2 as applicable shall not exceed the ratio specified in that table. *(Note: None of the study roadways are presented in Table TC-2)*
    - If a project causes the peak hour level of service or volume/capacity ratio on a county road or state highway that would otherwise meet the County standards (without the project) to exceed the LOS threshold, then the impact shall be considered significant.
    - If any county road or state highway fails to meet the above listed county standards for peak hour level of service or volume/capacity ratios under existing conditions, and the project will "significantly worsen" conditions on the road or highway, then the impact shall be considered significant. The term "significantly worsen" is defined for the purpose of the paragraph according to General Plan Policy TC-Xe as follows:
        A. A two (2) percent increase in traffic during the AM peak hour, PM peak hour or daily, OR
        B. The addition of 100 or more daily trips, OR
        C. The addition of 10 or more trips during the AM peak hour or the PM peak hour.

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.
    - The County has published the following issues and General Plan goals as relevant to traffic impact study assessments. The project may trigger a potentially significant impact if it's in conflict with any of the following:
        - Access to Public Transit Services consistent with General Plan Circulation Element Goal TC-2: "To promote a safe and efficient transit system that provides service to

[1] *El Dorado County Department of Transportation's Traffic Impact Study Protocols and Procedures*

all residents, including senior citizens, youths, the disabled, and those without access to automobiles that also helps to reduce congestion, and improves the environment."

  - Transportation System Management consistent with General Plan Circulation Element Goal TC-3: "To reduce travel demand on the County's road system and maximize the operating efficiency of transportation facilities, thereby reducing the quantity of motor vehicle emissions and the amount of investment required in new or expanded facilities."
  - Non-Motorized Transportation consistent with General Plan Circulation Element Goal TC-4: "To provide a safe, continuous, and easily accessible non-motorized transportation system that facilitates the use of the viable alternative transportation modes."

- Conflict with adopted policies, plans, or programs regarding the delivery of goods and services.

4.0 EXISTING SETTING

4.1 STUDY AREA

Based on coordination with the El Dorado County Community Development Agency (Long Range Planning) staff and Caltrans, the expected distribution of project trips, and review of the El Dorado County Department of Transportation's 2008 *Traffic Impact Study Protocols and Procedures,* the following study intersections and roadways selected for analysis during both the AM and PM peak hours. Figure 1 shows the study area. Most of the study intersections are located in the Community Region, except for the Green Valley Road/Deer Valley Road intersection, which is in the Rural Region. The segment of Green Valley Road between Silva Valley Parkway and Malcolm Dixon Road spans both the Community Region and the Rural Region and the segment between Malcolm Dixon Road and Deer Valley Road is located in the Rural Region. Please note that the project will replace the existing Bass Lake Road/Sandhurst Hill Road intersection. The Bass Lake Road/Sandhurst Hill Road intersection is not analyzed under existing conditions due to low turning movement volume using the intersection.

Intersections:

1. Green Valley Road/Francisco Drive
2. Green Valley Road/El Dorado Hills Boulevard
3. Green Valley Road/Silva Valley Parkway
4. Green Valley Road/Deer Valley Road (Rural Region)
5. Green Valley Road/Pleasant Grove Middle School (signalized access)
6. Green Valley Road/Silver Springs Parkway
7. Green Valley Road/Bass Lake Road
8. Green Valley Road/Cambridge Road
9. Bass Lake Road/Serrano Parkway
10. Bass Lake Road/Silver Springs Parkway

Roadway Segments:

1. Green Valley Road – County Line to Sophia Parkway
2. Green Valley Road – Sophia Parkway to Francisco Drive
3. Green Valley Road – Francisco Drive to El Dorado Hills Boulevard

4. Green Valley Road – El Dorado Hills Boulevard to Silva Valley Parkway
5. Green Valley Road – Silva Valley Parkway to Malcolm Dixon Road (Spans Community Region and Rural Region)
6. Green Valley Road – Malcolm Dixon Road to Deer Valley Road (Located in Rural Region)
7. Green Valley Road – Deer Valley Road to Bass Lake Road
8. Green Valley Road – Bass Lake Road to Cameron Park Road
9. Bass Lake Road – Green Valley Road to Silver Springs Parkway
10. Bass Lake Road – Silver Springs Parkway to Serrano Parkway
11. Bass Lake Road – Serrano Parkway to US 50
12. Silver Springs Parkway – Green Valley Road to Bass Lake Road

1 Study Intersection

El Dorado County Line

Proposed Project

Figure 1

Study Area

4.2 ROADWAY NETWORK

The characteristics of the roadway system near the project are described below. Where applicable, the roadway designation given in the *2004 El Dorado County General Plan* (amended January 2009) is provided.

Green Valley Road is an east-west roadway that connects Placerville with western portions of El Dorado County and eastern Sacramento County, south of Folsom Lake. Through the project area, Green Valley Road provides one travel lane in each direction to just west of El Dorado Hills Boulevard. West of Francisco Drive, Green Valley is a four lane facility. The General Plan identifies Green Valley Road as a four lane divided road between the El Dorado County / Sacramento County line and Deer Valley Road. Green Valley Road serves about 27,000 vehicles per day west of Francisco Drive.

Bass Lake Road is a two-lane roadway that generally follows at north-south alignment from north of US 50 to Green Valley Road. The County's General Plan identifies Bass Lake Road as a four lane divided road near US 50 transitioning to a four lane undivided road and eventually a two-lane road as it continues north. Bass Lake Road serves about 10,000 vehicles per day north of US 50.

Cambridge Road is a two-lane roadway that generally follows a north-south alignment from north of US 50 to Green Valley Road. The County's General Plan identifies Cambridge Road as a major two lane road. Cambridge Road serves about 8,000 vehicles per day north of Country Club Drive.

El Dorado Hills Boulevard is a north-south roadway that continues as Salmon Falls Road on the north and Latrobe Road on the south. The roadway is four lanes with a center median between Park Drive and Governor Drive. Between US 50 and Park Drive, the roadway section widens to three lanes northbound to accommodate vehicle demand near the US 50 interchange. The County's General Plan identifies El Dorado Hills Boulevard as a four lane divided road except near US 50 where the designation changes to a six lane divided road. El Dorado Hills Boulevard serves about 22,000 vehicles per day north of Wilson Boulevard.

Silva Valley Parkway is a north-south roadway that generally runs parallel to El Dorado Hills Boulevard north of US 50. Silva Valley Parkway ranges from two lanes to four lanes with a center median within the study area. The General Plan identifies Silva Valley Parkway as a four lane divided road. A new US 50 interchange at Silva Valley/White Rock Road is currently under construction and is included in the Cumulative conditions transportation analysis. The interchange project provides a realigned Silva Valley Parkway that will connect to the existing four-lane Silva Valley Parkway to the north and the existing two-lane White Rock Road on the south. A new signalized intersection will be installed where the new Silva

Valley Parkway will intersect old White Rock Road on the south. Silva Valley Parkway serves about 9,300 vehicles per day north of US 50.

US Route 50 (US 50) is an east-west freeway located south of the project site. Generally, US 50 serves the majority of El Dorado County's major population centers and provides regional connections to the west (i.e., Sacramento) and to the east (i.e., State of Nevada). Primary access to the project from US 50 is provided via the US 50/El Dorado Hills Boulevard/Latrobe Road interchange. Near the Bass Lake Road interchange, westbound US 50 has a high-occupancy vehicle (HOV) lane and two general purpose travel lanes and eastbound US 50 has an HOV lane and three general purpose travel lanes. The General Plan identifies US 50 as an eight lane freeway under future conditions. US 50 serves about 80,000 vehicles per day east of Latrobe/El Dorado Hills Boulevard.

The US 50/El Dorado Hills Boulevard/Latrobe Road interchange is currently under construction to improve the westbound on- and off-ramps, add 1,000 feet of auxiliary lane to westbound US 50, and provide westbound ramp metering and a dedicated HOV on-ramp lane. Future improvements are planned for this interchange as described in Section 6.1, Table 9.

Construction of the new US 50/Silva Valley Parkway/White Rock Road interchange began in 2014. The interchange will be constructed in two phases. Phase 1 (CIP Project No: 71328) will construct a new connection to US 50 with new signalized slip on- and off-ramps westbound and a slip off-ramp and loop on-ramp eastbound. The mainline will have an overcrossing for Silva Valley Parkway and will be improved to include eastbound and westbound auxiliary lanes between the US 50/El Dorado Hills Boulevard/Latrobe Road interchange and the new US 50/Silva Valley interchange. Completion of Phase 1 is scheduled for 2016. Phase 2 will construct a westbound loop on-ramp and eastbound slip on-ramp (CIP Project No: 71345). The westbound loop on-ramp will begin the addition of an auxiliary lane that will continue westbound through the El Dorado Hills Boulevard interchange and terminate at the planned US 50/Empire Ranch interchange (CIP Project No: 53120).

The planned reconstruction of the US 50/Bass Lake Road interchange (CIP Project No: 71330 and GP148) will add a westbound auxiliary lane between the Bass Lake Road and Silva Valley Parkway interchanges.

4.3 EXISTING CONDITIONS PEAK HOUR TRAFFIC VOLUMES

Intersection and roadway segment counts were collected to determine the existing traffic operations of study facilities. Weather conditions were generally dry and local schools were in full session, during the traffic count data collection.

AM peak period (7 AM to 9 AM) and PM peak period (4 PM to 6 PM) intersection turning movement counts and daily roadway segment counts were collected in May 2014. Construction was ongoing at the US 50/El Dorado Hills Boulevard interchange. Each intersection's peak hour within the peak period was used for the analysis. On the west end of the corridor, the counts indicate that the AM peak hour is between 7:00 and 8:00 and the PM peak hour is between 5:00 and 6:00. On the east end of the corridor, the counts indicate that the AM peak hour is between 7:15 and 8:15 and the PM peak hour is between 5:15 and 6:15. Figure 2 provides peak hour traffic volumes, lane configurations and traffic controls at each of the study intersections.

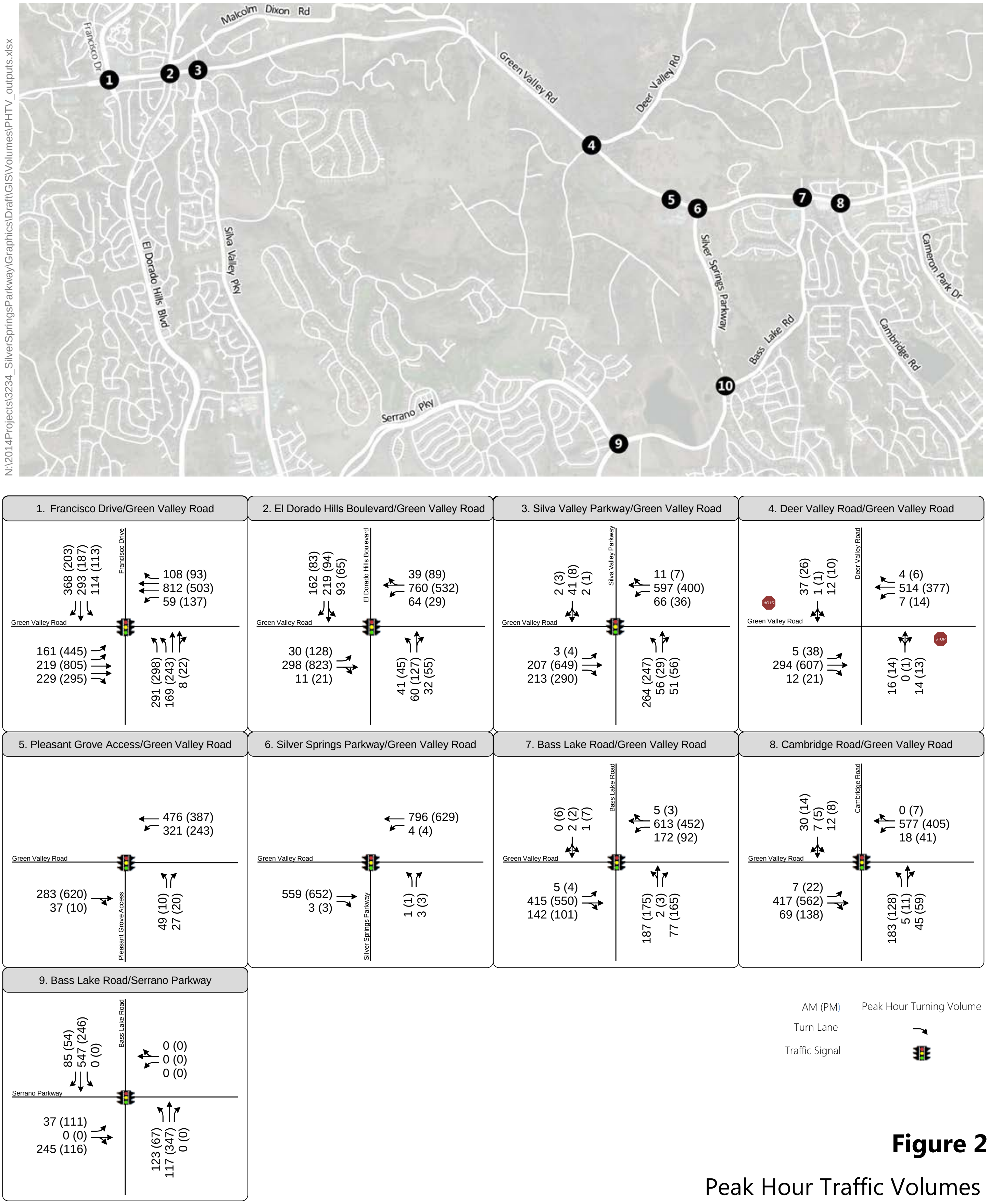


Figure 2

Peak Hour Traffic Volumes and Lane Configurations - Existing Conditions

4.4 EXISTING CONDITIONS PEAK HOUR VEHICLE LEVEL OF SERVICE

4.4.1 INTERSECTIONS

Table 3 summarizes existing conditions AM and PM peak hour Level of Service (LOS) for the study intersections. The LOS of a facility is a qualitative measure used to describe operating conditions. LOS ranges from A (best), which represents short delays, to LOS F (worst), which represents long delays and a facility that is operating at or near its functional capacity.

Detailed LOS analysis sheets are contained in Appendix A. See Section 3.1 and Table 1 for a definition of LOS as it relates to intersection delay.

As shown in Table 3, all of the study intersection operate at LOS E or better during both the AM and PM peak hours. The Bass Lake Road/Sandhurst Hill Road intersection was not analyzed under existing conditions due to low turning movement volume to and from Sandhurst Hill Road. AM peak hour traffic operations at the Green Valley Road/Pleasant Grove Middle School intersection (Intersection 5) reflect recent improvements in onsite traffic management implemented by the school. Prior to the improvements, the intersection operated at LOS E during the AM peak hour due to vehicle queue spillback from the westbound left-turn movement that would block westbound through traffic.

TABLE 3:
PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS

Intersection	Traffic Control	LOS / Delay (seconds)	
		AM	PM
1. Green Valley Road/Francisco Drive	Signal	D / 41	D / 40
2. Green Valley Road/El Dorado Hills Boulevard	Signal	E / 64	E / 58
3. Green Valley Road/Silva Valley Parkway	Signal	C / 22	B / 18
4. Green Valley Road/Deer Valley Road	SSSC	C / 19	D / 27
5. Green Valley Road/Pleasant Grove Middle School	Signal	B / 11	B / 13
6. Green Valley Road/Silver Springs Parkway	Signal	A / 5	A / 4
7. Green Valley Road/Bass Lake Road	Signal	D / 42	B / 17
8. Green Valley Road/Cambridge Road	Signal	C / 21	B / 15
9. Bass Lake Road/Serrano Parkway	Signal	B / 13	A / 9
10. Bass Lake Road/Sandhurst Hill Road (Silver Springs Parkway)	N/A	N/A	N/A

Notes: SSSC = side-street stop-control, AWSC = all-way stop control, N/A = Not Applicable

The average delay is measured in seconds per vehicle. For signalized and AWSC intersections, the delay shown is the average control delay for the overall intersection. For SSSC intersections, the LOS and control delay for the worst movement is shown. Intersection LOS and delay is calculated based on the procedures and methodology contained in the HCM (TRB, 2000).

Source: Fehr & Peers, 2015

4.4.2 ROADWAY SEGMENTS

Table 4 summarizes existing conditions AM and PM peak hour LOS for the study roadways. Most study area roadway segments operate at acceptable levels (better than LOS F), with most operating at LOS C or better. The two-lane segment of Green Valley Road from the County line to just west of Sophia Parkway operates unacceptably at LOS F.

See Section 3.1 and Table 2 for a definition of LOS as it relates to roadway segments.

TABLE 4:
ROADWAY SEGMENT PEAK HOUR LEVEL OF SERVICE – EXISTING CONDITIONS

Roadway Segment	Facility	AM			PM		
		VOL	VC	LOS	VOL	VC	LOS
Green Valley Road							
County Line to West of Sophia Parkway	2A	1,467	0.89	D	1,797	**<u>1.09</u>**	**<u>F</u>**
Just of Sophia Parkway to East of Francisco Drive	4AD	1,546	0.47	C or better	2,114	0.64	D
East of Francisco Drive to El Dorado Hills Boulevard	2A	1,015	0.62	D	1,121	0.68	D
El Dorado Hills Boulevard to Silva Valley Parkway	2A	863	0.52	D	1,088	0.66	D
Silva Valley Parkway to Malcolm Dixon Road	2A	707	0.43	C or better	987	0.60	D
Malcolm Dixon Road to Deer Valley Road	2A	688	0.42	C or better	872	0.53	D
Deer Valley Road to Silver Springs Parkway	2A	762	0.46	C or better	862	0.52	D
Silver Springs Parkway to Bass Lake Road	2A	762	0.46	C or better	862	0.52	D
Bass Lake Road to Cameron Park Road	2A	774	0.47	C or better	965	0.58	D
Bass Lake Road							
Green Valley Road to Silver Springs Parkway	2A	582	0.35	C or better	538	0.33	C or better
Silver Springs Parkway to Serrano Parkway	2A	726	0.44	C or better	772	0.47	C or better
Serrano Parkway to US 50	2A	935	0.57	D	859	0.52	D
Silver Springs Parkway							
South of Green Valley	2A	-	-	-	-	-	-
Extension to Bass Lake Road	2A	-	-	-	-	-	-

Notes: Peak hour roadway segment capacities based on the HCM 2010 and developed by El Dorado County Community Development Agency, Long Range Planning.

4AU – 4-Lane Undivided Arterial, 4AD – 4-Lane Divided Arterial, 2A – 2-Lane Arterial

<u>Bold and underlined</u> text indicates LOS worse than the established acceptable condition.

Source: Fehr & Peers, 2015

4.5 PEDESTRIAN CIRCULATION

Pedestrian facilities are limited near the project. Sidewalks are located on the south side of Green Valley Road from west of the Pleasant Grove School signalized intersection to Bass Lake Road. The existing segment of Silver Springs Parkway (south of Green Valley Road) includes sidewalks on the west side of the roadway for its entire length and on the east side between Green Valley Road and the first intersection. In addition, the Green Valley Road/Bass Lake Road intersection includes intersection controlled pedestrian crosswalks on the north, south and east legs. These pedestrian facilities connect Pleasant Grove Middle School and Green Valley Elementary School to study area residential development. There are no existing sidewalks on Bass Lake Road near the proposed project location.

4.6 BICYCLE CIRCULATION

Bicycle facilities are classified into three categories:

- Class I Bicycle Path – Off-street bike paths within exclusive right-of-way; usually shared with pedestrians
- Class II Bicycle Lane – Striped on-road bike lanes adjacent to the outside travel lane on preferred corridors for biking
- Class III Bicycle Route – Shared on-road facility, usually delineated by signage and pavement markings

In the study area, according to the *El Dorado Bicycle Transportation Plan, 2010 Update (El Dorado County Transportation Commission)* and field observations, the following major bikeway facilities are present within the study area:

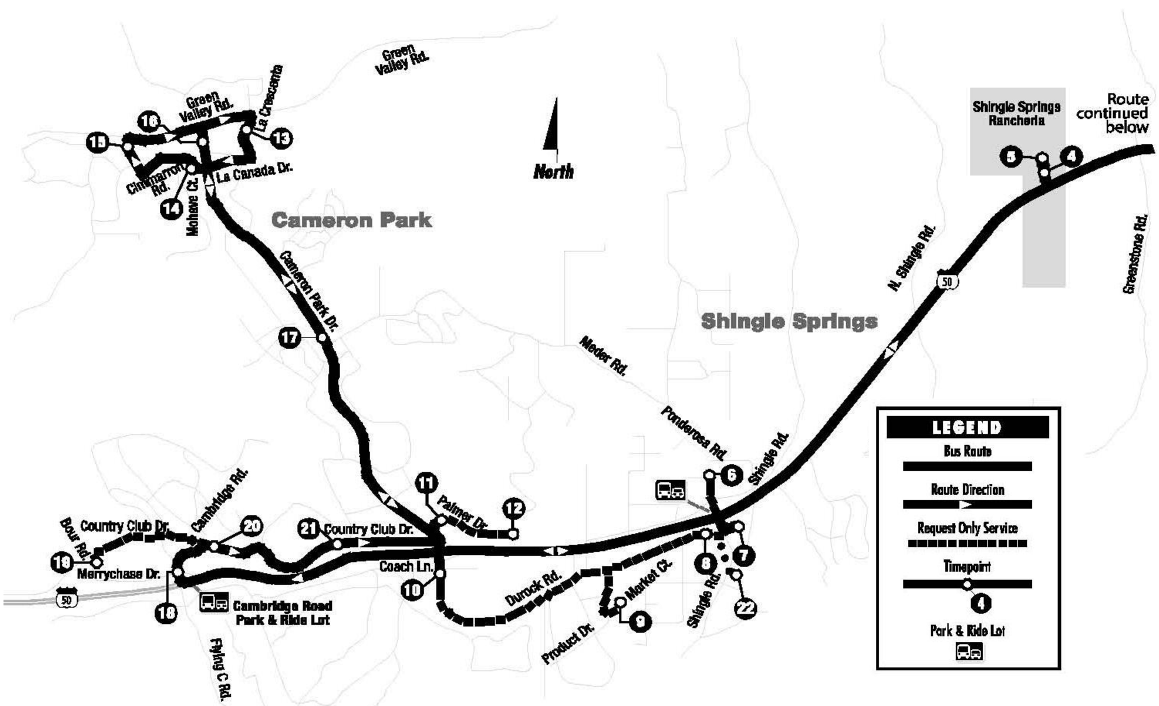
- Class II bicycle lanes on Green Valley Road from west of Pleasant Grove Middle School to Cameron Park Drive and on Serrano Parkway.
- Class I bicycle path on the east and west sides of Bass Lake Road between Serrano Parkway and Hollow Oak Drive

Class II bicycle lanes are planned (where they do not currently exist) for Green Valley Road, Bass Lake Road, and Cambridge Road.

4.7 TRANSIT

El Dorado County Transit Authority (El Dorado Transit) provides public transit service within the project area. Cameron Park is served by an El Dorado Transit Local Route (Cameron Park), Dial-A-Ride services, Commuter Service, and the Iron Point Connector Route.

The Cameron Park Local Route circulates in the Cameron Park along Country Club Drive, Cameron Park Drive, and Green Valley Road. Request only services in available on Country Club Drive west of Cameron Park Drive and along Durock Road.



These services are described briefly below.

- **Dial-A-Ride** service is a demand response service designed for seniors and disabled passengers, with limited access available for the general public. The service is available on a first-come, first-serve basis Monday through Friday between the hours of 7:30 AM and 5:00 PM, and between 8:00

AM and 5:00 PM on Saturdays and Sundays. El Dorado Hills is one of twelve geographic zone service areas.

- **Commuter Service** is offered Monday through Friday between El Dorado County and downtown Sacramento. Morning departures from El Dorado County locations are scheduled from 5:10 AM to 8:00 AM, and afternoon eastbound departures from Sacramento occur from 2:40 PM to 6:00 PM. A reverse commuting service is offered. The Cambridge Drive Park-and-Ride is the nearest stop location to the project. According to the Plan, nearly half of commute passengers boarded at the El Dorado Hills Park-and-Ride in the morning, which makes this location the highest boarding stop offered as part of the Commuter Service.

- **Iron Point Connector (IPC) Route** provides direct service from El Dorado County to Folsom with connections to Sacramento Regional Transit light rail on weekdays. This route runs twice in the morning and twice in the afternoon from the Central Transit Center to the Iron Point Light Rail Station in Folsom. The Cambridge Road Park-and-Ride is the nearest stop location to the project.

5.0 TRAVEL DEMAND FORECASTS

This section describes the development of travel demand forecasting for existing plus project, cumulative, and cumulative plus project conditions.

5.1 TRAVEL DEMAND FORECASTING

Traffic volume forecasts for existing plus project, cumulative, and cumulative plus project conditions were developed using the El Dorado County model.

As is standard practice with large area travel demand models, a thorough model review was completed and the model was refined to ensure that it produced reasonable results in the study area. The following refinements were implemented in the study area:

- Added roadway network detail
- Updated land use to reflect 2014 conditions
- Refined the traffic analysis zones (TAZs) in order to get more refined loading of trips in the study area
- Updated network attributes in the study area to reflect existing conditions (e.g. verified roadway network speeds, number of lanes on the roadway, and roadway capacities to reflect existing conditions)
- Updated the future year roadway network in the study area to only reflect the SACOG Metropolitan Transportation Plan (MTP) constrained roadway network, which is consistent with the County's 2013 Capital Improvement Program (CIP)
- Updated the future land use information to reflect approved and reasonably foreseeable projects in the study area

Specific information related to the model's performance is described below.

5.1.1 BASE YEAR MODEL VALIDATION

Before any model can be applied for use in a major specific plan application, it must first satisfy specific validation criteria identified by Caltrans, the Federal Highway Administration (FHWA), and the California Transportation Commission (CTC). These criteria were developed to ensure that a model is developed such that it can accurately forecast existing conditions based on land use and roadway network information, which improves the model's ability to accurately forecast future conditions. The state-of-the-practice for developing defensible forecasts for changes in the roadway network and/or changes in proposed land use is to use a valid base year model.

The first step of any model validation is to ensure that the model generally produces similar results to existing counts. Please note that, since the model is being used to generate AM peak hour and PM peak hour forecasts, the model must be valid at our study facilities for both time periods.

Key metrics for model validation guidelines are described below:

- The volume-to-count ratio is computed by dividing the volume assigned by the model and the actual traffic count for individual roadways (or intersections). The volume-to-count ratio should be less than 10%.
- The deviation is the difference between the model volume and the actual count divided by the actual count. Caltrans provides guidance on the maximum allowable deviation by facility type (e.g., lower-volume roadways can have a higher deviation than higher-volume roadways). 75% of the study facilities should be within the maximum allowable deviation.
- The correlation coefficient estimates the correlation between the actual traffic counts and the estimated traffic volumes from the model. The correlation coefficient should be greater than 0.88.
- The percent Root Mean Square Error (RMSE) is the square root of the model volume minus the actual count squared divided by the number of counts. It is a measure similar to standard deviation in that it assesses the accuracy of the entire model. The RMSE should be less than 40%.

The model validation statistics are summarized in Table 5. As shown in Table 5, the model meets or exceeds the identified model validation statistics in the study area. As such, the model is appropriate for use in this assessment.

TABLE 5
TRAVEL DEMAND FORECASTING MODEL SUB AREA VALIDATION

Metric	Model Validation	Validation Target
AM Peak Hour – 112 Count Locations		
Model/Count Ratio	1.00	Between 0.90 and 1.10
Percent Within Caltrans Maximum Deviation	86%	> 75%
Percent Root Mean Square Error	27%	< 40%
Correlation Coefficient	0.92	> 0.88
PM Peak Hour – 112 Count Locations		
Model/Count Ratio	1.02	between 0.90 and 1.10
Percent Within Caltrans Maximum Deviation	84%	> 75%
Percent Root Mean Square Error	24%	< 40%
Correlation Coefficient	0.94	> 0.88

Source: Fehr & Peers, 2015

5.1.2 BASE YEAR (YEAR 2010) MODELING ASSUMPTIONS

The existing plus project forecasts were developed by applying the following steps with the validated El Dorado County travel demand forecasting model:

- Added the Silver Springs Parkway extension, connecting the existing Silver Springs Parkway to Bass Lake Road.
- Ran the model assignment to forecast the shift in travel due to the project.

Consistent with state-of-the-practice travel demand forecasting practice, model error was corrected using the methodologies identified in the National Cooperative Highway Research Program Report 255 (Transportation Research Board, 1982), applying "difference method" (e.g., add model predicted change in travel to existing volumes) for roadway segments and intersections.

Figure 3 present AM and PM peak hour traffic volume forecasts for existing plus project conditions.

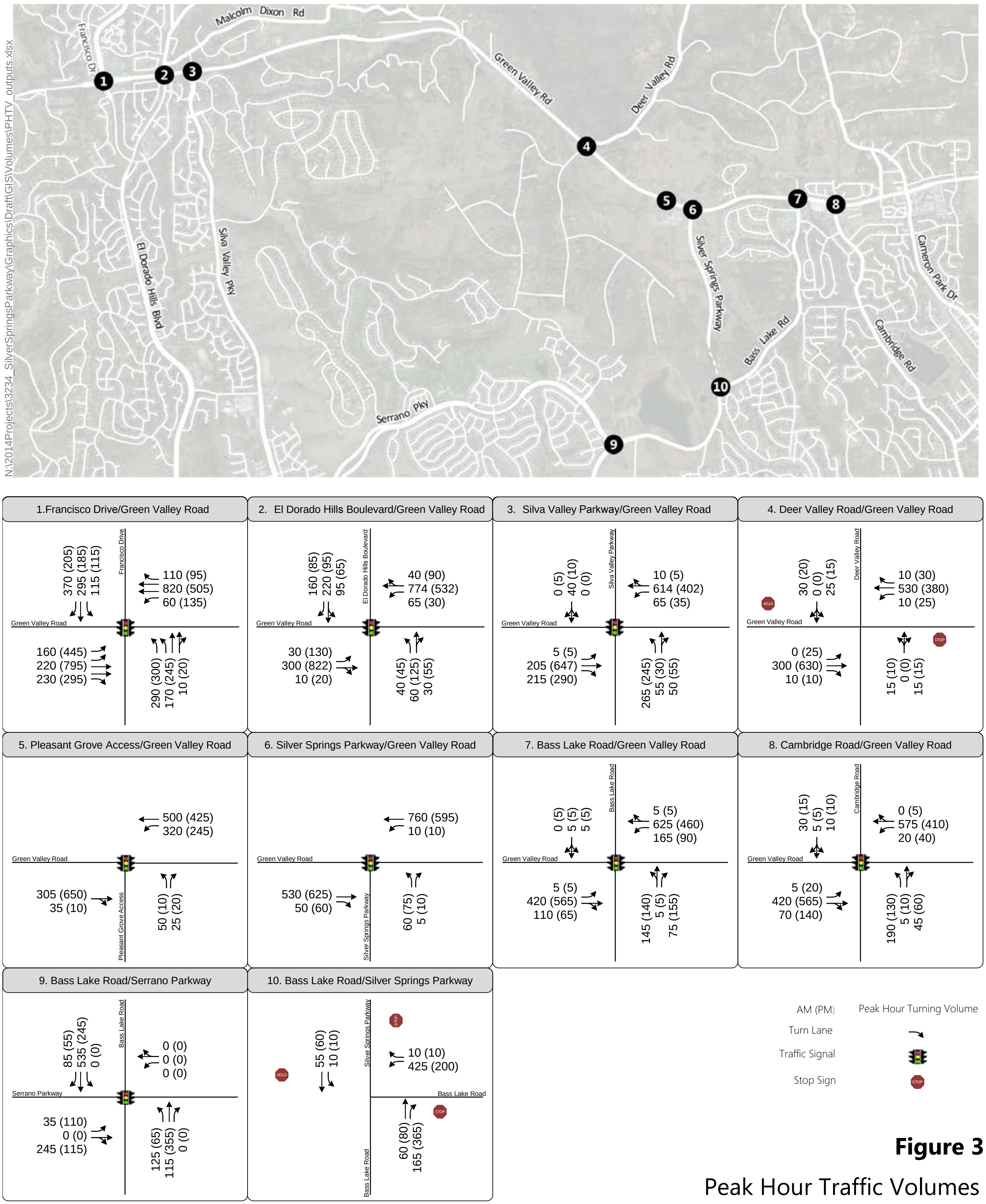


Figure 3

Peak Hour Traffic Volumes and Lane Configurations - Existing Plus Project Conditions

5.1.3 FUTURE (YEAR 2035) MODELING ASSUMPTIONS

All modifications incorporated into the validated Base Year model were incorporated into the future year (2035) travel demand forecasting model. Additionally, as previously mentioned, the model was also updated to include only roadway improvements consistent with the SACOG's MTP and the County's 2013 CIP.

Table 6 describes capacity-enhancing improvements to roadway facilities in the project study area that are planned to occur prior to year 2035 and are included in the cumulative analysis. This information is primarily based on El Dorado County's 2013 CIP (Section 8.1 – West Slop Road/Bridge Individual Project Summaries) and SACOG's MTP/SCS (Appendix A1: MTP/SCS Project List). All relevant projects with the El Dorado County Department of Transportation as the lead agency are identified in Table 6. As described above, the validated El Dorado County model was used to develop AM and PM peak hour forecasts for Cumulative No Project conditions, which corresponds to a 2035 horizon that accounts for planned (and funded) roadway improvements, land use growth consistent with the 2004 General Plan, and with approved and reasonably foreseeable projects in the study area, including the following:

- Bass Lake Hills Specific Plan
- Cameron Estates
- Carson Creek Specific Plan
- Dixon Ranch
- Central El Dorado Hills Specific Plan
- Lime Rock Valley Specific Plan
- Marble Valley Specific Plan
- Promontory
- Rancho Dorado
- Ridgeview
- San Stino Residential Project
- Serrano
- Tilden Park
- Valley View Specific Plan

In addition to these projects, the Cumulative No Project traffic volume forecasts include the approved land use from the Silver Springs Development. There are three phases associated with the development; Unit I includes 53 single family dwelling units, Unit II includes 134 single family dwelling units, and Unit III includes 47 single family dwelling units.

Without the proposed project, only Unit I can develop. Therefore, only Unit I development is assumed under Cumulative No Project conditions. Under Cumulative Plus Project conditions, all three units are assumed to be developed in the Silver Springs development.

Dwelling units in Unit I will have access to both Silver Springs Parkway and Foxmore Lane in the Sierra Crossing residential development east of Silver Springs. Foxmore Lane and Lambeth Drive in the Pioneer Place Subdivision connect to Bass lake Road. Units II and III will access Silver Springs Parkway at two locations north of the proposed project and will access Bass Lake Road approximately 0.5 mile northeast of the proposed Silver Springs Parkway/Bass Lake Road intersection.

Consistent with accepted travel demand forecasting practice, model error was corrected using the methodologies identified in the National Cooperative Highway Research Program Report 255 (Transportation Research Board, 1982) using the "difference method" (e.g., add model predicted growth to existing volumes) for roadway segments and intersections.

Figures 4 and 5 present AM and PM peak hour traffic volume forecasts under Cumulative No Project and Cumulative Plus Project conditions, respectively.

TABLE 6:
CAPACITY–ENHANCING ROADWAY IMPROVEMENTS (ASSUMED COMPLETION BY 2035)

Project Name	Project Description	Estimated Completion
Bass Lake Road Frontage Improvements	Perform roadway operational improvements on Bass Lake Road constructed by Silver Springs development. Project No: 66115	2019
Bass Lake Road Improvements - Phase 1A	Widen and reconstruct Bass Lake Road from US 50 to Hollow Oak Road to 2-lane divided road with 4-foot shoulders and bicycle/pedestrian paths. Includes an 8-foot median, sidewalk, and bike lane from Hollow Oak Road to US 50; median improvements only from Hollow Oak Road to Serrano Parkway; improvements of park-and-ride lot with frontage road improvement to Old Bass Lake Road and Tierra de Dios. (See ELD19225/CIP#GP166 for Phase 1B). CIP#66109	By 2035
Bass Lake Road Widening	Widen Bass Lake Road from US 50 to Silver Springs Pkwy to accommodate 4 lanes of traffic (divided), curb, gutter, and sidewalk. (See ELD19224 for Phase 1A)	By 2035
Country Club Drive – Silva Valley Parkway to "Old Lincoln Highway"	Construct new 2-lane road north of existing Tong Rd from Silva Valley Pkwy to the "Old Lincoln Hwy". This project is the first half of the ultimate project to connect Silva Valley Pkwy to Bass Lake Rd and provide parallel capacity to US 50.	By 2020
Country Club Drive Extension – Bass Lake Road to Silver Dove Road	Construct 2-lane extension of Country Club Drive from Bass Lake Road to Silver Dove Road. Roadway includes 6-foot paved shoulders and new intersection at Bass Lake Road. (Curb, gutter, and sidewalk may be included.) CIP#GP124	By 2035
Country Club Drive Extension - Silver Dove to west end Bass Lake Hills	Construct new 2-lane extension of Country Club Drive from Silver Dove Road to the west end of Bass Lake Hills Specific Plan boundary for future connection to Silva Valley Parkway. Project includes 6-foot paved shoulders. (Curb, gutter, and sidewalk may be included). CIP#GP125	By 2035
El Dorado Hills Boulevard /Francisco Drive – Realignment	Realign existing El Dorado Hills Boulevard / Francisco Drive / Brittany Way intersection and approach roadways to result in a new 4-way intersection with extensions and signal installation. Northern portion of El Dorado Hills Boulevard (at this intersection) will become new minor traffic way, and current Francisco Drive between El Dorado Hills Boulevard and Green Valley Road will become new major traffic way. CIP#72332	By 2035
El Dorado Hills Boulevard Widening - Lassen Lane to Park Drive	Widen El Dorado Hills Boulevard from Lassen Lane to Park Drive from 4 to 5 lanes (divided) by adding a third southbound lane. Project includes curb, gutter, and sidewalk. CIP#GP183	By 2035

TABLE 6:
CAPACITY–ENHANCING ROADWAY IMPROVEMENTS (ASSUMED COMPLETION BY 2035)

Project Name	Project Description	Estimated Completion
Green Valley Rd Widening - Francisco to Salmon Falls	Widen Green Valley Rd from Francisco Dr to Salmon Falls Rd to 4-lanes divided with curb, gutter, and sidewalk. CIP#GP178	By 2035
Green Valley Road	Widen: 4-lanes from Salmon Falls Rd. east to Deer Valley Rd.	By 2035
Green Valley Road Widening – East Natoma Street to Sacramento/El Dorado County line	Widen Green Valley Road from two to four lanes. SACOG Project #SAC21280	By 2020
Latrobe Road Widening – Golden Foothill to Investment	Widen Latrobe Rd from Golden Foothill Pkwy (south end) to Investment Boulevard from 2-lanes undivided to 4-lanes divided with curb, gutter, and Class II bike lanes; modify signal at Investment Boulevard. CIP#72350	By 2035
Latrobe Road	Widen: 6 lanes (divided with 4-foot shoulders) from White Rock Rd. to Carson Creek (Suncast Ln.).	By 2035
Latrobe Rd / White Rock Rd Connector (New Road)	New connector road from the El Dorado Hills Business Park to White Rock Rd west of Four Seasons/Stonebriar intersection; Phase 1 to perform route alignment study and prepare PSR; Phase 2 will include environmental, design and construction; may require coordination with Sacramento County, City of Folsom, Southeast Connector JPA and area developers. CIP#66116	By 2035
Saratoga Way Ext - Phase 1	Construct new 2-lane arterial to extend Saratoga Way from current terminus near Finders Way to Sacramento County Line; includes median, 6-ft shoulders, right-turn pocket onto Finders Way, asphalt path, drainage system, environmental clearance and secure ROW for future 4-lane road from County Line to El Dorado Hills Boulevard. CIP71324 (Phase 2 CIP#GP147 - See ELD19234 in MTP.)	By 2035
Saratoga Way (Phase 2)	Widen: 4 lanes from the Sacramento/El Dorado County line to El Dorado Hills Boulevard. Includes: full curb, gutter, and sidewalk. (See ELD16010 for Phase 1)	By 2035
Silva Valley Pkwy Widening from Entrada	Widen Silva Valley Pkwy (2 to 4 lanes) from Entrada Dr to 1000 feet south of Oak Meadow Elem School; includes sidewalk, bike lanes and left-turn storage for school entrance. CIP#72370	Completed
Silva Valley Pkwy / Golden Eagle Ln - Signalization	Signalize intersection at Silva Valley Pkwy and Golden Eagle Ln (Silva Valley Elementary School). CIP#GP182	By 2035

TABLE 6:
CAPACITY–ENHANCING ROADWAY IMPROVEMENTS (ASSUMED COMPLETION BY 2035)

Project Name	Project Description	Estimated Completion
Silver Springs Parkway to Bass Lake Road (South Segment)	It is anticipated that Silver Springs Parkway will be built as a two-lane standard divided roadway with shoulders. It is planned to realign Bass Lake Road south of Green Valley Road through the proposed Silver Springs subdivision, which is west of the existing Bass Lake Road. The new road is named Silver Springs Parkway. That development is responsible for building Silver Springs Parkway through their development. There is a portion of the new alignment that falls to the south of the Silver Springs development that must also be built to connect the new road to the existing Bass Lake Road to the south. The proposed project evaluated in this transportation impact analysis provides the southern portion needed to complete this project. Completion is assumed in the with-project analysis only. CIP #76108	By 2018
Green Valley Road/Silver Springs Parkway Intersection & Silver Springs parkway Realignment Onsite Phase-2	Construct new Silver Springs Parkway through the Silver Springs Development from Bass Lake Road to Green Valley Road and install signal at Silver Springs Parkway and Green Valley Road intersection. Connect to realigned Bass Lake Road north of Bass Lake. CIP #76107 (both 66106 & 66107 projects)	Completed
Sophia Parkway	Widen: 4 lanes (divided) from Alexandria Rd. to Empire Ranch Rd. at the County Line.	By 2035
US 50 / Bass Lake Road (Phase 2)	Add Auxiliary Lane: WB on US 50 between Bass Lake Rd. and Cambridge Rd. interchanges. Includes: additional ramp, road widening (Phase 2) (See ELD19182 for Phase 1).	By 2035
US 50 / Cambridge Road (Phase 2)	Add Auxiliary Lane: on US 50 EB between Cambridge Rd. and Cameron Park Dr. interchanges and WB between Cameron Park Dr. and Bass Lake Rd. interchanges. Includes bridge widening to add two lanes and ramp widening (Phase 2) (See Eld19181 for Phase 1).	By 2035
US 50 Aux Lane WB - El Dorado Hills to Empire Ranch	Widen US 50 and add auxiliary lane to westbound US 50 connecting the El Dorado Hills Boulevard/Latrobe Rd Interchange to the future Empire Ranch Rd Interchange located in the City of Folsom; (City of Folsom will construct the EB aux lane.) Timing of construction to be concurrent with or after the El Dorado Hills Boulevard Interchange (ELD15630/CIP71323) or Empire Ranch Interchange. CEQA/NEPA cleared through the Empire Ranch Interchange environmental document. CIP#53115	By 2035
US 50 50 Auxiliary Lane Eastbound – Cambridge to Ponderosa	Construct eastbound auxiliary lane on US 50 between Cambridge Rd and Ponderosa Rd interchanges. CIP#GP150	By 2035

TABLE 6:
CAPACITY–ENHANCING ROADWAY IMPROVEMENTS (ASSUMED COMPLETION BY 2035)

Project Name	Project Description	Estimated Completion
US 50 Bus / Carpool Lanes	Bus/Carpool Lanes – Phase 3: Us 50-Ponderosa Road to Greenstone Road.	By 2035
US 50 HOV Lanes – Phase 1	Phase 1 (El Dorado Hills to Bass Lake Grade) - Add HOV lanes in median of US 50 between El Dorado Hills Boulevard/Latrobe Rd and Bass Lake Rd interchanges (PM 0.5 to PM 4.2 eastbound and PM 0.9 to PM 2.9 westbound); includes extension of EB truck climbing lane from Latrobe Rd to base of Bass Lake Grade, median widenings of Clarksville Rd and Bass Lake Rd undercrossings, and replacement of EDH Boulevard undercrossings including EB off-ramp. (See ELD19287 for Phase 2A, ELD19290 for Phase 2B and ELD19289 for future unfunded Phase 3 in the MTP). Emission Benefits in kg/day: ROG 27, NOx: 28, PM10 15, CO 303. CIP#53110	Completed
US 50 HOV Lanes – Phase 2A	Phase 2A (Bass Lake Rd to Cameron Park Dr) - Add HOV lanes in median of US 50 between Bass Lake Rd and Cameron Park Dr Interchanges. PA&ED completed by Caltrans. Caltrans advancing project design through Cooperative Agreement with the County. Intergovernmental Agreement between County and Shingle Springs Band of Miwok Indians for funding (coded as Local Agency Funds). (Emission Benefits in kg/day: 19 ROG, 20 NOx, 12 PM10.) (See ELD19211/CIP53113 for Phase 1, ELD19290/CIP53122 for Phase 2B and ELD19289/CIP#53116 for future unfunded Phase 3 in the MTP). CIP#53113	Completed
US 50 HOV Lanes – Phase 2B	Phase 2B (Cameron Park Dr to Ponderosa Rd.) - Add HOV lanes in median of US 50 between Cameron Park Dr. and Ponderosa Rd. interchanges. PA&ED completed by Caltrans. Caltrans advancing project design through Cooperative Agreement with the County. Intergovernmental Agreement between County and Shingle Springs Band of Miwok Indians for funding (coded as Local Agency Funds). (See ELD19211/CIP53113 for Phase 1, ELD19290/CIP53122 for Phase 2B and ELD19289/CIP53116 for future unfunded Phase 3 in the MTP). CIP53113	By 2035
US 50 Mainline Widening at El Dorado Hills	Construct new westbound aux lane within median of US 50 between Silva Valley Pkwy and Empire Ranch Rd future new interchanges; requires coordination with Silva Valley I/C (ELD15610/CIP#71328), El Dorado Hills I/C (ELD15630/CIP71323) and Empire Ranch I/C (City of Folsom project). CIP#53120	By 2035
US 50 / Bass Lake Rd Interchange - Phase 1	Interchange Improvements: this phase includes detailed study to determine complete improvements needed; Phase 1 may include ramp widening, road widening, signals, and WB auxiliary lane between Bass Lake and Silva Valley interchanges; Phase 1 assumes bridge replacement. (See	By 2035

TABLE 6:
CAPACITY–ENHANCING ROADWAY IMPROVEMENTS (ASSUMED COMPLETION BY 2035)

Project Name	Project Description	Estimated Completion
	ELD19217 for Phase 2). CIP#71330	
US 50 / Cambridge Rd. Interchange – Phase 1	Interchange Improvements: this phase includes widening existing EB and WB on-/off-ramps; addition of new WB on-ramp; reconstruction of local intersections; and installation of traffic signals at EB and WB ramp terminal intersections; preliminary engineering for Phase 2 to be performed under Phase 1. (See ELD19218 for Phase 2) CIP#71332	By 2035
US 50 / Cameron Park Dr. Interchange Improvements	Interchange Improvements: this project includes detailed study to identify capacity improvement alternatives and selection of preferred alternative; assumes reconstruction of US 50 bridges to widen Cameron Park Dr. to 8 lanes under the overcrossing; road and ramp widening. CIP#72361	By 2020
US 50 / El Dorado Hills Boulevard Interchange Eastbound Ramps	Reconstruct eastbound diagonal on-ramp and eastbound loop off-ramp for the ultimate configuration; add a lane to northbound El Dorado Hills Boulevard under the overpass (eliminates merge lane and improves traffic flow from the eastbound loop off-ramp); eastbound diagonal on-ramp will be metered and have an HOV bypass. Project split from ELD15630 (CIP#71323).	By 2020
US 50 / El Dorado Rd Interchange - Phase 1	Interchange Improvements: includes signalization and widening of existing ramps. (See ELD19272 for Phase 2). CIP#71347	2035
US 50 / El Dorado Rd Interchange - Phase 2	Interchange Improvements: this phase involves construction of left and right turn lanes and additional through traffic lanes in all approaches to the interchange. (See ELD19178/CIP#71347 for Phase 1). CIP#71376	2035
US 50 / HOV Lanes Phase 0	Interchange Improvements: constructs new WB off-ramp undercrossing, improves WB on-/off-ramps and widens El Dorado Hills Boulevard. (Coordinates with ELD19215/CIP#53120, ELD19273/CIP#53115, ELD19173/CIP71340, and ELD19345). CIP#53124	Completed
US 50 / El Dorado Hills Boulevard Pedestrian Overcrossing	Construct ped/bike overcrossing over US 50 just east of El Dorado Hills Boulevard. Interchange; includes a mixed use path; construction and ROW acquisition for 10-ft wide sidewalk and adjacent retaining walls, barriers, railings, and landscape replacement included with CIP#71323 (see ELD15630). CIP#71340.	By 2035
US 50 / Silva Valley Pkwy Interchange - Phase 1	New Interchange: Phase 1 includes US 50 on-/off-ramps, overcrossing, and US 50 aux lanes. (See ELD19291/CIP#71345 for Phase 2). CIP#71328	Ongoing
US 50 / Silva Valley Pkwy Interchange -	Final phase of new interchange: construction of eastbound diagonal and westbound loop on-ramps to US 50. (See ELD15610/CIP#71328 for Phases	By 2035

TABLE 6:
CAPACITY–ENHANCING ROADWAY IMPROVEMENTS (ASSUMED COMPLETION BY 2035)

Project Name	Project Description	Estimated Completion
Phase 2 (Connector Segment)	1). CIP#71345	
White Rock Rd Widening - Manchester to County Line (Connector Segment)	Widen White Rock Rd from 2 to 4 lanes, divided, from Manchester Dr east to Sacramento County Line. CIP#GP137	By 2035
White Rock Rd Widening – Monte Verde to US 50 / Silva Valley (Connector Segment)	Widen White Rock Rd from 2-lanes undivided to 4 lanes divided, from Monte Verde Dr east to new future US 50/Silva Valley Pkwy Interchange (ELD15610/CIP71328); includes curb, gutter, sidewalk, and Class II bike lanes. ROW costs include acquisition for ultimate 6-lane facility (see CIP#GP152/ELD19235 in MTP). CIP#72374	By 2035
White Rock Rd Widening – Latrobe to Monte Verde (Connector Segment)	Widen White Rock Rd (2 lanes undivided to 4 lanes divided) from Post St to the culvert east of Monte Verde Dr; install new traffic signal at White Rock Rd/Windfield Wy; includes curb, gutter, sidewalk, and Class II bike lanes. CIP#72372	By 2020
White Rock Rd (Connector Segment)	Widen: 6 lanes (divided) from Latrobe Rd. to U.S. 50 / Silva Valley Pkwy. Interchange.	By 2035
White Rock Rd / Post St - Signalization (Connector Segment)	Signalize intersection at White Rock Rd and Post St in El Dorado Hills. CIP#73310	Completed

Source: El Dorado County's 2013 CIP (Section 8.1 – West Slope Road/Bridge Individual Project Summaries) and SACOG's MTP/SCS (Appendix A1: MTP/SCS Project List).

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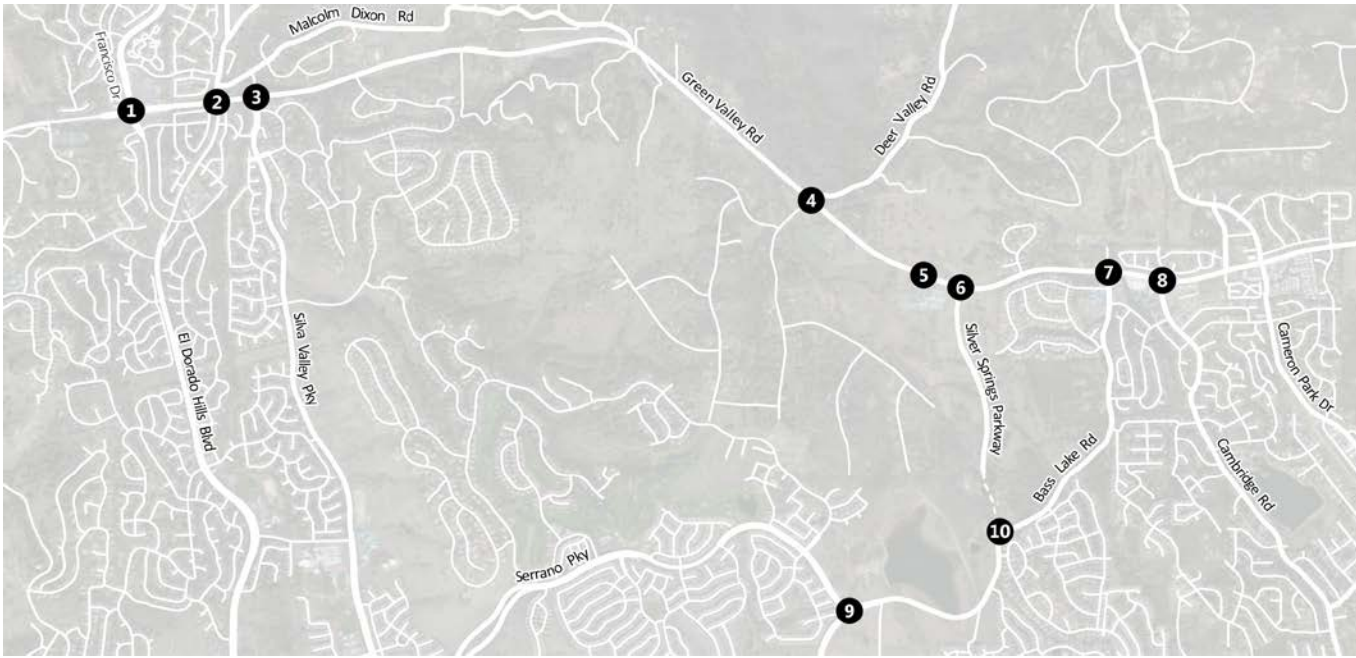

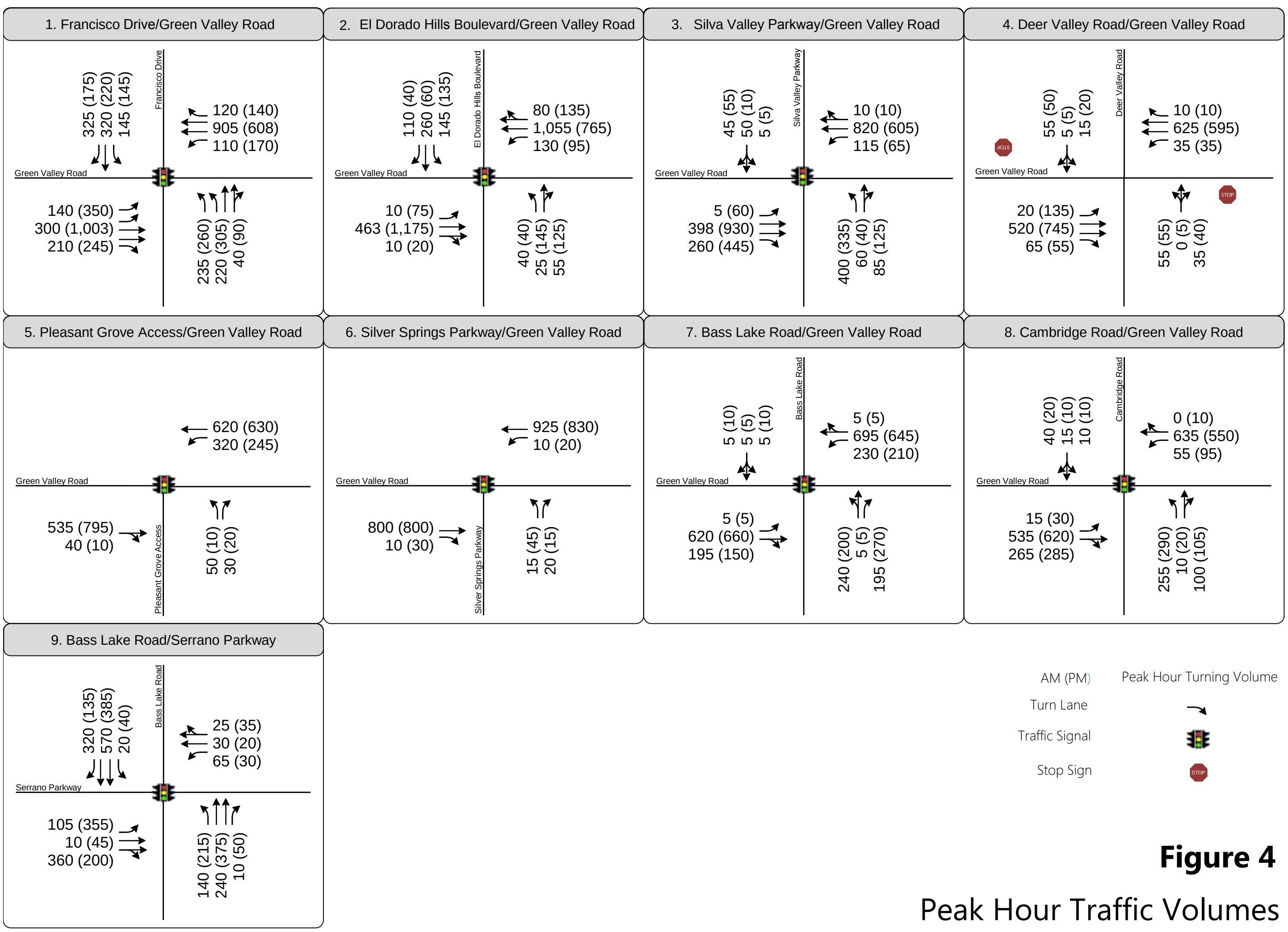

Figure 4

Peak Hour Traffic Volumes
and Lane Configurations -
Cumulative No Project Conditions

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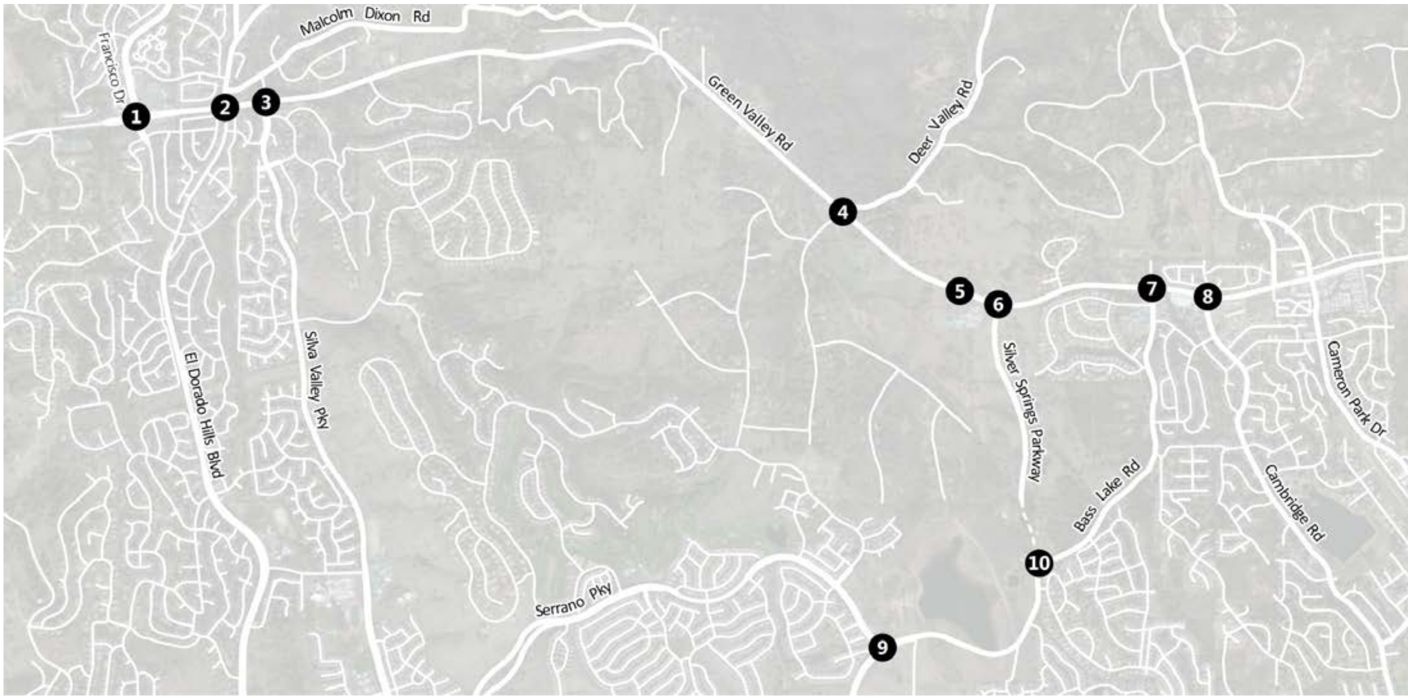


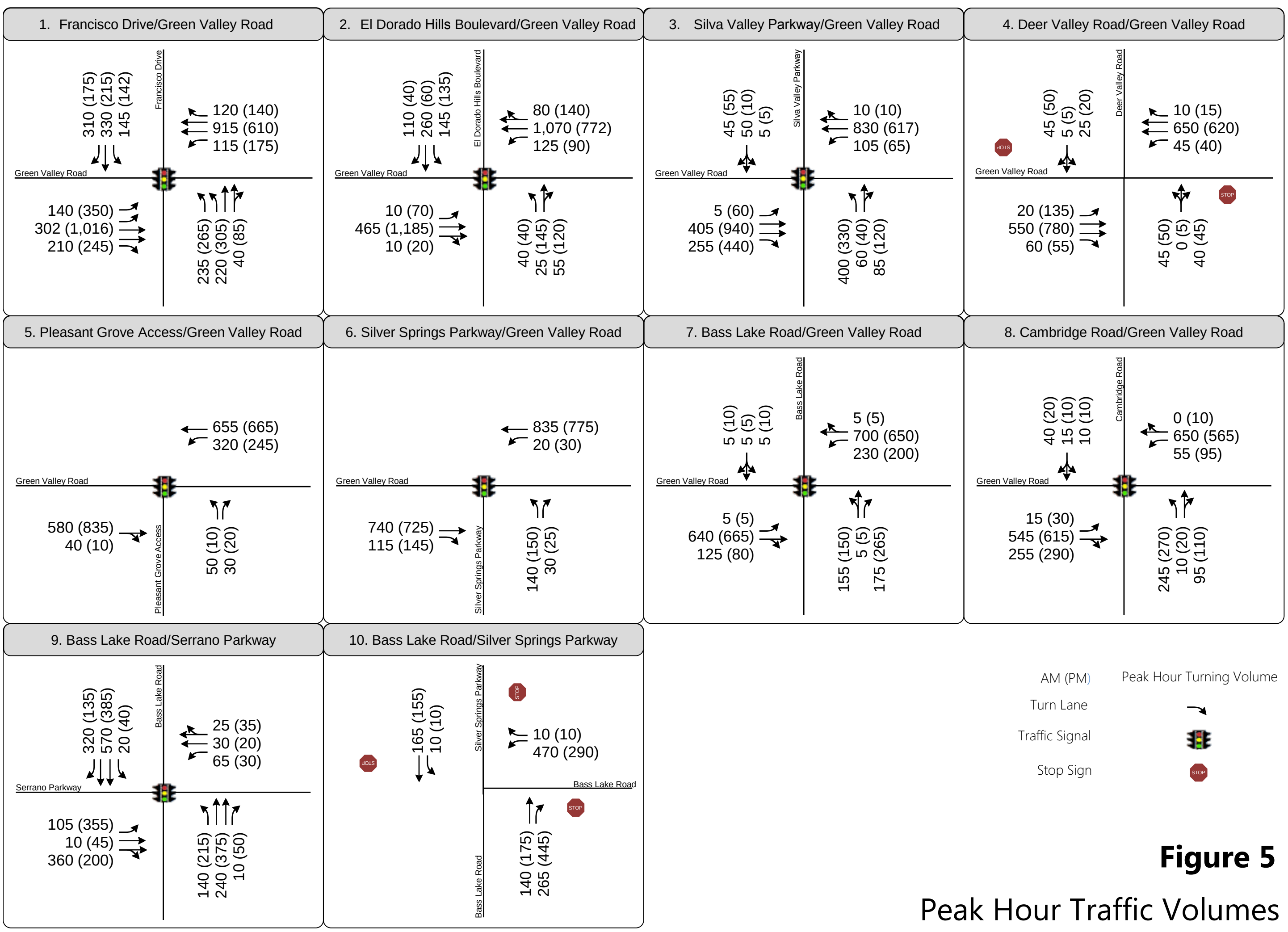


Figure 5

Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Project Conditions

6.0 EXISTING PLUS PROJECT CONDITIONS

This section presents the operations of the transportation system with the addition of the project under Existing Plus Project conditions.

6.1 PEAK HOUR VEHICLE LEVEL OF SERVICE

6.1.1 INTERSECTIONS

Analysis results, which are presented in Table 7, show that all of the study intersections will operate acceptably (LOS E or better) with the addition of the proposed project. The project will not add (i.e., generate new trips) new trips, but will result in modified travel patterns for some motorists within the study area. The project will attract about 120 vehicles in the AM peak hour and about 140 vehicles in the PM peak hour to Silver Springs Parkway, attracting these trips from existing roads and intersections in the study area. The project will provide an alternative to the Green Valley Road/Bass Lake Road intersection, primarily for trips with an origin/destination to/from the west. Consequently, the Green Valley Road/Bass Lake Road intersection will experience the largest decrease in vehicle delay and corresponding improvement in peak hour operation.

TABLE 7:
INTERSECTION LOS AND DELAY – EXISTING PLUS PROJECT CONDITIONS

Intersection	Control	Existing Conditions (LOS/Delay)		Existing Plus Project (LOS/Delay)	
		AM	PM	AM	PM
1. Green Valley Road/Francisco Drive	Signal	D / 41	D / 40	D / 41	D / 40
2. Green Valley Road/El Dorado Hills Boulevard	Signal	E / 64	E / 58	E / 67	E / 58
3. Green Valley Road/Silva Valley Parkway	Signal	C / 22	B / 18	B / 16	B / 18
4. Green Valley Road/Deer Valley Road	SSSC	C / 19	D / 27	C / 20	C / 24
5. Green Valley Road/Pleasant Grove Middle School	Signal	B / 11	B / 13	B / 11	B / 15
6. Green Valley Road/Silver Springs Parkway	Signal	A / 5	A / 4	A / 8	A / 10
7. Green Valley Road/Bass Lake Road	Signal	D / 42	B / 17	C / 22	B / 12
8. Green Valley Road/Cambridge Road	Signal	C / 21	B / 15	C / 22	B / 15
9. Bass Lake Road/Serrano Parkway	Signal	B / 13	A / 9	B / 13	A / 9
10. Bass Lake Road/Silver Springs Parkway	AWSC	N/A		B / 13	B / 12

Notes: SSSC = side-street stop-control, AWSC = all-way stop control, N/A = Not Applicable

The average delay is measured in seconds per vehicle. For signalized and AWSC intersections, the delay shown is the average control delay for the overall intersection. For SSSC intersections, the LOS and control delay for the worst movement is shown. Intersection LOS and delay is calculated based on the procedures and methodology contained in the HCM (TRB, 2000).

Source: Fehr & Peers, 2015

6.1.2 ROADWAY SEGMENTS

Table 8 summarizes AM and PM peak hour roadway segment operation under existing conditions with the addition of the proposed project. Most study area roadway segments operate acceptably with most roadway segments operating at LOS C or better during the AM peak hour and LOS D or better during the PM peak hour. The two-lane segment of Green Valley Road between the County line and just west of Sophia Parkway will operate at LOS F under existing conditions without the project during the PM peak hour. The addition of the project will result in slightly less traffic (i.e., about 10 vehicles) during the PM peak hour on this segment of Green Valley Road. The project will not add (i.e., generate new trips) new trips, but will result in modified travel patterns for some motorists within the study area. The project will attract about 120 vehicles in the AM peak hour and about 140 vehicles in the PM peak hour to Silver Springs Parkway, attracting these trips from existing roads and intersections in the study area. Consistent with the intersection operations discussed above, the project will provide an alternative to the segment of Green Valley Road (between the project and Bass Lake Road) and Bass Lake Road (between Green Valley Road and the project). These segments will see the largest decrease in traffic due to the addition of the project. See section 3.1 and Table 2 for a definition of LOS as it relates to roadway segments.

Appendix B includes daily roadway segment traffic volume forecasts (two-way total) and VMT by speed bin for existing conditions without and with the proposed project.

TABLE 8:
ROADWAY SEGMENT PEAK HOUR LEVEL OF SERVICE – EXISTING PLUS PROJECT CONDITIONS

Roadway Segment	Facility	Existing						Existing Plus Project					
		AM			PM			AM			PM		
		VOL	V/C	LOS	VOL	V/C	LOS	VOL	V/C	LOS	VOL	V/C	LOS
Green Valley Road													
County Line to West of Sophia Parkway	2A	1,467	0.89	D	1,797	**<u>1.09</u>**	**<u>F</u>**	1,480	0.90	D	1,790	**1.08**	**F**
West of Sophia Parkway to Just East of Francisco Drive	4AD	1,546	0.47	C or better	2,114	0.64	D	1,560	0.47	C or better	2,100	0.64	D
East of Francisco Drive to El Dorado Hills Boulevard	2A	1,015	0.62	D	1,121	0.68	D	1,030	0.62	D	1,110	0.67	D
El Dorado Hills Boulevard to Silva Valley Parkway	2A	863	0.52	D	1,088	0.66	D	870	0.53	D	1,080	0.65	D
Silva Valley Parkway to Malcolm Dixon Road	2A	707	0.43	C or better	987	0.60	D	720	0.44	C or better	980	0.59	D
Malcolm Dixon Road to Deer Valley Road	2A	688	0.42	C or better	872	0.53	D	700	0.42	C or better	860	0.52	D
Deer Valley Road to Silver Springs Parkway	2A	762	0.46	C or better	862	0.52	D	800	0.48	C or better	930	0.56	D
Silver Springs Parkway to Bass Lake Road	2A	762	0.46	C or better	862	0.52	D	700	0.42	C or better	810	0.49	C or better
Bass Lake Road to Cameron Park Road	2A	774	0.47	C or better	965	0.58	D	760	0.46	C or better	960	0.58	D
Bass Lake Road													
Green Valley Road to Silver Springs Parkway	2A	582	0.35	C or better	538	0.33	C or better	500	0.30	C or better	460	0.28	C or better
Silver Springs Parkway to Serrano Parkway	2A	726	0.44	C or better	772	0.47	C or better	740	0.45	C or better	780	0.47	C or better
Serrano Parkway to US 50	2A	935	0.57	D	859	0.52	D	930	0.56	D	870	0.53	D
Silver Springs Parkway													
South of Green Valley	2A	-	-	-	-	-	-	120	0.07	C or better	140	0.08	C or better
Extension to Bass Lake Road	2A	-	-	-	-	-	-	120	0.07	C or better	140	0.08	C or better

Notes: Peak hour roadway segment capacities based on the HCM 2010 and developed by El Dorado County Community Development Agency, Long Range Planning.

4AU – 4-Lane Undivided Arterial, 4AD – 4-Lane Divided Arterial, 2A – 2-Lane Arterial

<u>Bold and underlined</u> text indicates LOS worse than the established acceptable condition.

Source: Fehr & Peers, 2015

6.2 PEDESTRIAN AND BICYCLE CIRCULATION

The project will connect to existing pedestrian facilities on Green Valley Road and on the existing segment of Silver Springs Parkway, providing a new connection in the transportation network between Green Valley Road and Bass Lake Road with continuous bicycle and pedestrian facilities. The project will not adversely affect pedestrian or bicycle circulation.

6.3 TRANSIT

The project does not include specific transit improvements or propose changes to transit service. Silver Springs Parkway would provide additional routing options for transit vehicles and would not adversely affect transit operations.

7.0 CUMULATIVE CONDITIONS

This section presents the development and analysis of cumulative conditions.

7.1 PEAK HOUR VEHICLE LEVEL OF SERVICE

As discussed in Section 5, the Cumulative No Project scenario includes Phase I (53 single family dwelling units) of the Silver Springs Development. The project construction of the southern segment of Silver Springs Parkway to Bass Lake Road must be completed in order for development of Phase II (134 single family dwelling units) and Phase III (47 single family dwelling units) of the Silver Springs development. Therefore, the Cumulative Plus Project scenario includes all three phases of the Silver Springs Development (234 single family dwelling units). Consequently, the increase in traffic volumes on Silver Springs Parkway, when comparing the volume on the connector between the cumulative and cumulative plus project analysis scenarios, is due to the improved roadway network accessibility (i.e., the addition of the connector) and the addition of trips from residential development in Phase II and Phase III in the Silver Springs development assumed to occur under the with-project cumulative analysis. Therefore, changes in study area traffic volumes under cumulative conditions with the project is due to both change in route choice due to improved accessibility and due to new traffic generated by Phase II and Phase III of the Silver Springs development.

7.1.1 INTERSECTIONS

Table 9 summarizes AM and PM peak hour intersection operation under cumulative conditions without the project and with the project. Analysis results indicate that most study intersections will operate acceptably under cumulative conditions both without and with the project. The three intersections discussed below would operate unacceptably under cumulative conditions both without and with the project. Conditions at the Green Valley Road/Deer Valley Road intersection during the PM peak hour would be worsened with the project. Although improvements are needed at these three intersections to achieve acceptable operations, the improvements are not needed as a result of the project and no mitigation is required.

- Green Valley Road / Deer Valley Road (Intersection 4) – This intersection, which is located in the Rural Region, will operate unacceptably at LOS E during the AM peak hour and LOS F during the PM peak hour without the project. Conditions with the project will result in increased traffic through the intersection, increasing delay for the northbound side-street stop controlled approach resulting in a significant impact at this location. The County of El Dorado Community Development Agency will continue to monitor the intersection. Installation of a traffic signal will occur when traffic volumes on the minor street approaches (i.e., Deer Valley Road) satisfy the traffic signal warrant. Consequently, the timing for signal installation is not certain. Installation of traffic signal control will be funded with TIM fees. So, payment of TIM fees by new development, contributing to the minor street approach volumes, will ensure fair share funding for traffic signal installation.

- Green Valley Road / Bass Lake Road (Intersection 7) – This intersection will operate unacceptably at LOS F without the proposed project during the AM peak hour. The project would result in fewer trips using critical turning movements during the AM peak hour, resulting in a decrease in average control delay the AM peak hour. Although improvements are needed at this intersection to achieve acceptable LOS, the project does not contribute to the need for these improvements. Thus, mitigation is not required at this location.

- Green Valley Road / Cambridge Road (Intersection 8) – This intersection will operate unacceptably at LOS F without the project during the AM peak hour. The project would result in fewer trips using critical turning movements during the AM peak hour, resulting in a decrease in average control delay the AM peak hour. Although improvements are needed at this intersection to achieve acceptable LOS, the project does not contribute to the need for these improvements. Thus, mitigation is not required at this location.

TABLE 9:
INTERSECTION LOS AND DELAY – CUMULATIVE PLUS PROJECT CONDITIONS

Intersection	Control	Cumulative Conditions (LOS/Delay)		Cumulative Plus Project (LOS/Delay)	
		AM	PM	AM	PM
1. Green Valley Road/Francisco Drive	Signal	D / 43	D / 42	D / 41	D / 43
2. Green Valley Road/El Dorado Hills Boulevard	Signal	C / 22	B / 19	C / 22	B / 19
3. Green Valley Road/Silva Valley Parkway	Signal	D / 35	C / 31	D / 35	C / 31
4. Green Valley Road/Deer Valley Road	SSSC	**<u>E / 50</u>**	**<u>F / >50</u>**	**<u>E / 47</u>**	**<u>F / >50</u>**
5. Green Valley Road/Pleasant Grove Middle School	Signal	B / 15	C / 23	B / 17	C / 27
6. Green Valley Road/Silver Springs Parkway	Signal	A / 6	A / 10	B / 20	C / 22
7. Green Valley Road/Bass Lake Road	Signal	**<u>F / >80</u>**	D / 42	**<u>F / >80</u>**	C / 28
8. Green Valley Road/Cambridge Road	Signal	**<u>F / >80</u>**	D / 48	**<u>F / >80</u>**	D / 45
9. Bass Lake Road/Serrano Parkway	Signal	C / 34	C / 32	C / 34	C / 32
10. Bass Lake Road/Silver Springs Parkway	AWSC	N/A	N/A	D / 28	C / 17

Notes: SSSC = side-street stop-control, AWSC = all-way stop control, N/A = Not Applicable

<u>Bold and underlined</u> text indicates LOS worse than established threshold. **<u>Bold, shaded, and underlined</u>** text identifies a significant impact.

The average del average delay is measured in seconds per vehicle. For signalized and AWSC intersections, the delay shown is the average control delay for the overall intersection. For SSSC intersections, the LOS and control delay for the worst movement is shown. Intersection LOS and delay is calculated based on the procedures and methodology contained in the HCM (TRB, 2000).

Source: Fehr & Peers, 2015

7.1.2 ROADWAY SEGMENTS

Table 10 summarizes AM and PM peak hour roadway segment operation under cumulative conditions without the project and with the project. All study area roadway segments operate acceptably with most roadway segments operating at LOS C or better during the AM peak hour and LOS D or better during the PM peak hour. The proposed project will serve about 310 vehicles in the AM peak hour and about 330 vehicles in the PM peak hour. Consistent with the intersection operations discussed above, the project will provide an alternative to the segment of Green Valley (between Silver Springs Parkway and Bass Lake Road) and Bass Lake Road (between Green Valley Road and Silver Springs Parkway). These segments will see the largest decrease in traffic due to the addition of the project. However, the change in traffic volume on these segments is less than under existing conditions due to the added trips generated by the Silver Springs development project.

Appendix B includes daily roadway segment traffic volume forecasts (two-way total) and VMT by speed bin for cumulative conditions without and with the proposed project.

TABLE 10:
ROADWAY SEGMENT PEAK HOUR LEVEL OF SERVICE – CUMULATIVE CONDITIONS

Roadway Segment	Facility	Cumulative						Cumulative Plus Project					
		AM			PM			AM			PM		
		VOL	VC	LOS	VOL	VC	LOS	VOL	VC	LOS	VOL	VC	LOS
Green Valley Road													
County Line to West of Sophia Parkway	4AU	1,530	0.49	C or better	1,900	0.61	D	1,540	0.49	C or better	1,900	0.61	D
West of Sophia Parkway to East of Francisco Drive	4AD	1,580	0.48	C or better	2,150	0.65	D	1,570	0.48	C or better	2,160	0.66	D
East of Francisco Drive to El Dorado Hills Boulevard	4AU	1,310	0.42	C or better	1,530	0.49	C or better	1,330	0.42	C or better	1,540	0.49	C or better
El Dorado Hills Boulevard to Silva Valley Parkway	4AU	1,500	0.48	C or better	1,920	0.61	D	1,520	0.49	C or better	1,930	0.62	D
Silva Valley Parkway to Malcolm Dixon Road	4AU	1,250	0.40	C or better	1,600	0.51	C or better	1,270	0.41	C or better	1,640	0.52	C or better
Malcolm Dixon Road to Deer Valley Road	4AU	1,140	0.36	C or better	1,420	0.45	C or better	1,170	0.37	C or better	1,470	0.47	C or better
Deer Valley Road to Silver Springs Parkway	2A	1,150	0.70	D	1,270	0.77	D	1,230	0.75	D	1,350	0.82	D
Silver Springs Parkway to Bass Lake Road	2A	1,150	0.70	D	1,230	0.75	D	1,020	0.62	D	1,130	0.68	D
Bass Lake Road to Cameron Park Road	2A	1,240	0.75	D	1,480	0.90	D	1,220	0.74	D	1,460	0.88	D
Bass Lake Road													
Green Valley Road to Silver Springs Parkway	2A	870	0.53	D	830	0.50	C or better	690	0.42	C or better	700	0.42	C or better
Silver Springs Parkway to Serrano Parkway	4AD	1,130	0.34	C or better	1,200	0.36	C or better	1,170	0.36	C or better	1,260	0.38	C or better
Serrano Parkway to US 50	4AD	1,180	0.36	C or better	1,220	0.37	C or better	1,210	0.37	C or better	1,260	0.38	C or better
Silver Springs Parkway													
South of Green Valley	2A	40	0.02	C or better	100	0.06	C or better	300	0.18	C or better	320	0.19	C or better
Extension to Bass Lake Road	2A	-	0.00	C or better	-	0.00	C or better	310	0.19	C or better	330	0.20	C or better

Notes: Peak hour roadway segment capacities based on the HCM 2010 and developed by El Dorado County Community Development Agency, Long Range Planning.

4AU – 4-Lane Undivided Arterial, 4AD – 4-Lane Divided Arterial, 2A – 2-Lane Arterial

Source: Fehr & Peers, 2015

7.2 PEDESTRIAN AND BICYCLE CIRCULATION

The project will connect to existing and planned pedestrian facilities on Green Valley Road and Bass Lake Road and to the existing segment of Silver Springs Parkway, providing a new connection in the transportation network between Green Valley Road and Bass Lake Road with continuous bicycle and pedestrian facilities. The project will not adversely affect pedestrian or bicycle circulation.

7.3 TRANSIT

The project does not include specific transit improvements or propose changes to transit service. Silver Springs Parkway would provide additional routing options for transit vehicles and would not adversely affect transit operations.

8.0 IMPACT STATEMENTS AND MITIGATION MEASURES

Project impacts were determined by comparing conditions with the project to conditions without the project in accordance with the established significance criteria presented in Section 3.2.

8.1 EXISTING PLUS PROJECT

Analysis results indicate that the addition of the project would not significantly worsen operations under existing conditions.

8.2 CUMULATIVE PLUS PROJECT

Implementation of the proposed project would alter study area traffic at intersection that would operate unacceptably without the project. The following discusses operations at these intersections:

8.2.1 INTERSECTIONS

Impacts

Impact 1 - Green Valley Road / Deer Valley Road (Intersection 4) – This intersection, which is located in the Rural Region, will operate unacceptably at LOS E during the AM peak hour and LOS F during the PM peak hour without the project. Cumulative with-project conditions will result in increased traffic through the intersection, increasing for the northbound side-street stop controlled approach. **This is a significant impact.**

Impact 2 - Green Valley Road / Bass Lake Road (Intersection 7) – This intersection will operate unacceptably at LOS F without the project during the AM peak hour. The project would result in fewer trips using critical turning movements during the AM peak hour, resulting in a decrease in average control delay the AM peak hour. **This is a less than significant impact.**

Impact 3 - Green Valley Road / Cambridge Road (Intersection 8) – This intersection will operate unacceptably at LOS F without the proposed project during the AM peak hour. The project would result in fewer trips using critical turning movements during the AM peak hour, resulting in a decrease in average control delay the AM peak hour. **This is a less than significant impact.**

Mitigation

Mitigation 1 - Green Valley Road / Deer Valley Road (Intersection 4) – Installation of traffic signal control would result in acceptable LOS B operations in the AM and PM peak hours.

With this improvement, the project impact at this location would be reduced to **less than significant.**

The cumulative analysis includes planned and funded roadway improvements, growth consistent with the 2004 General Plan, and with approved and reasonably foreseeable projects within the study area. Improvements (traffic signal control) at this location are necessary to achieve acceptable operations under the cumulative scenario without the project. The County of El Dorado Community Development Agency will continue to monitor the intersection. Installation of a traffic signal will occur when traffic volumes on the minor street approaches (i.e., Deer Valley Road) satisfy the traffic signal warrant. Consequently, the timing for signal installation is not certain. Installation of traffic signal control will be funded with TIM fees. So, payment of TIM fees by new development, contributing to the minor street approach volumes, will ensure fair share funding for traffic signal installation. Therefore, this improvement should be added to the County CIP and constructed in response to planned development and is not solely required as a result of the project.

Mitigation 2 - No mitigation is required.

Mitigation 3 - No mitigation is required.

8.2.2 PEDESTRIAN AND BICYCLE FACILITIES

Impact 4 - Implementation of the proposed project will connect to existing and planned pedestrian facilities on Green Valley Road and Bass Lake Road and to the existing segment of Silver Springs Parkway, providing a new connection in the transportation network between Green Valley Road and Bass Lake Road with continuous bicycle and pedestrian facilities. **This is a less than significant impact.**

Mitigation 4 - No mitigation is required.

8.2.3 TRANSIT

Impact 5 - Implementation of the proposed project will disrupt or interfere with existing or planned transit improvements or service. **This is a less than significant impact.**

Mitigation 5 - No mitigation is required.

8.2.4 EMERGENCY ACCESS

Impact 6 - The proposed project will increase roadway network connectivity and provide a more direct connection between Bass Lake Road and Green Valley Road for access to/from areas west of Silver Springs Parkway along Green Valley Road. In addition, the project provides a second full-access connection for planned development in the Silver Springs development. This is a **less than significant impact**.

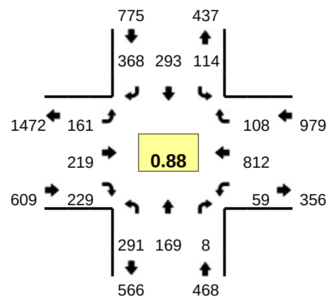
Mitigation 6 - No mitigation is required.

Appendix A

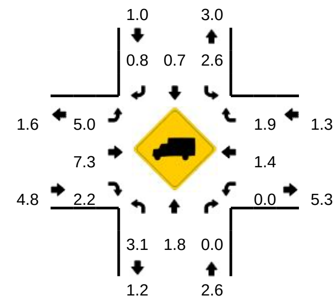
Traffic Counts

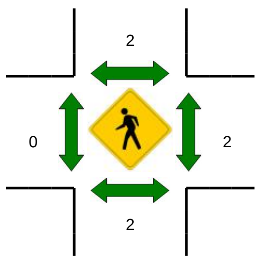
Intersection and Roadway Counts

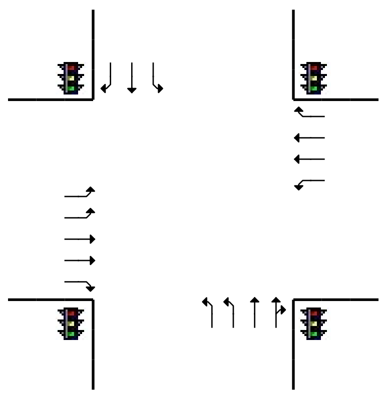
LOCATION: Francisco Dr -- Green Valley Rd | **QC JOB #:** 12004703
CITY/STATE: El Dorado Hills, CA | **DATE:** Tue, May 06 2014

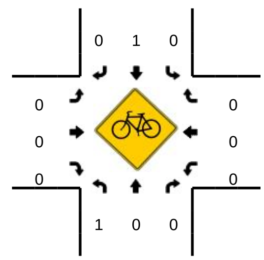


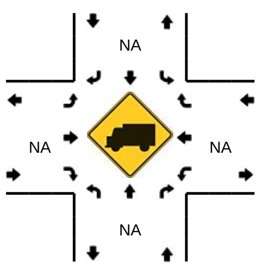
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

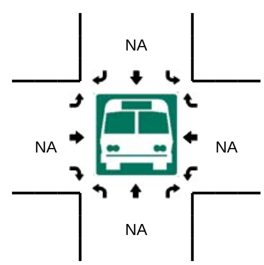












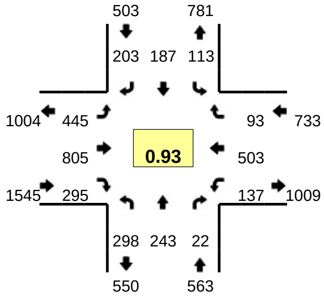
15-Min Count Period Beginning At	Francisco Dr (Northbound) Left	Thru	Right	U	Francisco Dr (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
6:30 AM	33	14	0	0	3	24	49	0	6	25	40	0	6	137	1	2	340	
6:45 AM	36	14	0	0	9	43	42	0	21	49	61	0	7	151	12	7	452	
7:00 AM	60	25	4	0	30	73	72	0	28	56	52	0	12	159	28	4	603	
7:15 AM	55	75	2	0	27	65	64	0	53	53	53	0	4	205	41	2	699	2094
7:30 AM	90	49	1	0	32	87	130	0	54	58	58	0	12	208	24	1	804	2558
7:45 AM	86	20	1	0	25	68	102	0	25	52	66	1	16	240	15	8	725	2831
8:00 AM	70	36	0	0	28	52	68	0	30	68	50	0	14	151	16	4	587	2815
8:15 AM	80	39	0	0	14	51	62	0	31	77	51	0	9	149	23	7	593	2709
8:30 AM	79	40	0	0	37	67	85	0	47	76	65	0	15	151	25	7	694	2599
8:45 AM	57	46	0	0	17	62	79	0	48	57	46	0	11	147	26	7	603	2477
9:00 AM	58	29	5	0	20	41	62	1	48	40	41	0	10	121	15	12	503	2393
9:15 AM	49	25	1	0	12	38	63	0	51	77	29	0	7	115	10	5	482	2282

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	360	196	4	0	128	348	520	0	216	232	232	0	48	832	96	4	3216
Heavy Trucks	8	0	0		0	4	0		8	12	0		0	12	0		44
Pedestrians		4				4				0				4			12
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

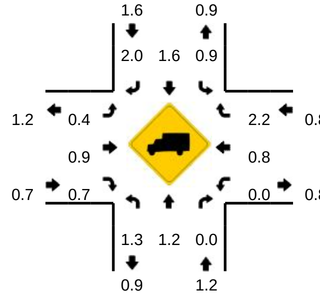
Comments:

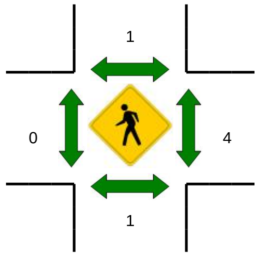
Type of peak hour being reported: Intersection Peak — Method for determining peak hour: Total Entering Volume

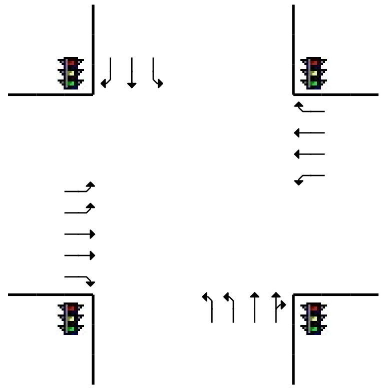
LOCATION: Francisco Dr -- Green Valley Rd — **QC JOB #:** 12004704
CITY/STATE: El Dorado Hills, CA — **DATE:** Tue, May 06 2014

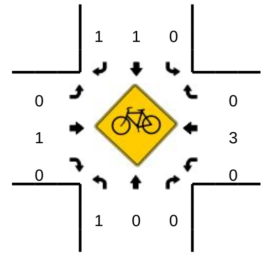


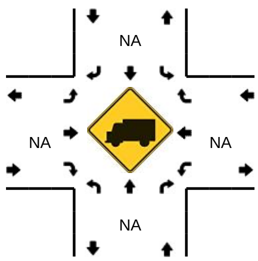
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

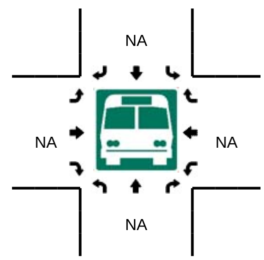












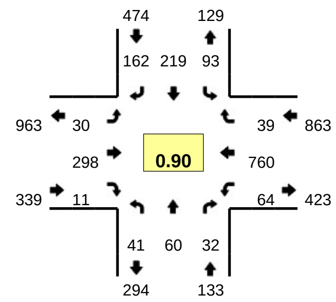
15-Min Count Period Beginning At	Francisco Dr (Northbound) Left	Thru	Right	U	Francisco Dr (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:30 PM	73	55	5	0	22	50	61	0	79	155	76	0	18	101	16	15	726	
3:45 PM	72	77	4	0	28	41	36	0	74	162	71	0	22	100	12	18	717	
4:00 PM	64	51	3	0	21	48	45	0	102	194	68	0	12	97	14	18	737	
4:15 PM	79	58	4	0	26	53	45	0	94	155	71	0	14	112	13	13	737	2917
4:30 PM	82	57	2	0	35	45	45	0	77	179	56	0	8	104	13	12	715	2906
4:45 PM	71	63	2	0	22	37	48	0	95	164	66	0	13	119	17	13	730	2919
5:00 PM	72	50	3	0	31	38	43	0	109	193	72	0	16	110	24	23	784	2966
5:15 PM	82	61	5	0	21	43	58	0	125	171	74	0	21	142	17	14	834	3063
5:30 PM	93	56	3	0	29	47	55	0	93	231	82	0	14	149	34	16	902	3250
5:45 PM	51	76	11	0	32	59	47	0	118	210	67	0	17	102	18	16	824	3344
6:00 PM	76	52	4	0	19	36	31	0	98	162	51	0	20	79	14	15	657	3217
6:15 PM	54	51	4	0	21	44	29	0	97	135	89	0	14	88	18	17	661	3044

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	372	224	12	0	116	188	220	0	372	924	328	0	56	596	136	64	3608
Heavy Trucks	4	8	0		4	0	12		4	4	0		0	0	0		36
Pedestrians		0				0				0				16			16
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

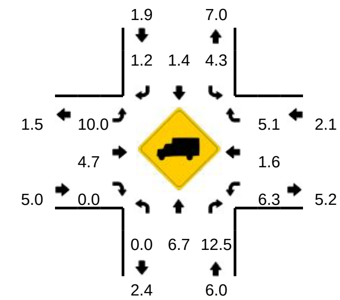
Comments:

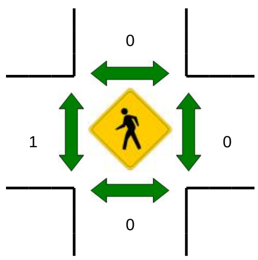
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

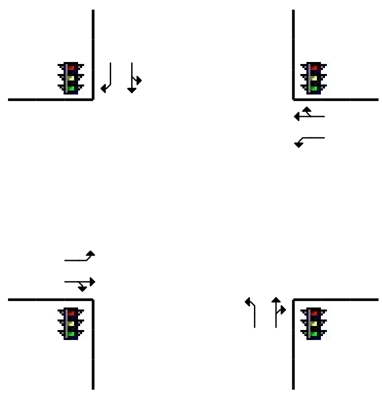
LOCATION: El Dorado Hills Blvd -- Green Valley Rd | **QC JOB #:** 12004730
CITY/STATE: El Dorado Hills, CA | **DATE:** Tue, May 06 2014

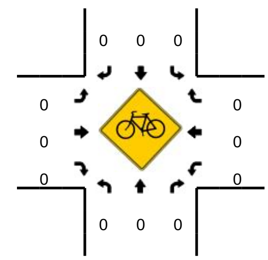


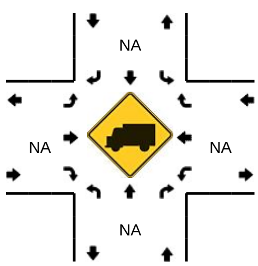
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

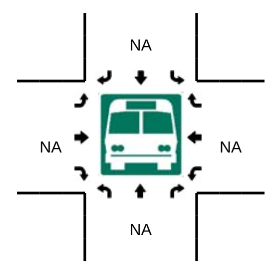












15-Min Count Period Beginning At	El Dorado Hills Blvd (Northbound) Left	Thru	Right	U	El Dorado Hills Blvd (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
6:30 AM	3	2	3	0	5	51	27	0	2	29	0	0	7	114	2	0	245	
6:45 AM	4	8	7	0	16	52	26	0	5	52	1	1	18	142	7	0	339	
7:00 AM	6	10	7	0	33	60	28	0	7	75	3	0	16	163	5	0	413	
7:15 AM	17	20	7	0	15	50	44	0	6	67	4	0	15	190	15	0	450	1447
7:30 AM	13	20	12	0	26	57	57	0	13	87	3	0	15	189	8	0	500	1702
7:45 AM	5	10	6	0	19	52	33	0	4	69	1	0	18	218	11	0	446	1809
8:00 AM	9	8	8	0	17	53	31	0	9	84	4	0	9	152	10	0	394	1790
8:15 AM	7	20	7	0	16	49	27	0	11	74	4	1	24	139	12	0	391	1731
8:30 AM	6	20	13	0	21	50	32	0	10	101	9	0	34	159	17	0	472	1703
8:45 AM	18	26	25	0	11	26	37	0	8	79	2	0	18	132	5	0	387	1644
9:00 AM	11	14	6	0	13	20	20	0	6	64	3	0	8	116	4	0	285	1535
9:15 AM	7	10	9	0	9	26	20	0	13	68	5	0	13	101	7	0	288	1432

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	52	80	48	0	104	228	228	0	52	348	12	0	60	756	32	0	2000
Heavy Trucks	0	0	4		8	0	4		0	16	0		8	16	0		56
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

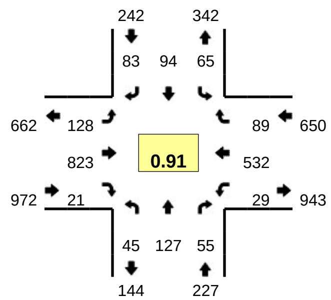
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

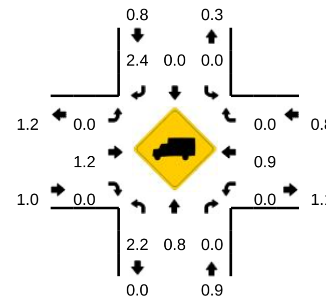
LOCATION: El Dorado Hills Blvd -- Green Valley Rd | **QC JOB #:** 12004731

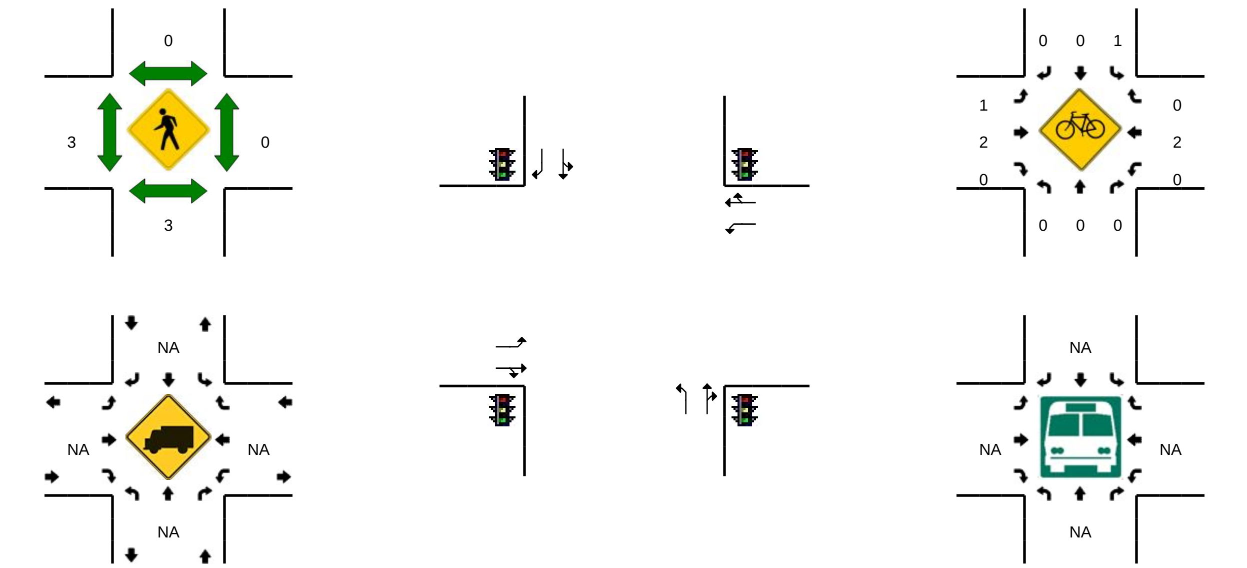
CITY/STATE: El Dorado Hills, CA | **DATE:** Tue, May 06 2014

Peak-Hour: 5:00 PM -- 6:00 PM

Peak 15-Min: 5:30 PM -- 5:45 PM







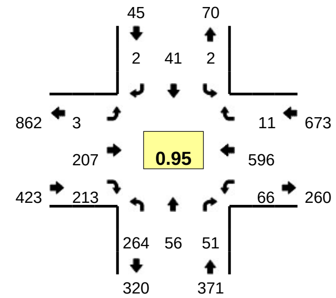
15-Min Count Period Beginning At	El Dorado Hills Blvd (Northbound) Left	Thru	Right	U	El Dorado Hills Blvd (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:30 PM	9	25	12	1	19	17	20	0	26	152	7	0	10	115	15	0	428	
3:45 PM	12	39	16	0	12	18	24	0	21	170	3	1	18	102	10	0	446	
4:00 PM	11	45	16	0	11	25	19	0	24	184	4	0	9	90	7	0	445	
4:15 PM	13	37	18	0	11	26	22	0	32	190	3	0	13	110	20	0	495	1814
4:30 PM	12	44	11	0	14	24	26	0	28	183	5	0	10	95	14	0	466	1852
4:45 PM	22	28	14	1	18	18	22	0	30	180	5	0	10	114	12	0	474	1880
5:00 PM	15	29	14	0	12	27	14	0	20	203	5	0	9	126	27	0	501	1936
5:15 PM	9	38	15	0	16	18	21	0	39	172	2	1	4	154	18	0	507	1948
5:30 PM	12	33	13	0	18	23	26	0	33	222	8	1	10	151	25	0	575	2057
5:45 PM	9	27	13	0	19	26	22	0	34	226	6	0	6	101	19	0	508	2091
6:00 PM	19	47	8	0	12	16	15	0	39	175	4	1	9	80	23	0	448	2038
6:15 PM	16	50	7	0	9	12	16	0	18	149	4	0	4	111	10	0	406	1937

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	48	132	52	0	72	92	104	0	132	888	32	4	40	604	100	0	2300
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		1	1	0		0	0	0		2
Railroad																	
Stopped Buses																	

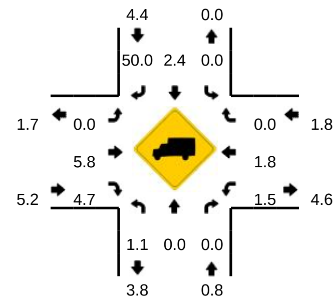
Comments:

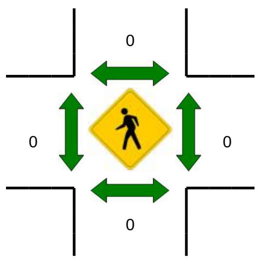
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

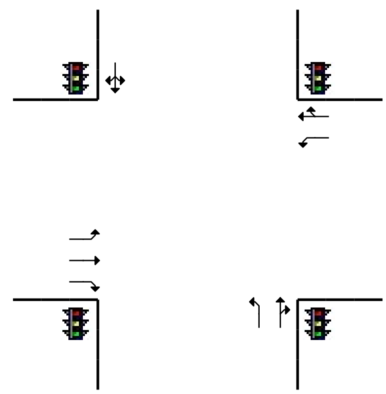
LOCATION: Silva Valley Rd -- Green Valley Rd | **QC JOB #:** 12004727
CITY/STATE: El Dorado Hills, CA | **DATE:** Tue, May 06 2014

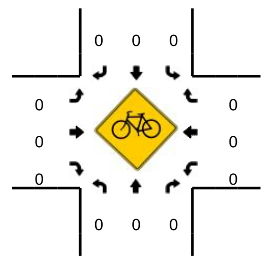


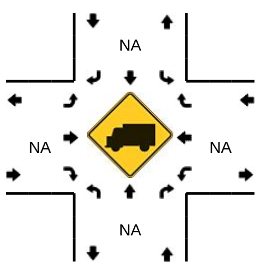
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

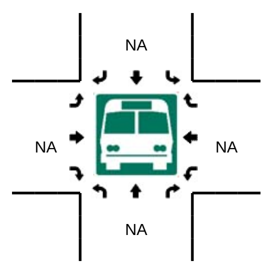












15-Min Count Period Beginning At	Silva Valley Rd (Northbound) Left	Thru	Right	U	Silva Valley Rd (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
6:30 AM	34	0	2	0	0	1	0	0	0	16	19	0	12	91	0	0	175	
6:45 AM	47	3	11	0	0	5	0	0	0	40	36	0	34	127	2	0	305	
7:00 AM	53	4	10	0	0	14	1	0	0	42	76	0	18	143	0	0	361	
7:15 AM	74	28	15	0	0	6	1	0	0	38	48	0	19	141	4	0	374	1215
7:30 AM	65	23	15	0	0	13	0	0	1	75	49	0	5	145	7	0	398	1438
7:45 AM	72	1	11	0	2	8	0	0	2	52	40	0	24	167	0	0	379	1512
8:00 AM	54	2	11	0	1	3	1	0	2	70	41	0	11	119	0	0	315	1466
8:15 AM	67	6	11	0	1	5	1	0	1	57	41	0	12	121	1	0	324	1416
8:30 AM	71	8	7	0	0	2	1	0	1	77	51	0	13	119	1	0	351	1369
8:45 AM	43	1	5	0	0	3	0	0	2	71	41	0	9	113	2	0	290	1280
9:00 AM	39	0	2	0	0	4	0	0	0	56	30	0	5	90	0	0	226	1191
9:15 AM	28	3	5	0	0	1	0	0	1	49	34	0	6	89	0	0	216	1083

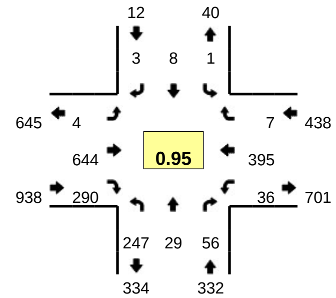
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	260	92	60	0	0	52	0	0	4	300	196	0	20	580	28	0	1592
Heavy Trucks	4	0	0		0	0	0		0	12	16		0	20	0		52
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

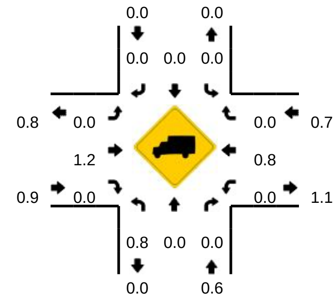
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

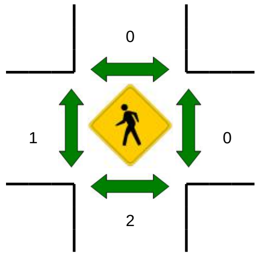
LOCATION: Silva Valley Rd -- Green Valley Rd | **QC JOB #:** 12004728

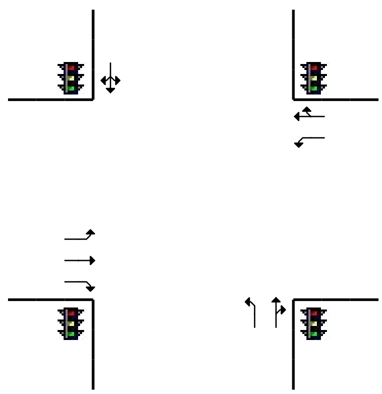
CITY/STATE: El Dorado Hills, CA | **DATE:** Tue, May 06 2014

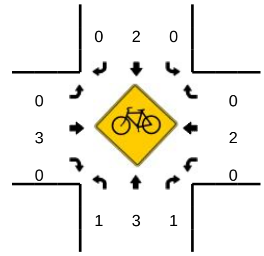


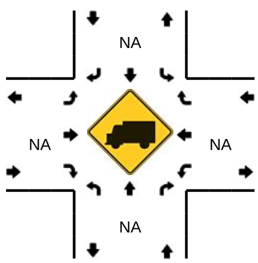
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

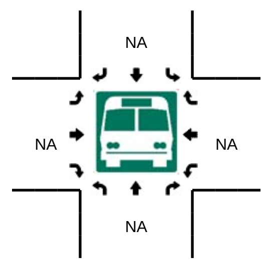












15-Min Count Period Beginning At	Silva Valley Rd (Northbound) Left	Thru	Right	U	Silva Valley Rd (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:30 PM	55	6	7	0	0	1	1	0	3	115	67	0	8	80	0	0	343	
3:45 PM	53	4	15	0	1	3	0	0	0	121	72	0	10	77	0	0	356	
4:00 PM	37	5	8	0	0	1	0	0	1	155	62	0	17	74	4	0	364	
4:15 PM	74	12	14	0	0	2	0	0	0	166	55	0	5	58	1	0	387	1450
4:30 PM	47	4	14	0	0	5	2	0	2	147	58	0	7	81	1	0	368	1475
4:45 PM	56	8	11	0	0	0	0	0	2	158	57	0	6	84	1	0	383	1502
5:00 PM	59	5	9	0	0	0	2	0	1	172	55	0	5	95	2	0	405	1543
5:15 PM	66	8	11	0	0	4	1	0	1	142	64	0	16	127	0	0	440	1596
5:30 PM	70	6	20	0	0	1	0	0	1	166	83	0	6	97	3	0	453	1681
5:45 PM	52	10	16	0	1	3	0	0	1	164	88	0	9	76	2	0	422	1720
6:00 PM	41	3	7	0	0	1	1	0	4	133	58	0	7	66	3	0	324	1639
6:15 PM	50	5	8	0	0	2	0	0	2	106	56	0	9	75	0	0	313	1512

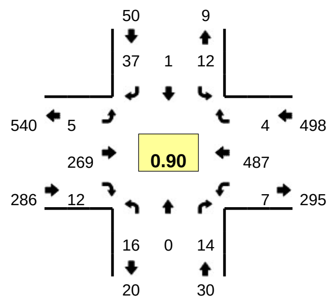
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	280	24	80	0	0	4	0	0	4	664	332	0	24	388	12	0	1812
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

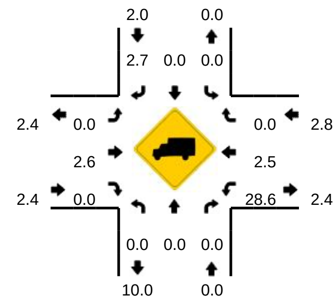
Type of peak hour being reported: Intersection Peak — Method for determining peak hour: Total Entering Volume

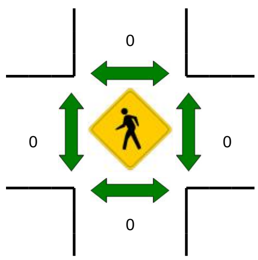
LOCATION: Deer Valley Rd (W) -- Green Valley Rd — **QC JOB #:** 12004705

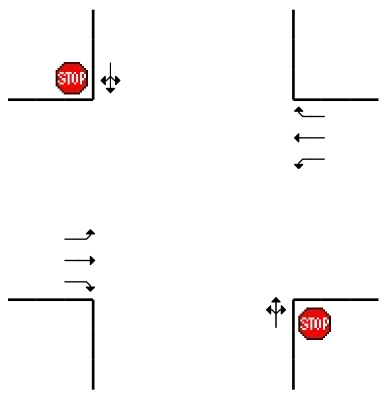
CITY/STATE: Cameron Park, CA — **DATE:** Tue, May 06 2014

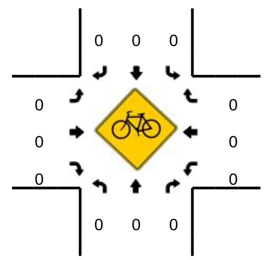


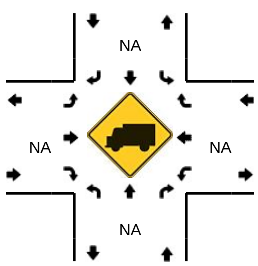
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

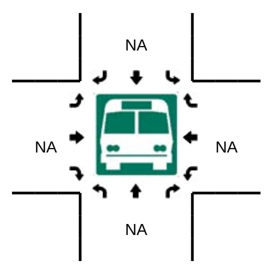












15-Min Count Period Beginning At	Deer Valley Rd (W) (Northbound) Left	Thru	Right	U	Deer Valley Rd (W) (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
6:30 AM	2	0	2	0	1	0	13	0	1	19	0	0	0	94	0	0	132	
6:45 AM	7	0	2	0	2	0	9	0	1	35	3	0	2	113	2	0	176	
7:00 AM	5	0	1	0	1	0	11	0	0	31	5	0	1	141	0	0	196	
7:15 AM	3	0	1	0	3	0	15	0	1	48	5	0	0	126	0	0	202	706
7:30 AM	4	0	4	0	9	0	11	0	2	70	2	0	0	135	2	0	239	813
7:45 AM	6	0	5	0	1	1	11	0	1	55	2	0	3	131	2	0	218	855
8:00 AM	3	0	1	0	1	0	7	0	1	70	5	0	1	112	0	0	201	860
8:15 AM	3	0	4	0	1	0	8	0	1	74	3	0	3	109	0	0	206	864
8:30 AM	3	0	5	0	2	0	8	0	2	70	0	0	3	113	0	0	206	831
8:45 AM	6	0	1	0	3	0	5	0	5	70	5	0	3	95	1	0	194	807
9:00 AM	2	0	4	0	1	0	4	0	0	45	1	0	4	85	0	0	146	752
9:15 AM	4	0	2	0	1	0	9	0	4	45	1	0	1	76	0	0	143	689

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	16	0	16	0	36	0	44	0	8	280	8	0	0	540	8	0	956
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	12	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2014 8:41 AM — SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

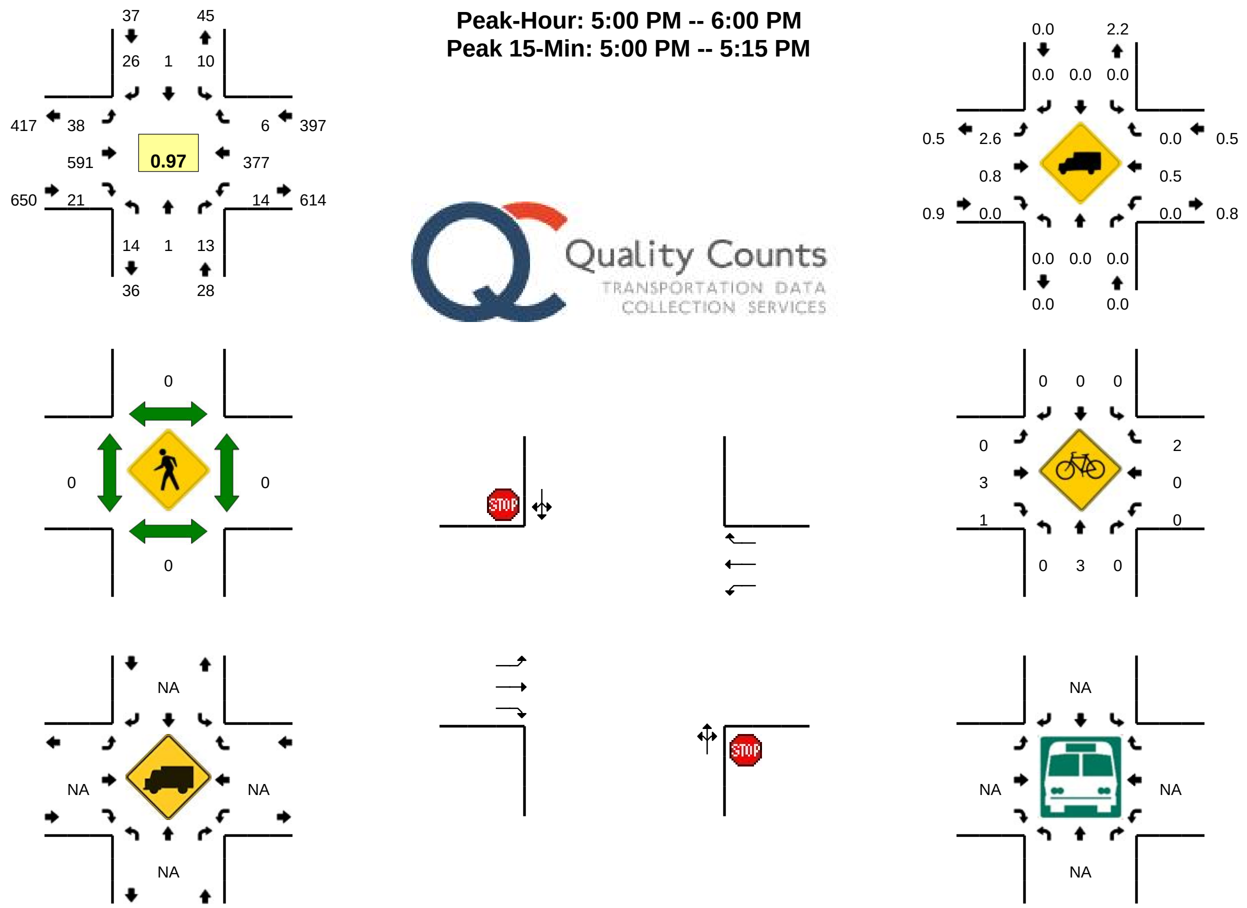
Type of peak hour being reported: Intersection Peak — Method for determining peak hour: Total Entering Volume

LOCATION: Deer Valley Rd (W) -- Green Valley Rd — **QC JOB #:** 12004706

CITY/STATE: Cameron Park, CA — **DATE:** Tue, May 06 2014

Peak-Hour: 5:00 PM -- 6:00 PM

Peak 15-Min: 5:00 PM -- 5:15 PM



15-Min Count Period Beginning At	Deer Valley Rd (W) (Northbound) Left	Thru	Right	U	Deer Valley Rd (W) (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:30 PM	5	1	4	0	1	0	4	0	6	114	3	0	3	76	2	0	219	
3:45 PM	6	0	1	0	0	0	2	0	5	109	5	0	3	69	2	0	202	
4:00 PM	3	0	3	0	1	0	7	0	3	142	6	0	4	74	3	0	246	
4:15 PM	0	0	2	0	2	0	4	0	9	147	5	0	5	53	2	0	229	896
4:30 PM	3	0	2	0	0	0	9	0	13	131	5	0	2	78	4	0	247	924
4:45 PM	4	0	2	0	2	0	6	0	11	144	3	0	3	74	2	0	251	973
5:00 PM	5	0	1	0	1	0	3	0	8	164	5	0	2	95	3	0	287	1014
5:15 PM	2	1	5	0	0	0	13	0	9	132	4	0	6	114	1	0	287	1072
5:30 PM	2	0	2	0	5	1	3	0	15	146	7	0	4	96	0	0	281	1106
5:45 PM	5	0	5	0	4	0	7	0	6	149	5	0	2	72	2	0	257	1112
6:00 PM	2	0	3	0	4	0	1	0	10	131	6	0	5	56	2	0	220	1045
6:15 PM	6	0	0	0	1	0	1	0	12	107	4	0	3	61	1	0	196	954

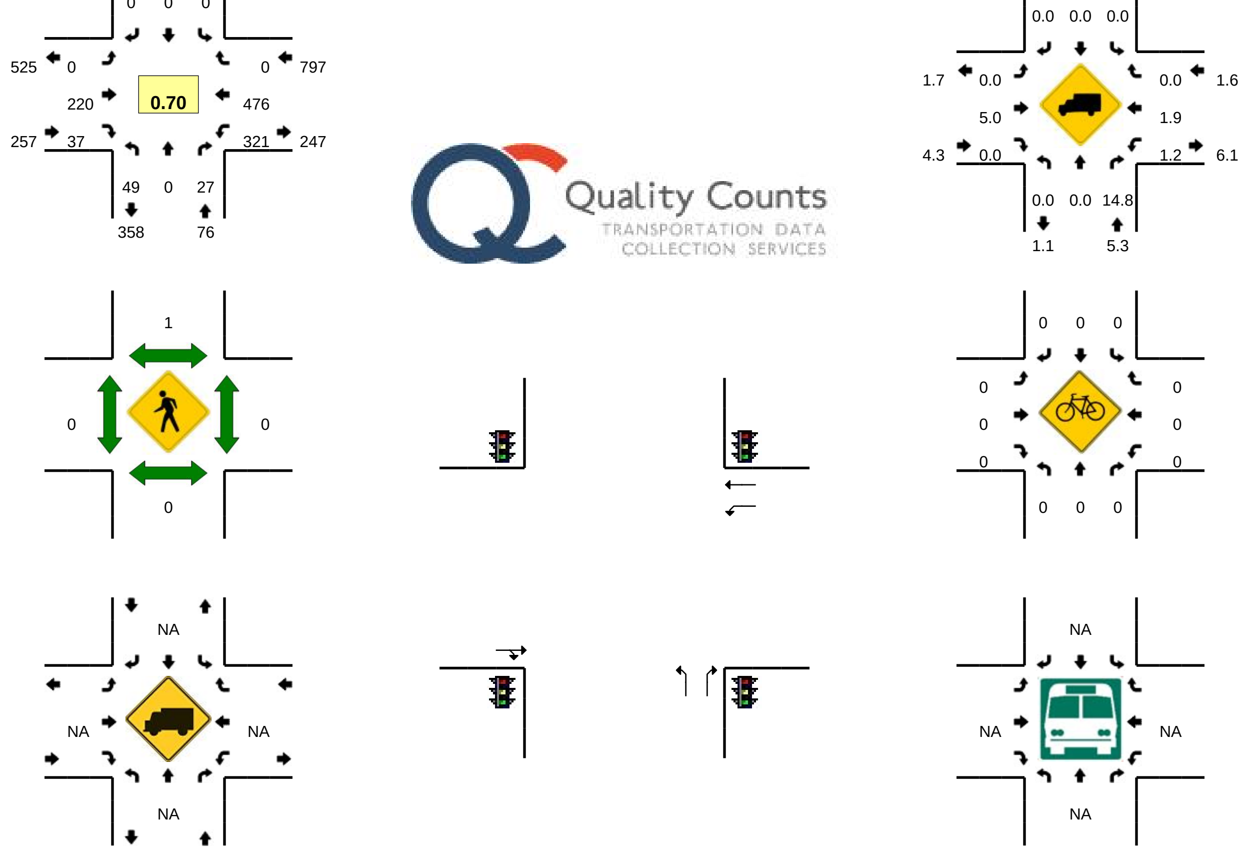
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	20	0	4	0	4	0	12	0	32	656	20	0	8	380	12	0	1148
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Type of peak hour being reported: Intersection Peak Method for determining peak hour: Total Entering Volume

LOCATION: Pleasant Grove Access (Signal) -- Green Valley Rd **QC JOB #:** 12004748
CITY/STATE: Rescue, CA **DATE:** Tue, May 06 2014

Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:30 AM -- 7:45 AM



5-Min Count Period Beginning At	Pleasant Grove Access (Signal) (Northbound) Left	Thru	Right	U	Pleasant Grove Access (Signal) (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
6:40 AM	0	0	0	0	0	0	0	0	0	9	1	0	0	40	0	0	50	
6:45 AM	0	0	0	0	0	0	0	0	0	9	1	0	0	37	0	0	47	
6:50 AM	0	0	0	0	0	0	0	0	0	13	0	0	2	34	0	0	49	
6:55 AM	0	0	0	0	0	0	0	0	0	15	1	0	1	41	0	0	58	
7:00 AM	0	0	0	0	0	0	0	0	0	9	0	0	3	44	0	0	56	
7:05 AM	1	0	1	0	0	0	0	0	0	12	0	0	3	47	0	0	64	
7:10 AM	0	0	0	0	0	0	0	0	0	12	1	0	15	53	0	0	81	
7:15 AM	1	0	0	0	0	0	0	0	0	15	0	0	24	42	0	0	82	
7:20 AM	4	0	1	0	0	0	0	0	0	9	4	0	39	31	0	0	88	
7:25 AM	6	0	3	0	0	0	0	0	0	15	4	0	63	41	0	0	132	776
7:30 AM	8	0	1	0	0	0	0	0	0	9	8	0	58	23	0	0	107	846
7:35 AM	11	0	3	0	0	0	0	0	0	21	11	0	53	39	0	0	138	952
7:40 AM	9	0	10	0	0	0	0	0	0	33	6	0	54	45	0	0	157	1059
7:45 AM	9	0	7	0	0	0	0	0	0	16	2	0	5	43	0	0	82	1094
7:50 AM	1	0	1	0	0	0	0	0	0	23	0	0	6	47	0	0	78	1123
7:55 AM	0	0	0	0	0	0	0	0	0	19	1	0	1	40	0	0	61	1126
8:00 AM	0	0	1	0	0	0	0	0	0	18	0	0	3	33	0	0	55	1125
8:05 AM	0	0	0	0	0	0	0	0	0	30	0	0	0	39	0	0	69	1130
8:10 AM	0	0	0	0	0	0	0	0	0	22	1	0	0	38	0	0	61	1110
8:15 AM	0	0	0	0	0	0	0	0	0	33	0	0	1	37	0	0	71	1099
8:20 AM	0	0	0	0	0	0	0	0	0	27	0	0	2	32	0	0	61	1072
8:25 AM	0	0	0	0	0	0	0	0	0	20	1	0	0	43	0	0	64	1004
8:30 AM	0	0	0	0	0	0	0	0	0	22	0	0	1	37	0	0	60	957
8:35 AM	1	0	0	0	0	0	0	0	0	26	0	0	2	45	0	0	74	893

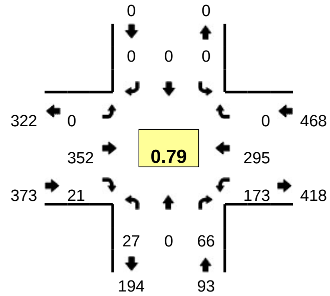
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	112	0	56	0	0	0	0	0	0	252	100	0	660	428	0	0	1608
Heavy Trucks	0	0	8		0	0	0		0	8	0		8	12	0		36
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

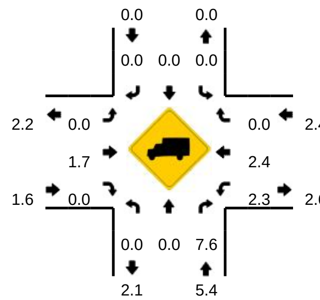
Comments:

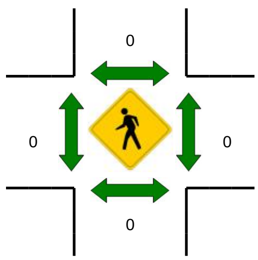
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

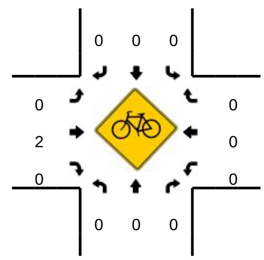
LOCATION: Pleasant Grove Access (Signal) -- Green Valley Rd | **QC JOB #:** 12004749
CITY/STATE: Rescue, CA | **DATE:** Tue, May 06 2014

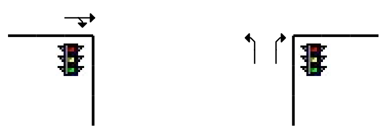
Peak-Hour: 1:35 PM -- 2:35 PM
Peak 15-Min: 2:05 PM -- 2:20 PM

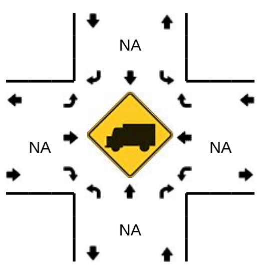


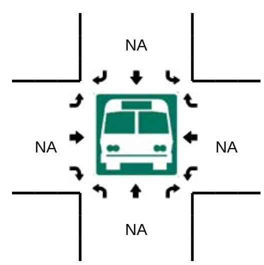












5-Min Count Period Beginning At	Pleasant Grove Access (Signal) (Northbound)				Pleasant Grove Access (Signal) (Southbound)				Green Valley Rd (Eastbound)				Green Valley Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
1:30 PM	0	0	1	0	0	0	0	0	0	28	1	0	5	21	0	0	56	
1:35 PM	0	0	1	0	0	0	0	0	0	31	1	0	5	26	0	0	64	
1:40 PM	1	0	0	0	0	0	0	0	0	25	2	0	8	36	0	0	72	
1:45 PM	0	0	1	0	0	0	0	0	0	26	1	0	9	29	0	0	66	
1:50 PM	0	0	1	0	0	0	0	0	0	27	2	0	17	20	0	0	67	
1:55 PM	0	0	0	0	0	0	0	0	0	28	2	0	21	16	0	0	67	
2:00 PM	0	0	2	0	0	0	0	0	0	26	6	0	34	27	0	0	95	
2:05 PM	0	0	7	0	0	0	0	0	0	23	0	0	21	27	0	0	78	
2:10 PM	9	0	36	0	0	0	0	0	0	35	2	0	20	14	0	0	116	
2:15 PM	11	0	13	0	0	0	0	0	0	30	2	0	17	29	0	0	102	
2:20 PM	3	0	2	0	0	0	0	0	0	33	1	0	13	21	0	0	73	
2:25 PM	2	0	3	0	0	0	0	0	0	28	2	0	3	23	0	0	61	917
2:30 PM	1	0	0	0	0	0	0	0	0	40	0	0	5	27	0	0	73	934
2:35 PM	0	0	3	0	0	0	0	0	0	18	2	0	3	27	0	0	53	923
2:40 PM	1	0	2	0	0	0	0	0	0	30	0	0	1	26	0	0	60	911
2:45 PM	0	0	0	0	0	0	0	0	0	34	0	0	2	29	0	0	65	910
2:50 PM	0	0	0	0	0	0	0	0	0	30	0	0	2	19	0	0	51	894
2:55 PM	2	0	1	0	0	0	0	0	0	32	1	0	2	30	0	0	68	895
3:00 PM	2	0	0	0	0	0	0	0	0	39	1	0	1	19	0	0	62	862
3:05 PM	1	0	0	0	0	0	0	0	0	39	0	0	0	24	0	0	64	848
3:10 PM	0	0	1	0	0	0	0	0	0	48	0	0	1	23	0	0	73	805
3:15 PM	0	0	0	0	0	0	0	0	0	59	3	0	3	29	0	0	94	797
3:20 PM	0	0	2	0	0	0	0	0	0	49	0	0	3	21	0	0	75	799
3:25 PM	0	0	2	0	0	0	0	0	0	56	0	0	0	34	0	0	92	830

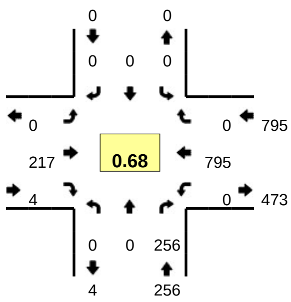
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	80	0	224	0	0	0	0	0	0	352	16	0	232	280	0	0	1184
Heavy Trucks	0	0	16		0	0	0		0	0	0		0	4	0		20
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

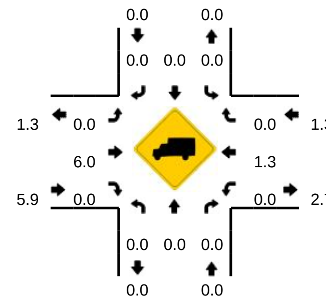
Comments:

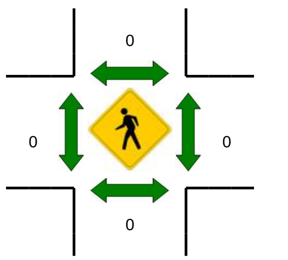
Type of peak hour being reported: Intersection Peak   Method for determining peak hour: Total Entering Volume

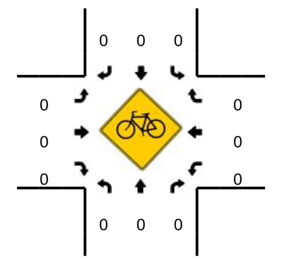
LOCATION: Pleasant Grove Access West (Stop) -- Green Valley Rd   **QC JOB #:** 12004761
CITY/STATE: Rescue, CA   **DATE:** Tue, May 06 2014

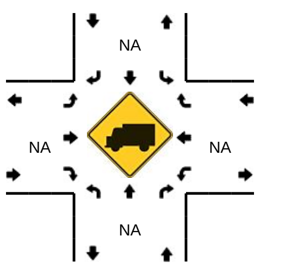
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

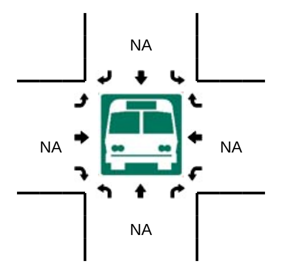












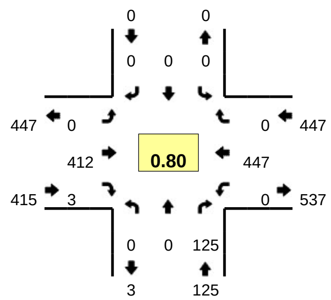
15-Min Count Period Beginning At	Pleasant Grove Access West (Stop) (Northbound) Left	Thru	Right	U	Pleasant Grove Access West (Stop) (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
6:30 AM	0	0	0	0	0	0	0	0	0	22	0	0	0	99	0	0	121	
6:45 AM	0	0	1	0	0	0	0	0	0	34	0	0	0	119	0	0	154	
7:00 AM	0	0	4	0	0	0	0	0	0	29	2	0	0	157	0	0	192	
7:15 AM	0	0	82	0	0	0	0	0	0	44	0	0	0	241	0	0	367	834
7:30 AM	0	0	141	0	0	0	0	0	0	69	2	0	0	255	0	0	467	1180
7:45 AM	0	0	29	0	0	0	0	0	0	75	0	0	0	142	0	0	246	1272
8:00 AM	0	0	1	0	0	0	0	0	0	71	0	0	0	115	0	0	187	1267
8:15 AM	0	0	1	0	0	0	0	0	0	78	0	0	0	116	0	0	195	1095
8:30 AM	0	0	0	0	0	0	0	0	0	68	0	0	0	120	0	0	188	816
8:45 AM	0	0	1	0	0	0	0	0	0	84	0	0	0	96	0	0	181	751
9:00 AM	0	0	2	0	0	0	0	0	0	55	0	0	0	95	0	0	152	716
9:15 AM	0	0	1	0	0	0	0	0	0	47	0	0	0	81	0	0	129	650

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	0	0	564	0	0	0	0	0	0	276	8	0	0	1020	0	0	1868
Heavy Trucks	0	0	0		0	0	0		0	20	0		0	16	0		36
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

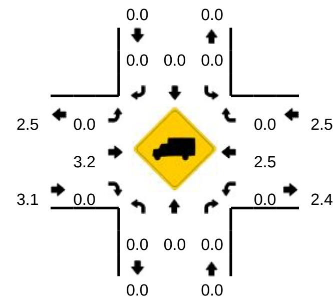
Comments:

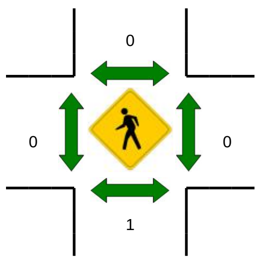
LOCATION: Pleasant Grove Access West (Stop) -- Green Valley Rd
CITY/STATE: Rescue, CA

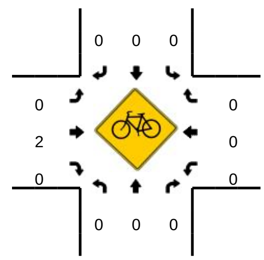
QC JOB #: 12004762
DATE: Tue, May 06 2014

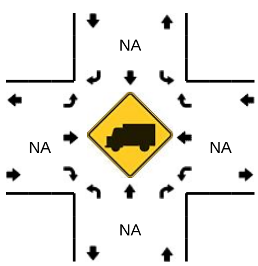


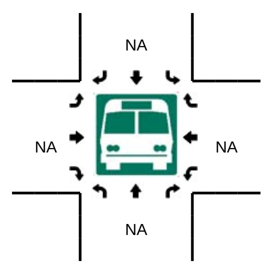
Peak-Hour: 1:45 PM -- 2:45 PM
Peak 15-Min: 2:00 PM -- 2:15 PM











15-Min Count Period Beginning At	Pleasant Grove Access West (Stop) (Northbound) Left	Thru	Right	U	Pleasant Grove Access West (Stop) (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
1:30 PM	0	0	4	0	0	0	0	0	0	85	0	0	0	95	0	0	184	
1:45 PM	0	0	2	0	0	0	0	0	0	82	1	0	0	115	0	0	200	
2:00 PM	0	0	49	0	0	0	0	0	0	118	2	0	0	140	0	0	309	
2:15 PM	0	0	66	0	0	0	0	0	0	118	0	0	0	103	0	0	287	980
2:30 PM	0	0	8	0	0	0	0	0	0	94	0	0	0	89	0	0	191	987
2:45 PM	0	0	5	0	0	0	0	0	0	92	0	0	0	86	0	0	183	970
3:00 PM	0	0	0	0	0	0	0	0	0	124	0	0	0	70	0	0	194	855
3:15 PM	0	0	5	0	0	0	0	0	0	166	0	0	0	92	0	0	263	831

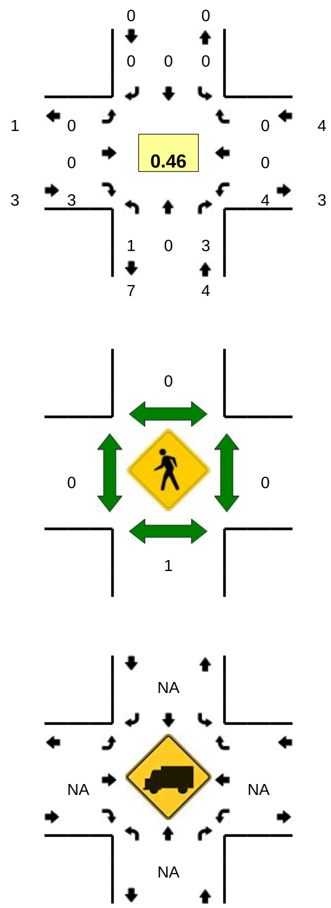
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	0	0	196	0	0	0	0	0	0	472	8	0	0	560	0	0	1236
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	0	0		12
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

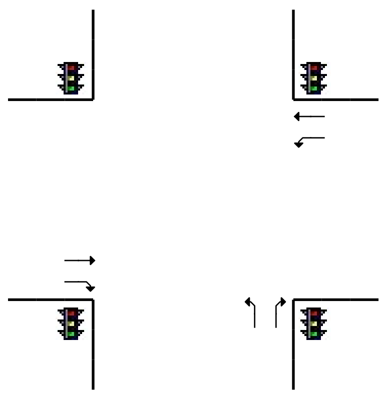
Comments:

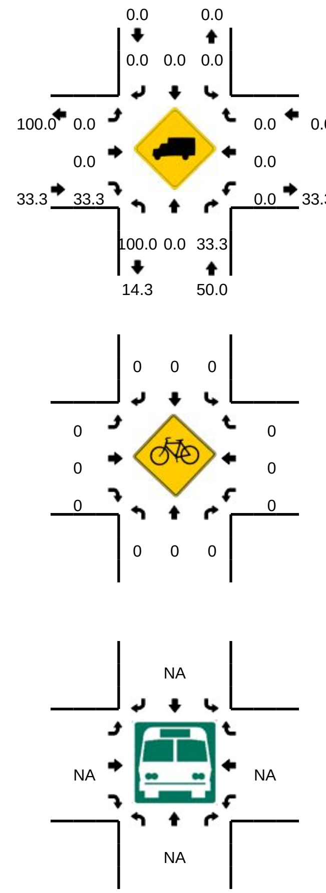
Type of peak hour being reported: Intersection Peak — Method for determining peak hour: Total Entering Volume

LOCATION: Silver Springs Pkwy -- Green Valley Rd — **QC JOB #:** 12004760
CITY/STATE: El Dorado, CA — **DATE:** Tue, May 06 2014

Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:15 AM -- 8:30 AM







15-Min Count Period Beginning At	Silver Springs Pkwy (Northbound)				Silver Springs Pkwy (Southbound)				Green Valley Rd (Eastbound)				Green Valley Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	3	
6:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	3	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	7
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
7:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	4
8:15 AM	1	0	1	0	0	0	0	0	0	0	1	0	3	0	0	0	6	9
8:30 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2	11
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	10
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
9:15 AM	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	7

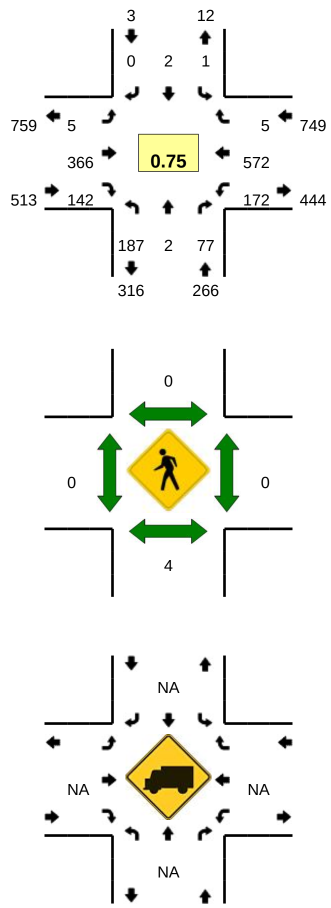
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	4	0	0	0	0	0	0	0	4	0	12	0	0	0	24
Heavy Trucks	4	0	0		0	0	0		0	0	0		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

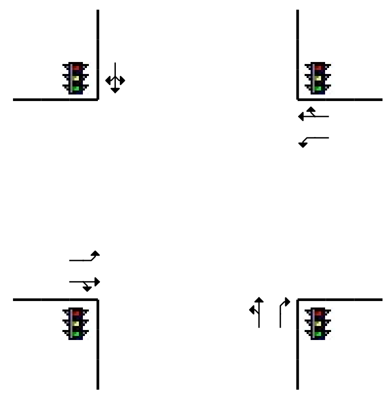
Comments:

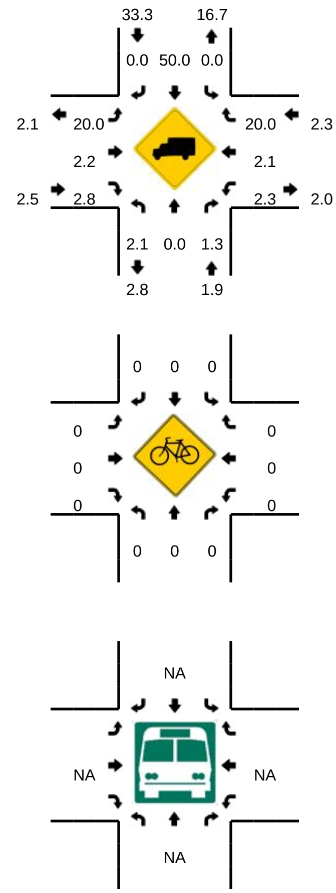
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: Bass Lake Rd -- Green Valley Rd | **QC JOB #:** 12004707
CITY/STATE: Cameron Park, CA | **DATE:** Tue, May 06 2014

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM







15-Min Count Period Beginning At	Bass Lake Rd (Northbound) Left	Thru	Right	U	Bass Lake Rd (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
6:30 AM	18	0	29	0	0	0	0	0	0	19	3	0	32	77	1	0	179	
6:45 AM	18	1	26	0	0	0	0	0	0	31	5	0	36	105	0	0	222	
7:00 AM	34	0	10	0	0	0	1	0	0	26	8	0	32	134	1	0	246	
7:15 AM	77	0	15	0	0	0	0	0	0	78	33	0	28	186	0	0	417	1064
7:30 AM	67	0	21	0	0	0	0	0	0	138	65	0	42	179	0	0	512	1397
7:45 AM	25	0	18	0	0	0	0	0	2	90	33	0	50	113	2	0	333	1508
8:00 AM	18	2	23	0	1	2	0	0	3	60	11	0	52	94	3	0	269	1531
8:15 AM	27	1	22	0	1	0	0	0	4	64	14	0	38	89	3	0	263	1377
8:30 AM	41	2	39	0	2	0	2	0	1	55	7	0	69	80	3	0	301	1166
8:45 AM	33	0	29	0	2	0	0	0	1	76	16	0	29	71	4	0	261	1094
9:00 AM	18	0	19	0	1	1	0	0	2	45	9	0	27	67	5	0	194	1019
9:15 AM	18	1	10	0	1	0	0	0	0	41	7	0	14	61	4	0	157	913

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	268	0	84	0	0	0	0	0	0	552	260	0	168	716	0	0	2048
Heavy Trucks	4	0	0		0	0	0		0	12	4		0	16	0		36
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

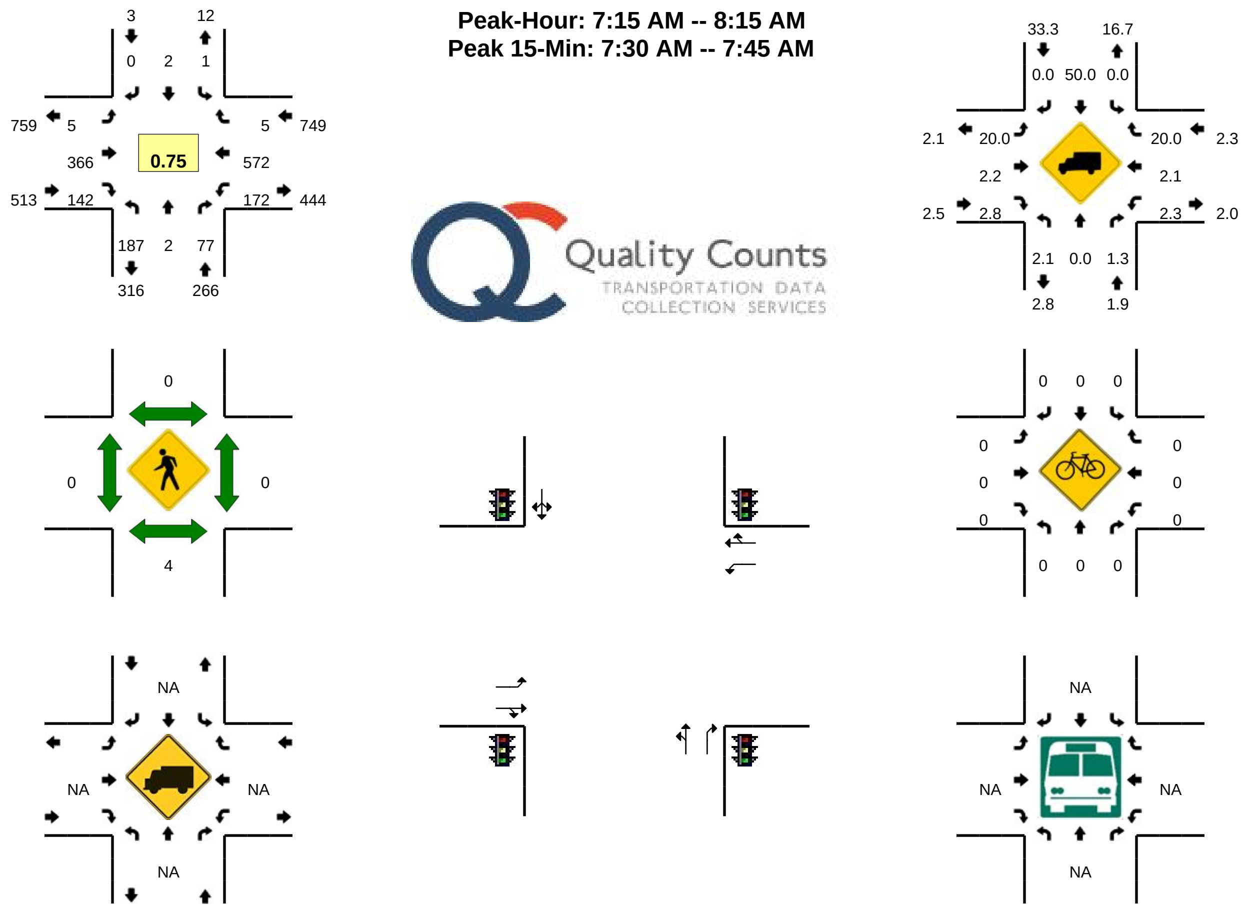
Comments:

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: Bass Lake Rd -- Green Valley Rd | **QC JOB #:** 12004707

CITY/STATE: Cameron Park, CA | **DATE:** Tue, May 06 2014

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM



15-Min Count Period Beginning At	Bass Lake Rd (Northbound)				Bass Lake Rd (Southbound)				Green Valley Rd (Eastbound)				Green Valley Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	18	0	29	0	0	0	0	0	0	19	3	0	32	77	1	0	179	
6:45 AM	18	1	26	0	0	0	0	0	0	31	5	0	36	105	0	0	222	
7:00 AM	34	0	10	0	0	0	1	0	0	26	8	0	32	134	1	0	246	
7:15 AM	77	0	15	0	0	0	0	0	0	78	33	0	28	186	0	0	417	1064
7:30 AM	67	0	21	0	0	0	0	0	0	138	65	0	42	179	0	0	512	1397
7:45 AM	25	0	18	0	0	0	0	0	2	90	33	0	50	113	2	0	333	1508
8:00 AM	18	2	23	0	1	2	0	0	3	60	11	0	52	94	3	0	269	1531
8:15 AM	27	1	22	0	1	0	0	0	4	64	14	0	38	89	3	0	263	1377
8:30 AM	41	2	39	0	2	0	2	0	1	55	7	0	69	80	3	0	301	1166
8:45 AM	33	0	29	0	2	0	0	0	1	76	16	0	29	71	4	0	261	1094
9:00 AM	18	0	19	0	1	1	0	0	2	45	9	0	27	67	5	0	194	1019
9:15 AM	18	1	10	0	1	0	0	0	0	41	7	0	14	61	4	0	157	913

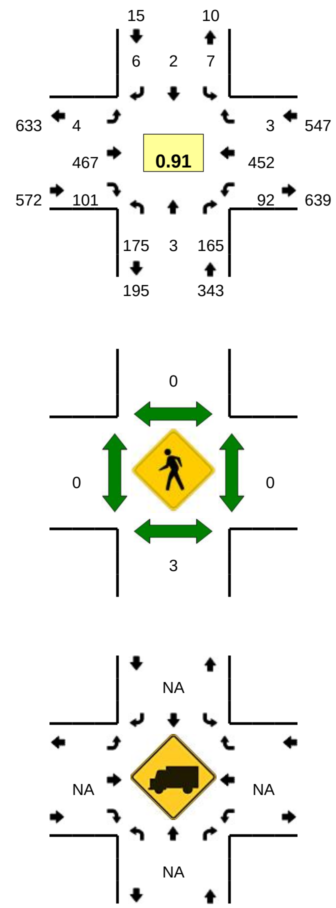
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	268	0	84	0	0	0	0	0	0	552	260	0	168	716	0	0	2048
Heavy Trucks	4	0	0		0	0	0		0	12	4		0	16	0		36
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

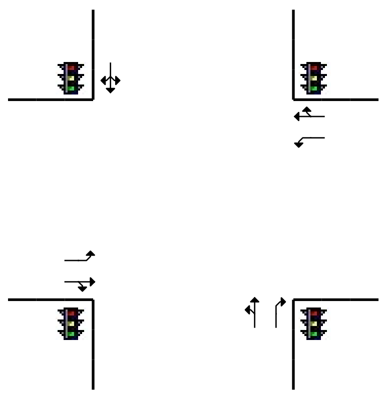
Comments:

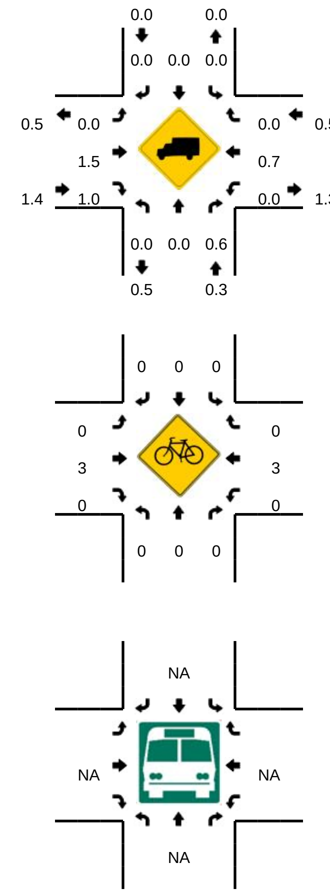
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: Bass Lake Rd -- Green Valley Rd | **QC JOB #:** 12004708
CITY/STATE: Cameron Park, CA | **DATE:** Tue, May 06 2014

Peak-Hour: 5:15 PM -- 6:15 PM
Peak 15-Min: 5:45 PM -- 6:00 PM







15-Min Count Period Beginning At	Bass Lake Rd (Northbound) Left	Thru	Right	U	Bass Lake Rd (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:30 PM	13	2	33	0	2	5	1	0	0	107	18	0	14	78	3	0	276	
3:45 PM	18	2	32	0	2	1	4	0	2	116	34	0	19	74	0	0	304	
4:00 PM	18	1	41	0	3	1	3	0	0	121	26	0	17	68	3	0	302	
4:15 PM	12	0	38	0	2	0	0	0	1	133	30	0	23	50	1	0	290	1172
4:30 PM	21	4	32	0	1	3	3	0	0	128	21	0	33	66	3	0	315	1211
4:45 PM	9	2	53	0	5	1	0	0	3	109	26	0	22	74	1	0	305	1212
5:00 PM	19	0	41	0	2	0	3	0	1	133	36	0	31	95	2	0	363	1273
5:15 PM	29	0	43	0	3	0	3	0	2	119	27	0	21	102	2	0	351	1334
5:30 PM	39	1	41	0	2	0	1	0	1	114	19	0	25	110	0	0	353	1372
5:45 PM	62	1	45	0	0	2	2	0	1	117	25	0	19	130	1	0	405	1472
6:00 PM	45	1	36	0	2	0	0	0	0	117	30	0	27	110	0	0	368	1477
6:15 PM	37	2	37	0	5	2	1	0	1	122	33	0	16	66	1	0	323	1449

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	248	4	180	0	0	8	8	0	4	468	100	0	76	520	4	0	1620
Heavy Trucks	0	0	0		0	0	0		0	0	4		0	8	0		12
Pedestrians		8				0				0				0			8
Bicycles	0	0	0		0	0	0		0	1	0		0	1	0		2
Railroad																	
Stopped Buses																	

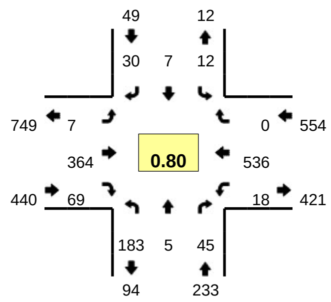
Comments:

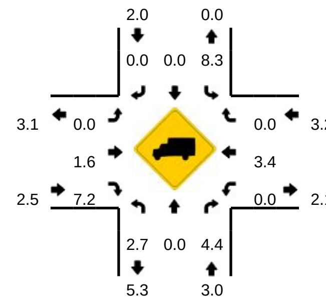
Report generated on 5/29/2014 8:41 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

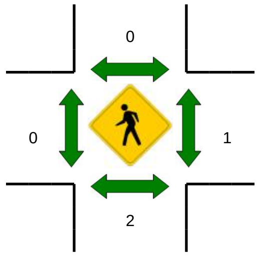
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

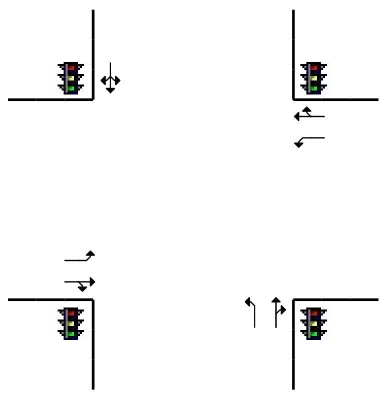
LOCATION: Cambridge Rd -- Green Valley Rd | **QC JOB #:** 12004709
CITY/STATE: Cameron Park, CA | **DATE:** Tue, May 06 2014

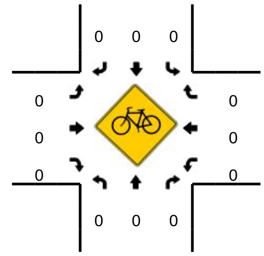
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

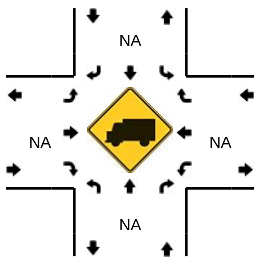


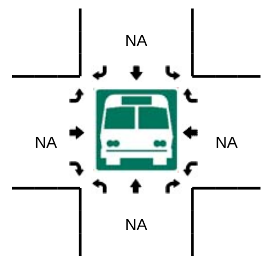












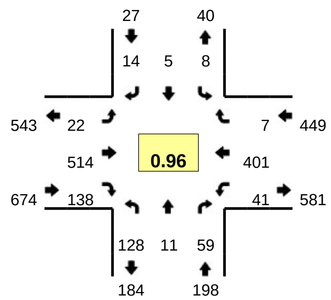
15-Min Count Period Beginning At	Cambridge Rd (Northbound) Left	Thru	Right	U	Cambridge Rd (Southbound) Left	Thru	Right	U	Green Valley Rd (Eastbound) Left	Thru	Right	U	Green Valley Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
6:30 AM	17	1	10	0	5	0	4	0	0	40	8	0	4	87	0	0	176	
6:45 AM	32	0	11	0	5	1	4	0	0	52	4	0	12	104	2	0	227	
7:00 AM	39	0	3	0	3	0	4	0	0	34	2	0	5	123	2	0	215	
7:15 AM	56	2	5	0	1	2	8	0	1	71	21	0	5	160	0	0	332	950
7:30 AM	55	1	15	0	6	4	10	0	2	125	28	0	4	150	0	0	400	1174
7:45 AM	37	1	8	0	3	1	5	0	2	97	13	0	5	120	0	0	292	1239
8:00 AM	35	1	17	0	2	0	7	0	2	71	7	0	4	106	0	0	252	1276
8:15 AM	30	1	12	0	2	0	5	0	1	77	13	0	7	96	0	0	244	1188
8:30 AM	34	0	23	0	2	0	9	0	3	84	9	0	13	105	1	0	283	1071
8:45 AM	25	1	11	0	3	1	1	0	1	88	16	0	16	79	2	0	244	1023
9:00 AM	24	0	12	0	2	1	2	0	0	50	15	0	5	70	0	0	181	952
9:15 AM	20	0	12	0	3	1	1	0	0	49	3	0	8	59	1	0	157	865

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	220	4	60	0	24	16	40	0	8	500	112	0	16	600	0	0	1600
Heavy Trucks	4	0	0		4	0	0		0	8	4		0	8	0		28
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

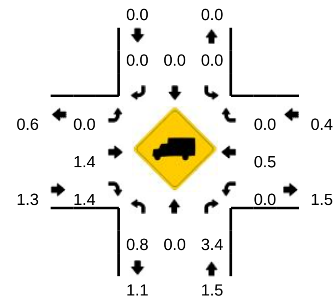
Comments:

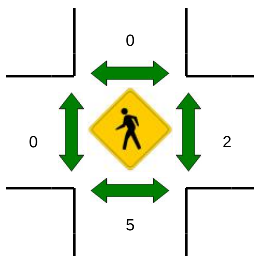
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

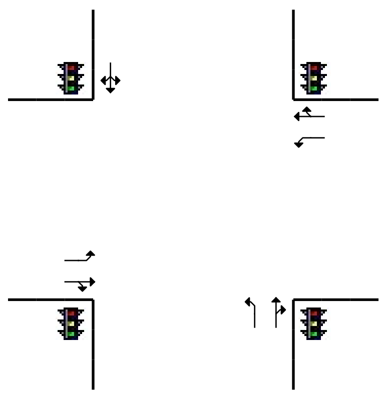
LOCATION: Cambridge Rd -- Green Valley Rd | **QC JOB #:** 12004710
CITY/STATE: Cameron Park, CA | **DATE:** Tue, May 06 2014

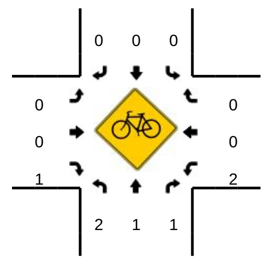


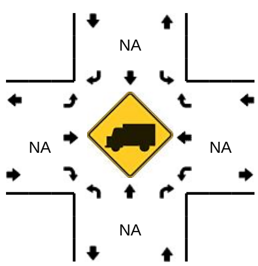
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM

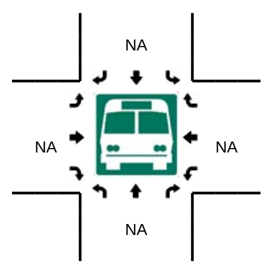












15-Min Count Period Beginning At	Cambridge Rd (Northbound)				Cambridge Rd (Southbound)				Green Valley Rd (Eastbound)				Green Valley Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	21	4	19	0	2	4	4	0	5	115	23	0	13	73	6	0	289	
3:45 PM	21	1	17	0	2	1	1	0	3	115	27	0	15	66	3	0	272	
4:00 PM	19	3	11	0	2	2	2	0	5	132	33	0	10	61	3	0	283	
4:15 PM	13	0	22	0	4	1	3	0	1	134	34	0	10	60	3	0	285	1129
4:30 PM	25	2	12	0	2	0	3	0	6	128	30	0	10	81	2	0	301	1141
4:45 PM	20	1	15	0	1	3	3	0	6	124	31	0	16	65	3	0	288	1157
5:00 PM	36	4	13	0	1	0	9	0	7	140	33	0	5	88	1	0	337	1211
5:15 PM	21	1	16	0	2	1	2	0	3	134	29	0	8	104	3	0	324	1250
5:30 PM	34	3	18	0	2	3	1	0	3	120	39	0	12	100	2	0	337	1286
5:45 PM	37	3	12	0	3	1	2	0	9	120	37	0	16	109	1	0	350	1348
6:00 PM	35	2	23	0	0	4	2	0	3	123	27	0	9	102	3	0	333	1344
6:15 PM	21	2	12	0	2	1	1	0	5	128	32	0	12	60	2	0	278	1298

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	148	12	48	0	12	4	8	0	36	480	148	0	64	436	4	0	1400
Heavy Trucks	4	0	4		0	0	0		0	0	0		0	4	0		12
Pedestrians		4				0				0				0			4
Bicycles	0	0	1		0	0	0		0	0	1		1	0	0		3
Railroad																	
Stopped Buses																	

Comments:

All Traffic Data

(916) 771-8700

El Dorado County
Bicycles on Bank 1
Heavy Vehicles on Bank 2

File Name : 12-7223-003 Bass Lake-Serrano
Site Code : 00000000
Start Date : 5/17/2012
Page No : 1

Groups Printed- Unshifted

	Bass Lake Rd Southbound					Westbound				Bass Lake Rd Northbound					Serrano Pkwy Eastbound							
Start Time	Left	Thr	Rig	Ped	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	0	128	18	0	146	0	0	0	0	28	16	0	0	44	4	0	29	0	33	0	223	223
07:15	0	108	23	0	131	0	0	0	0	26	20	0	0	46	11	0	35	0	46	0	223	223
07:30	0	144	20	0	164	0	0	0	0	30	13	0	0	43	7	0	63	0	70	0	277	277
07:45	0	149	23	0	172	0	0	0	0	22	32	0	0	54	7	0	69	0	76	0	302	302
Total	0	529	84	0	613	0	0	0	0	106	81	0	0	187	29	0	196	0	225	0	1025	1025
08:00	0	107	22	0	129	0	0	0	0	29	36	0	0	65	13	0	42	2	55	2	249	251
08:15	0	104	20	0	124	0	0	0	0	25	19	0	0	44	10	0	51	0	61	0	229	229
08:30	0	93	9	0	102	0	0	0	0	21	14	0	0	35	16	0	37	0	53	0	190	190
08:45	0	76	23	0	99	0	0	0	0	18	26	0	0	44	5	0	40	1	45	1	188	189
Total	0	380	74	0	454	0	0	0	0	93	95	0	0	188	44	0	170	3	214	3	856	859
16:00	0	43	13	0	56	0	0	0	0	33	84	0	0	117	30	0	27	0	57	0	230	230
16:15	0	51	20	0	71	0	0	0	0	36	92	0	0	128	20	0	22	0	42	0	241	241
16:30	0	42	14	0	56	0	0	0	0	45	84	0	0	129	27	0	31	0	58	0	243	243
16:45	0	55	16	0	71	0	0	0	0	42	99	0	0	141	36	0	23	0	59	0	271	271
Total	0	191	63	0	254	0	0	0	0	156	359	0	0	515	113	0	103	0	216	0	985	985
17:00	0	53	10	0	63	0	0	0	0	36	102	0	0	138	16	0	31	0	47	0	248	248
17:15	0	55	14	0	69	0	0	0	0	31	102	0	0	133	30	0	26	0	56	0	258	258
17:30	0	50	14	0	64	0	0	0	0	38	91	0	0	129	29	0	25	0	54	0	247	247
17:45	0	51	19	0	70	0	0	0	0	36	95	0	0	131	26	0	25	0	51	0	252	252
Total	0	209	57	0	266	0	0	0	0	141	390	0	0	531	101	0	107	0	208	0	1005	1005
Grand Total	0	1309	278	0	1587	0	0	0	0	496	925	0	0	1421	287	0	576	3	863	3	3871	3874
Apprch %	0	82.5	17.5			0	0	0		34.9	65.1	0			33.3	0	66.7					
Total %	0	33.8	7.2		41	0	0	0	0	12.8	23.9	0		36.7	7.4	0	14.9		22.3	0.1	99.9	

All Traffic Data

(916) 771-8700

El Dorado County
Bicycles on Bank 1
Heavy Vehicles on Bank 2

File Name : 12-7223-003 Bass Lake-Serrano
Site Code : 00000000
Start Date : 5/17/2012
Page No : 2

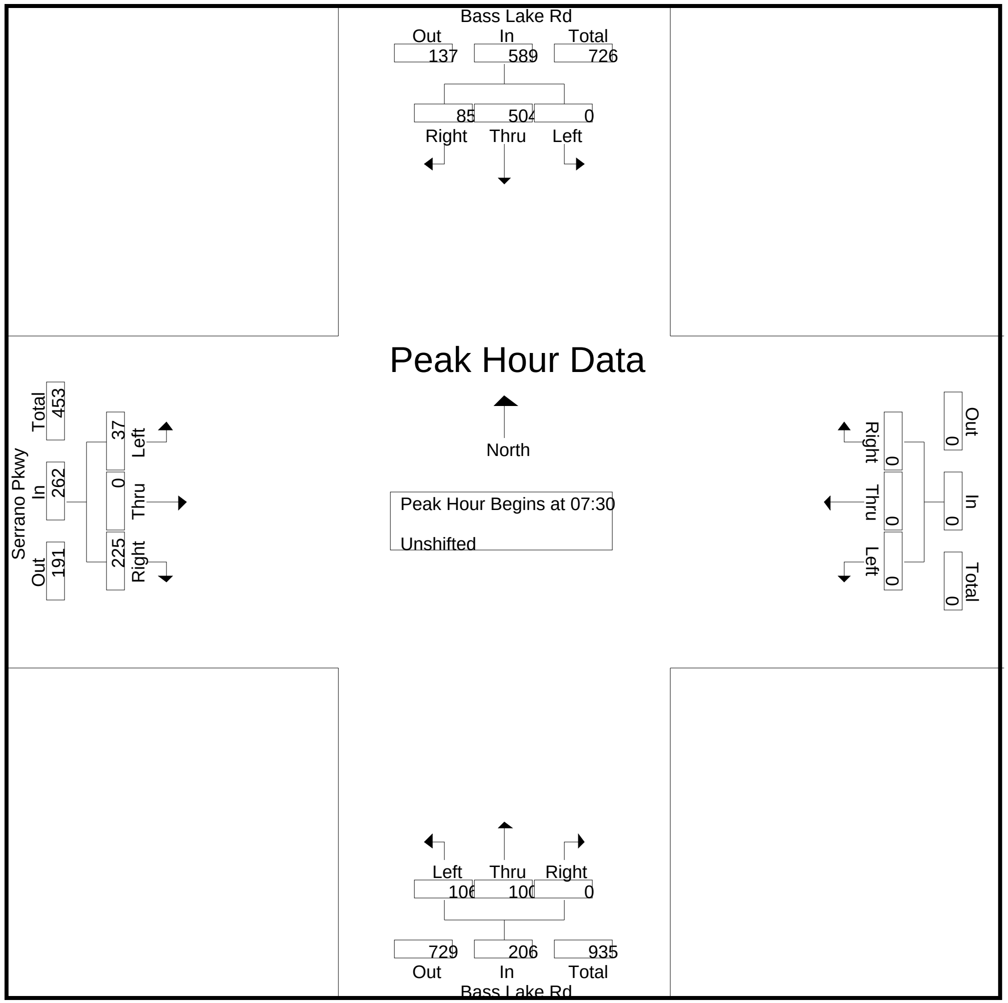
	Bass Lake Rd Southbound				**Westbound**				**Bass Lake Rd Northbound**				**Serrano Pkwy Eastbound**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30																	
07:30	0	144	20	164	0	0	0	0	**30**	13	0	43	7	0	63	70	277
07:45	0	**149**	**23**	**172**	0	0	0	0	22	32	0	54	7	0	**69**	**76**	**302**
08:00	0	107	22	129	0	0	0	0	29	**36**	0	**65**	**13**	0	42	55	249
08:15	0	104	20	124	0	0	0	0	25	19	0	44	10	0	51	61	229
Total Volume	0	504	85	589	0	0	0	0	106	100	0	206	37	0	225	262	1057
% App. Total	0	85.6	14.4		0	0	0		51.5	48.5	0		14.1	0	85.9		
PHF	.000	.846	.924	.856	.000	.000	.000	.000	.883	.694	.000	.792	.712	.000	.815	.862	.875

All Traffic Data

(916) 771-8700

El Dorado County
Bicycles on Bank 1
Heavy Vehicles on Bank 2

File Name : 12-7223-003 Bass Lake-Serrano
Site Code : 00000000
Start Date : 5/17/2012
Page No : 3



All Traffic Data

(916) 771-8700

El Dorado County
Bicycles on Bank 1
Heavy Vehicles on Bank 2

File Name : 12-7223-003 Bass Lake-Serrano
Site Code : 00000000
Start Date : 5/17/2012
Page No : 4

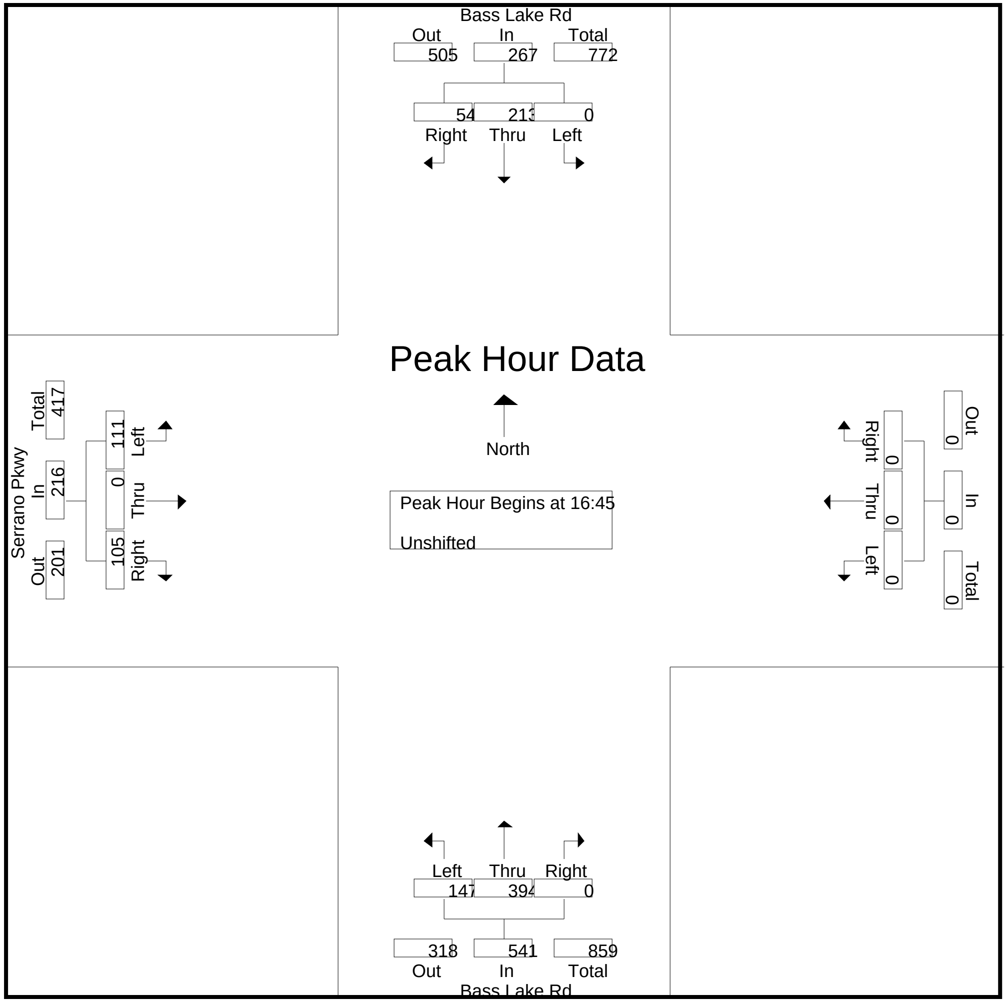
	Bass Lake Rd Southbound				**Westbound**				**Bass Lake Rd Northbound**				**Serrano Pkwy Eastbound**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	0	**55**	**16**	**71**	0	0	0	0	**42**	99	0	**141**	**36**	0	23	**59**	**271**
17:00	0	53	10	63	0	0	0	0	36	**102**	0	138	16	0	**31**	47	248
17:15	0	55	14	69	0	0	0	0	31	102	0	133	30	0	26	56	258
17:30	0	50	14	64	0	0	0	0	38	91	0	129	29	0	25	54	247
Total Volume	0	213	54	267	0	0	0	0	147	394	0	541	111	0	105	216	1024
% App. Total	0	79.8	20.2		0	0	0		27.2	72.8	0		51.4	0	48.6		
PHF	.000	.968	.844	.940	.000	.000	.000	.000	.875	.966	.000	.959	.771	.000	.847	.915	.945

All Traffic Data

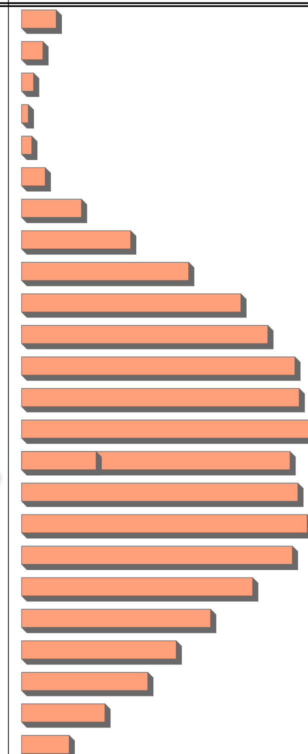
(916) 771-8700

El Dorado County
Bicycles on Bank 1
Heavy Vehicles on Bank 2

File Name : 12-7223-003 Bass Lake-Serrano
Site Code : 00000000
Start Date : 5/17/2012
Page No : 5



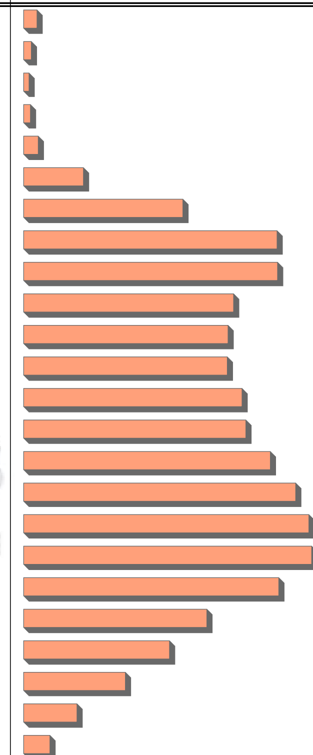
LOCATION: 1. Green Valley Rd from County Line to Sophia Pkwy
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA
QC JOB #: 12004733
DIRECTION: EB/WB
DATE: May 02 2014 - May 04 2014

Start Time	Mon	Tue	Wed	Thu	Fri 02-May-14	Average Weekday Hourly Traffic	Sat 03-May-14	Sun 04-May-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM						**0**	187	229	208	
1:00 AM						0	118	138	128	
2:00 AM						0	62	81	72	
3:00 AM						0	40	40	40	
4:00 AM						0	69	53	61	
5:00 AM						0	163	121	142	
6:00 AM						0	422	298	360	
7:00 AM						0	795	516	656	
8:00 AM						0	1127	883	1005	
9:00 AM						0	1428	1209	1319	
10:00 AM						0	1587	1375	1481	
11:00 AM						0	**1734**	**1554**	**1644**	
12:00 PM						0	1694	**1646**	1670	
1:00 PM						0	**1824**	1636	**1730**	
2:00 PM					448	0 / 448	1668	1561	1615 / 448	
3:00 PM					1811	1811	1673	1502	1662	
4:00 PM					**1927**	**1927**	1638	1588	1718	
5:00 PM					1769	1769	1691	1427	1629	
6:00 PM					1661	1661	1384	1124	1390	
7:00 PM					1330	1330	1132	950	1137	
8:00 PM					1041	1041	943	806	930	
9:00 PM					919	919	837	520	759	
10:00 PM					570	570	629	305	501	
11:00 PM					328	328	403	128	286	
Day Total					11804	11804	23248	19690	22591	
% Weekday Average					100.0%					
% Week Average					52.3%	52.3%	102.9%	87.2%		
AM Peak Volume						12:00 AM 0	11:00 AM 1734	11:00 AM 1554	11:00 AM 1644	
PM Peak Volume					4:00 PM 1927	4:00 PM 1927	1:00 PM 1824	12:00 PM 1646	1:00 PM 1730	

Comments:

LOCATION: 1. Green Valley Rd from County Line to Sophia Pkwy
QC JOB #: 12004733
SPECIFIC LOCATION: 0 ft from
DIRECTION: EB/WB
CITY/STATE: El Dorado Hills, CA
DATE: May 05 2014 - May 09 2014

Start Time	Mon 05-May-14	Tue 06-May-14	Wed 07-May-14	Thu 08-May-14	Fri 09-May-14	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM	84	79	93	80	101	87			87	
1:00 AM	45	40	60	58	45	50			50	
2:00 AM	34	28	28	36	51	35			35	
3:00 AM	40	44	50	42	46	44			44	
4:00 AM	92	100	104	87	94	95			95	
5:00 AM	410	389	371	395	379	389			389	
6:00 AM	1033	1067	1049	1059	974	1036			1036	
7:00 AM	**1660**	**1722**	1549	**1766**	1547	1649			1649	
8:00 AM	1588	1614	**1757**	1695	**1604**	**1652**			**1652**	
9:00 AM	1338	1366	1306	1380	1439	1366			1366	
10:00 AM	1277	1266	1364	1308	1434	1330			1330	
11:00 AM	1375	1383	1447	1395	1026	1325			1325	
12:00 PM	1376	1395	1510	1401		1421			1421	
1:00 PM	1460	1392	1514	1417		1446			1446	
2:00 PM	1617	1592	1624	1586		1605			1605	
3:00 PM	1692	1798	1833	1755		1770			1770	
4:00 PM	1804	**1887**	1861	1871		1856			1856	
5:00 PM	**1828**	1866	**1890**	**1913**		**1874**			**1874**	
6:00 PM	1627	1659	1755	1599		1660			1660	
7:00 PM	1115	1220	1210	1223		1192			1192	
8:00 PM	798	1017	1025	954		949			949	
9:00 PM	579	683	708	678		662			662	
10:00 PM	296	337	327	426		347			347	
11:00 PM	149	165	179	192		171			171	
Day Total	23317	24109	24614	24316	8740	24011			24011	
% Weekday Average	197.5%	100.4%	102.5%	101.3%	36.4%					
% Week Average	103.2%	100.4%	102.5%	101.3%	36.4%	100.0%				
AM Peak	7:00 AM	7:00 AM	8:00 AM	7:00 AM	8:00 AM	8:00 AM			8:00 AM	
Volume	1660	1722	1757	1766	1604	1652			1652	
PM Peak	5:00 PM	4:00 PM	5:00 PM	5:00 PM		5:00 PM			5:00 PM	
Volume	1828	1887	1890	1913		1874			1874	



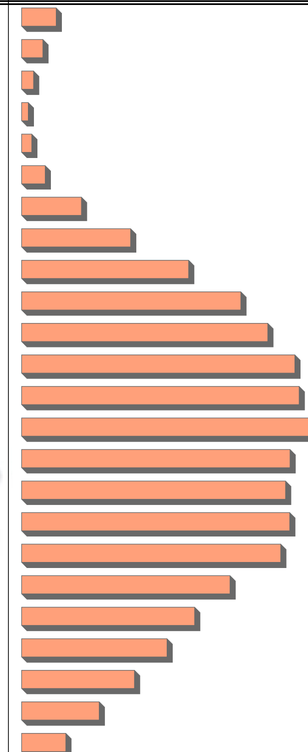
Comments:

SUMMARY - Tube Count - Volume Data (Weekend)

LOCATION: 1. Green Valley Rd from County Line to Sophia Pkwy
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004733
DIRECTION: EB/WB
DATE: May 03 2014 - May 04 2014

Start Time			Sat 03-May-14	Sun 04-May-14	Average Weekend Hourly Traffic	Average Weekend Profile
12:00 AM			187	229	208	
1:00 AM			118	138	128	
2:00 AM			62	81	72	
3:00 AM			40	40	40	
4:00 AM			69	53	61	
5:00 AM			163	121	142	
6:00 AM			422	298	360	
7:00 AM			795	516	656	
8:00 AM			1127	883	1005	
9:00 AM			1428	1209	1319	
10:00 AM			1587	1375	1481	
11:00 AM			**1734**	**1554**	**1644**	
12:00 PM			1694	**1646**	1670	
1:00 PM			**1824**	1636	**1730**	
2:00 PM			1668	1561	1615	
3:00 PM			1673	1502	1588	
4:00 PM			1638	1588	1613	
5:00 PM			1691	1427	1559	
6:00 PM			1384	1124	1254	
7:00 PM			1132	950	1041	
8:00 PM			943	806	875	
9:00 PM			837	520	679	
10:00 PM			629	305	467	
11:00 PM			403	128	266	
Day Total			23248	19690	21473	
% Weekday Average						
% Week Average			108.3%	91.7%		
AM Peak Volume			11:00 AM 1734	11:00 AM 1554	11:00 AM 1644	
PM Peak Volume			1:00 PM 1824	12:00 PM 1646	1:00 PM 1730	



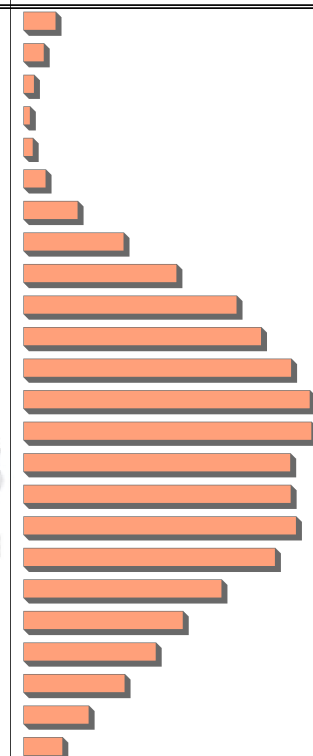
Comments:

LOCATION: 2. Sophia Pkwy to Francisco Dr
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004734
DIRECTION: EB/WB
DATE: May 03 2014 - May 04 2014

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat 03-May-14	Sun 04-May-14	Average Week Hourly Traffic
12:00 AM						**0**	183	242	213
1:00 AM						0	119	151	135
2:00 AM						0	54	86	70
3:00 AM						0	40	46	43
4:00 AM						0	68	56	62
5:00 AM						0	165	128	147
6:00 AM						0	418	300	359
7:00 AM						0	801	524	663
8:00 AM						0	1187	838	1013
9:00 AM						0	1621	1200	1411
10:00 AM						0	1744	1402	1573
11:00 AM						0	**1947**	**1597**	**1772**
12:00 PM						**0**	2062	**1728**	1895
1:00 PM						0	**2087**	1724	**1906**
2:00 PM						0	1837	1694	1766
3:00 PM						0	1915	1622	1769
4:00 PM						0	1963	1644	1804
5:00 PM						0	1855	1474	1665
6:00 PM						0	1473	1148	1311
7:00 PM						0	1167	943	1055
8:00 PM						0	990	762	876
9:00 PM						0	829	510	670
10:00 PM						0	575	288	432
11:00 PM						0	390	125	258
Day Total						0	25490	20232	22868
% Weekday Average									
% Week Average						0.0%	111.5%	88.5%	
AM Peak Volume						12:00 AM 0	11:00 AM 1947	11:00 AM 1597	11:00 AM 1772
PM Peak Volume						12:00 PM 0	1:00 PM 2087	12:00 PM 1728	1:00 PM 1906

Average Week Profile

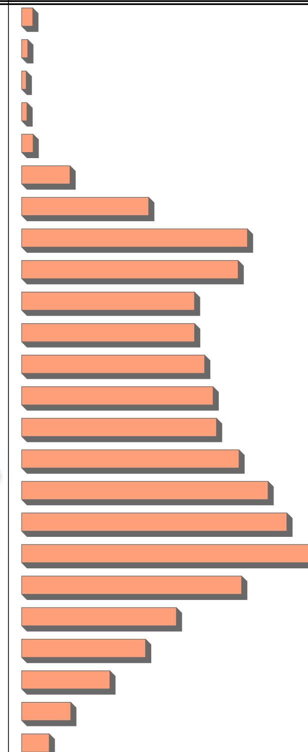


Comments:

LOCATION: 2. Sophia Pkwy to Francisco Dr
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004734
DIRECTION: EB/WB
DATE: May 05 2014 - May 09 2014

Start Time	Mon 05-May-14	Tue 06-May-14	Wed 07-May-14	Thu 08-May-14	Fri 09-May-14	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM	85	76	94	76	110	88			88	
1:00 AM	45	38	58	56	44	48			48	
2:00 AM	34	27	33	37	49	36			36	
3:00 AM	37	39	53	43	40	42			42	
4:00 AM	88	99	97	83	90	91			91	
5:00 AM	416	387	356	385	374	384			384	
6:00 AM	1007	1006	1063	1026	946	1010			1010	
7:00 AM	**1747**	**1881**	**1806**	**1816**	**1727**	**1795**			**1795**	
8:00 AM	1744	1672	1804	1707	1676	1721			1721	
9:00 AM	1292	1399	1314	1375	1492	1374			1374	
10:00 AM	1302	1341	1402	1380	1451	1375			1375	
11:00 AM	1411	1389	1480	1427	1569	1455			1455	
12:00 PM	1504	1423	1534	1444	1707	1522			1522	
1:00 PM	1526	1465	1545	1465	1742	1549			1549	
2:00 PM	1665	1652	1689	1723	1909	1728			1728	
3:00 PM	1787	1889	1943	1899	2275	1959			1959	
4:00 PM	2063	2024	2053	2129	2275	2109			2109	
5:00 PM	**2262**	**2265**	**2214**	**2329**	**2401**	**2294**			**2294**	
6:00 PM	1670	1672	1787	1816	1798	1749			1749	
7:00 PM	1156	1247	1230	1218	1297	1230			1230	
8:00 PM	848	1007	984	986	1098	985			985	
9:00 PM	569	686	696	679	877	701			701	
10:00 PM	287	339	314	407	601	390			390	
11:00 PM	151	166	178	195	407	219			219	
Day Total	24696	25189	25727	25701	27955	25854			25854	
% Weekday Average		97.4%	99.5%	99.4%	108.1%					
% Week Average	108.0%	97.4%	99.5%	99.4%	108.1%	100.0%				
AM Peak Volume	7:00 AM 1747	7:00 AM 1881	7:00 AM 1806	7:00 AM 1816	7:00 AM 1727	7:00 AM 1795			7:00 AM 1795	
PM Peak Volume	5:00 PM 2262	5:00 PM 2265	5:00 PM 2214	5:00 PM 2329	5:00 PM 2401	5:00 PM 2294			5:00 PM 2294	



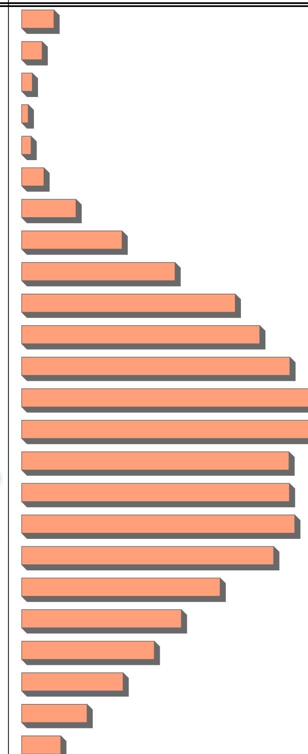
Comments:

SUMMARY - Tube Count - Volume Data (Weekend)

LOCATION: 2. Sophia Pkwy to Francisco Dr
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004734
DIRECTION: EB/WB
DATE: May 03 2014 - May 04 2014

Start Time	Sat 03-May-14	Sun 04-May-14	Average Weekend Hourly Traffic	Average Weekend Profile
12:00 AM	183	242	213	
1:00 AM	119	151	135	
2:00 AM	54	86	70	
3:00 AM	40	46	43	
4:00 AM	68	56	62	
5:00 AM	165	128	147	
6:00 AM	418	300	359	
7:00 AM	801	524	663	
8:00 AM	1187	838	1013	
9:00 AM	1621	1200	1411	
10:00 AM	1744	1402	1573	
11:00 AM	**1947**	**1597**	**1772**	
12:00 PM	2062	**1728**	1895	
1:00 PM	**2087**	1724	**1906**	
2:00 PM	1837	1694	1766	
3:00 PM	1915	1622	1769	
4:00 PM	1963	1644	1804	
5:00 PM	1855	1474	1665	
6:00 PM	1473	1148	1311	
7:00 PM	1167	943	1055	
8:00 PM	990	762	876	
9:00 PM	829	510	670	
10:00 PM	575	288	432	
11:00 PM	390	125	258	
Day Total	25490	20232	22868	
% Weekday Average				
% Week Average	111.5%	88.5%		
AM Peak Volume	11:00 AM 1947	11:00 AM 1597	11:00 AM 1772	
PM Peak Volume	1:00 PM 2087	12:00 PM 1728	1:00 PM 1906	



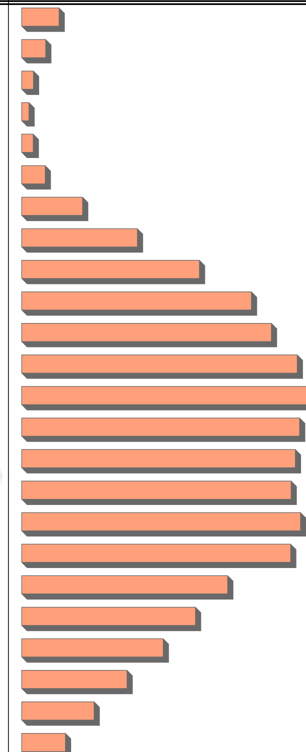
Comments:

Type of report: Tube Count - Volume Data

LOCATION: 3. Francisco Dr to El Dorado Hills Blvd/Salmon Falls Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004735
DIRECTION: EB/WB
DATE: May 03 2014 - May 04 2014

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat 03-May-14	Sun 04-May-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM						**0**	128	189	159	
1:00 AM						0	86	117	102	
2:00 AM						0	40	60	50	
3:00 AM						0	36	25	31	
4:00 AM						0	44	54	49	
5:00 AM						0	102	98	100	
6:00 AM						0	283	235	259	
7:00 AM						0	591	392	492	
8:00 AM						0	903	609	756	
9:00 AM						0	1095	858	977	
10:00 AM						0	1181	942	1062	
11:00 AM						0	**1222**	**1121**	**1172**	
12:00 PM						**0**	**1275**	**1179**	**1227**	
1:00 PM						0	1204	1159	1182	
2:00 PM						0	1217	1110	1164	
3:00 PM						0	1171	1120	1146	
4:00 PM						0	1257	1115	1186	
5:00 PM						0	1257	1030	1144	
6:00 PM						0	960	791	876	
7:00 PM						0	790	687	739	
8:00 PM						0	639	565	602	
9:00 PM						0	519	376	448	
10:00 PM						0	403	213	308	
11:00 PM						0	287	85	186	
Day Total						0	16690	14130	15417	
% Weekday Average										
% Week Average						0.0%	108.3%	91.7%		
AM Peak						12:00 AM	11:00 AM	11:00 AM	11:00 AM	
Volume						0	1222	1121	1172	
PM Peak						12:00 PM	12:00 PM	12:00 PM	12:00 PM	
Volume						0	1275	1179	1227	

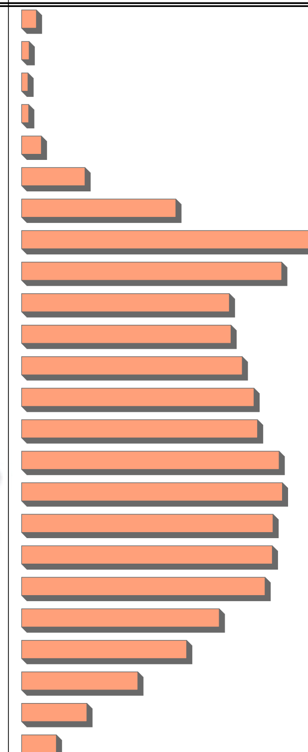


Comments:

LOCATION: 3. Francisco Dr to El Dorado Hills Blvd/Salmon Falls Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004735
DIRECTION: EB/WB
DATE: May 05 2014 - May 09 2014

Start Time	Mon 05-May-14	Tue 06-May-14	Wed 07-May-14	Thu 08-May-14	Fri 09-May-14	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM	50	51	75	63	75	63			63	
1:00 AM	31	22	41	39	28	32			32	
2:00 AM	23	22	26	28	35	27			27	
3:00 AM	29	29	35	33	26	30			30	
4:00 AM	80	88	89	86	79	84			84	
5:00 AM	291	274	245	285	255	270			270	
6:00 AM	625	646	701	659	655	657			657	
7:00 AM	**1187**	**1251**	**1237**	**1272**	**1177**	**1225**			**1225**	
8:00 AM	1121	1091	1143	1110	1077	1108			1108	
9:00 AM	840	838	903	896	948	885			885	
10:00 AM	863	896	869	878	955	892			892	
11:00 AM	979	883	935	913	989	940			940	
12:00 PM	996	955	1028	928	1041	990			990	
1:00 PM	990	979	1010	934	1113	1005			1005	
2:00 PM	1099	1093	1016	1089	**1190**	1097			1097	
3:00 PM	1034	**1094**	**1199**	1090	1137	**1111**			**1111**	
4:00 PM	1134	1075	1052	999	1095	1071			1071	
5:00 PM	**1156**	1037	1027	**1103**	1016	1068			1068	
6:00 PM	946	1033	1080	1042	1084	1037			1037	
7:00 PM	806	872	854	830	850	842			842	
8:00 PM	625	734	696	650	808	703			703	
9:00 PM	404	469	467	477	657	495			495	
10:00 PM	202	262	223	256	445	278			278	
11:00 PM	108	124	119	120	268	148			148	
Day Total	15619	15818	16070	15780	17003	16058			16058	
% Weekday Average		98.5%	100.1%	98.3%	105.9%					
% Week Average	101.3%	98.5%	100.1%	98.3%	105.9%	100.0%				
AM Peak Volume	7:00 AM 1187	7:00 AM 1251	7:00 AM 1237	7:00 AM 1272	7:00 AM 1177	7:00 AM 1225			7:00 AM 1225	
PM Peak Volume	5:00 PM 1156	3:00 PM 1094	3:00 PM 1199	5:00 PM 1103	2:00 PM 1190	3:00 PM 1111			3:00 PM 1111	



Comments:

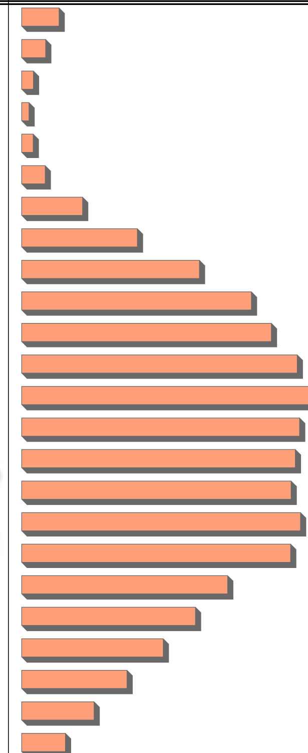
SUMMARY - Tube Count - Volume Data (Weekend)

LOCATION: 3. Francisco Dr to El Dorado Hills Blvd/Salmon Falls Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004735
DIRECTION: EB/WB
DATE: May 03 2014 - May 04 2014

Start Time	Sat 03-May-14	Sun 04-May-14	Average Weekend Hourly Traffic
12:00 AM	128	189	159
1:00 AM	86	117	102
2:00 AM	40	60	50
3:00 AM	36	25	31
4:00 AM	44	54	49
5:00 AM	102	98	100
6:00 AM	283	235	259
7:00 AM	591	392	492
8:00 AM	903	609	756
9:00 AM	1095	858	977
10:00 AM	1181	942	1062
11:00 AM	**1222**	**1121**	**1172**
12:00 PM	**1275**	**1179**	**1227**
1:00 PM	1204	1159	1182
2:00 PM	1217	1110	1164
3:00 PM	1171	1120	1146
4:00 PM	1257	1115	1186
5:00 PM	1257	1030	1144
6:00 PM	960	791	876
7:00 PM	790	687	739
8:00 PM	639	565	602
9:00 PM	519	376	448
10:00 PM	403	213	308
11:00 PM	287	85	186
Day Total	16690	14130	15417
% Weekday Average			
% Week Average	108.3%	91.7%	
AM Peak Volume	11:00 AM 1222	11:00 AM 1121	11:00 AM 1172
PM Peak Volume	12:00 PM 1275	12:00 PM 1179	12:00 PM 1227

Average Weekend Profile



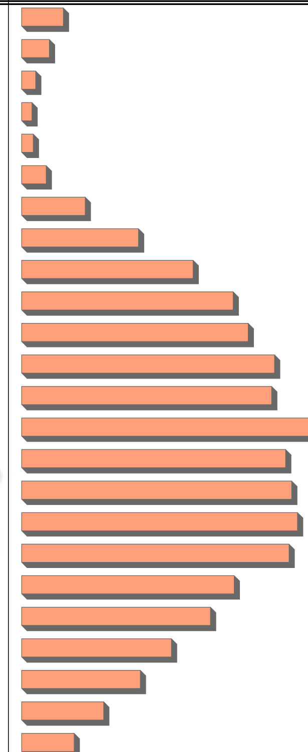
Comments:

LOCATION: 4. El Dorado Hills Blvd/Salmon Falls Rd to Silva Valley Pkwy/Allegheny Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004736
DIRECTION: EB/WB
DATE: May 03 2014 - May 04 2014

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat 03-May-14	Sun 04-May-14	Average Week Hourly Traffic
12:00 AM						**0**	120	195	158
1:00 AM						0	81	128	105
2:00 AM						0	40	66	53
3:00 AM						0	41	37	39
4:00 AM						0	37	51	44
5:00 AM						0	86	99	93
6:00 AM						0	256	225	241
7:00 AM						0	502	384	443
8:00 AM						0	749	551	650
9:00 AM						0	862	742	802
10:00 AM						0	949	769	859
11:00 AM						0	**963**	**955**	**959**
12:00 PM						**0**	945	950	948
1:00 PM						0	**1154**	**1034**	**1094**
2:00 PM						0	1006	996	1001
3:00 PM						0	1049	999	1024
4:00 PM						0	1080	1011	1046
5:00 PM						0	1082	946	1014
6:00 PM						0	874	737	806
7:00 PM						0	749	682	716
8:00 PM						0	612	523	568
9:00 PM						0	520	380	450
10:00 PM						0	406	216	311
11:00 PM						0	305	92	199
Day Total						0	14468	12768	13623
% Weekday Average									
% Week Average						0.0%	106.2%	93.7%	
AM Peak Volume						12:00 AM 0	11:00 AM 963	11:00 AM 955	11:00 AM 959
PM Peak Volume						12:00 PM 0	1:00 PM 1154	1:00 PM 1034	1:00 PM 1094

Average Week Profile



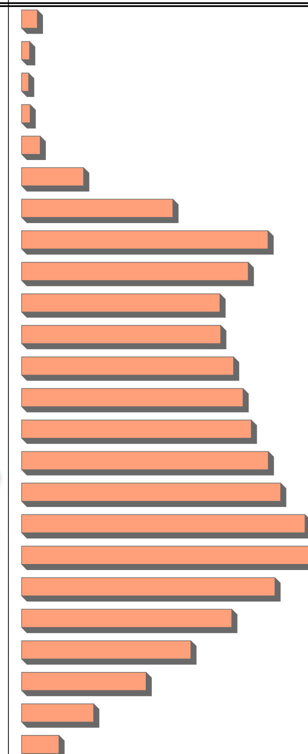
Comments:

LOCATION: 4. El Dorado Hills Blvd/Salmon Falls Rd to Silva Valley Pkwy/Allegheny Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004736
DIRECTION: EB/WB
DATE: May 05 2014 - May 09 2014

Start Time	Mon 05-May-14	Tue 06-May-14	Wed 07-May-14	Thu 08-May-14	Fri 09-May-14	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic
12:00 AM	53	54	67	61	71	61			61
1:00 AM	28	28	36	37	26	31			31
2:00 AM	24	25	28	26	34	27			27
3:00 AM	32	29	41	36	28	33			33
4:00 AM	64	85	72	72	69	72			72
5:00 AM	266	242	221	251	223	241			241
6:00 AM	555	611	631	575	570	588			588
7:00 AM	**914**	**986**	973	**967**	**949**	**958**			**958**
8:00 AM	871	846	**974**	897	815	881			881
9:00 AM	741	738	812	775	791	771			771
10:00 AM	735	755	770	779	831	774			774
11:00 AM	864	746	828	827	855	824			824
12:00 PM	856	842	900	872	836	861			861
1:00 PM	906	845	923	815	978	893			893
2:00 PM	990	918	996	923	966	959			959
3:00 PM	966	1058	1054	1025	934	1007			1007
4:00 PM	1121	1029	1051	**1150**	**1159**	1102			1102
5:00 PM	**1132**	**1185**	**1063**	1110	1101	**1118**			**1118**
6:00 PM	952	956	1043	994	979	985			985
7:00 PM	774	796	840	848	828	817			817
8:00 PM	570	694	646	627	751	658			658
9:00 PM	378	458	468	469	645	484			484
10:00 PM	209	258	222	253	456	280			280
11:00 PM	107	127	112	110	268	145			145
Day Total	14108	14311	14771	14499	15163	14570			14570
% Weekday Average		98.2%	101.4%	99.5%	104.1%				
% Week Average	103.6%	98.2%	101.4%	99.5%	104.1%	100.0%			
AM Peak	7:00 AM	7:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM			7:00 AM
Volume	914	986	974	967	949	958			958
PM Peak	5:00 PM	5:00 PM	5:00 PM	4:00 PM	4:00 PM	5:00 PM			5:00 PM
Volume	1132	1185	1063	1150	1159	1118			1118

Average Week Profile



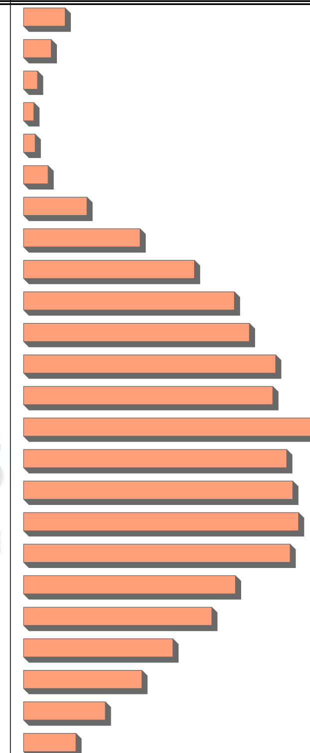
Comments:

LOCATION: 4. El Dorado Hills Blvd/Salmon Falls Rd to Silva Valley Pkwy/Allegheny Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004736
DIRECTION: EB/WB
DATE: May 03 2014 - May 04 2014

Start Time	Sat 03-May-14	Sun 04-May-14	Average Weekend Hourly Traffic
12:00 AM	120	195	158
1:00 AM	81	128	105
2:00 AM	40	66	53
3:00 AM	41	37	39
4:00 AM	37	51	44
5:00 AM	86	99	93
6:00 AM	256	225	241
7:00 AM	502	384	443
8:00 AM	749	551	650
9:00 AM	862	742	802
10:00 AM	949	769	859
11:00 AM	**963**	**955**	**959**
12:00 PM	945	950	948
1:00 PM	**1154**	**1034**	**1094**
2:00 PM	1006	996	1001
3:00 PM	1049	999	1024
4:00 PM	1080	1011	1046
5:00 PM	1082	946	1014
6:00 PM	874	737	806
7:00 PM	749	682	716
8:00 PM	612	523	568
9:00 PM	520	380	450
10:00 PM	406	216	311
11:00 PM	305	92	199
Day Total	14468	12768	13623
% Weekday Average			
% Week Average	106.2%	93.7%	
AM Peak Volume	11:00 AM 963	11:00 AM 955	11:00 AM 959
PM Peak Volume	1:00 PM 1154	1:00 PM 1034	1:00 PM 1094

Average Weekend Profile

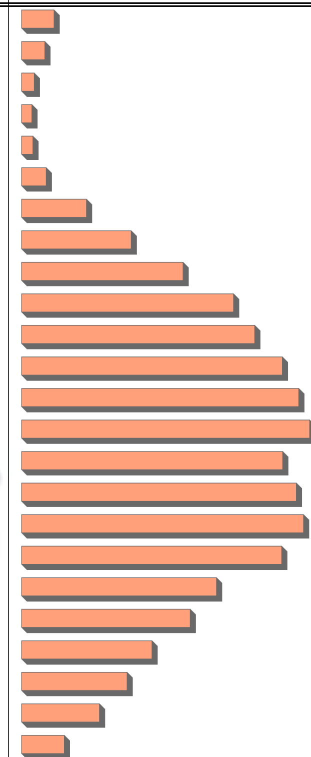


Comments:

LOCATION: 5. Silva Valley Pkwy/Allegheny Rd to Malcolm Dixon Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004737
DIRECTION: EB/WB
DATE: May 03 2014 - May 04 2014

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat 03-May-14	Sun 04-May-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM						**0**	81	108	95	
1:00 AM						0	60	76	68	
2:00 AM						0	34	40	37	
3:00 AM						0	34	26	30	
4:00 AM						0	30	35	33	
5:00 AM						0	69	74	72	
6:00 AM						0	183	197	190	
7:00 AM						0	347	294	321	
8:00 AM						0	515	431	473	
9:00 AM						0	703	539	621	
10:00 AM						0	770	595	683	
11:00 AM						0	**799**	**729**	**764**	
12:00 PM						**0**	885	739	812	
1:00 PM						0	**954**	733	**844**	
2:00 PM						0	776	753	765	
3:00 PM						0	848	**762**	805	
4:00 PM						0	942	709	826	
5:00 PM						0	834	690	762	
6:00 PM						0	620	521	571	
7:00 PM						0	527	461	494	
8:00 PM						0	411	353	382	
9:00 PM						0	349	268	309	
10:00 PM						0	289	167	228	
11:00 PM						0	188	62	125	
Day Total						0	11248	9362	10310	
% Weekday Average										
% Week Average						0.0%	109.1%	90.8%		
AM Peak						12:00 AM	11:00 AM	11:00 AM	11:00 AM	
Volume						0	799	729	764	
PM Peak						12:00 PM	1:00 PM	3:00 PM	1:00 PM	
Volume						0	954	762	844	

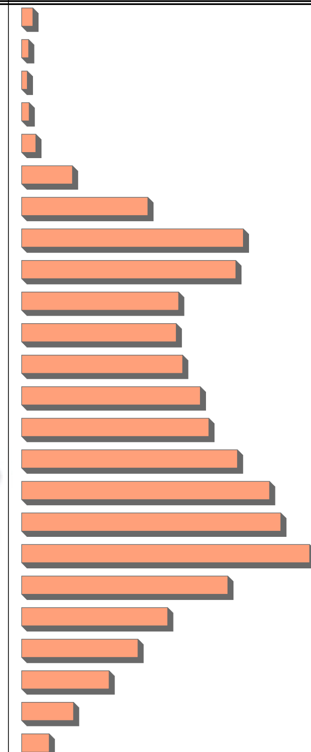


Comments:

LOCATION: 5. Silva Valley Pkwy/Allegheny Rd to Malcolm Dixon Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004737
DIRECTION: EB/WB
DATE: May 05 2014 - May 09 2014

Start Time	Mon 05-May-14	Tue 06-May-14	Wed 07-May-14	Thu 08-May-14	Fri 09-May-14	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM	39	33	46	40	53	42			42	
1:00 AM	24	22	30	34	21	26			26	
2:00 AM	13	18	20	25	30	21			21	
3:00 AM	32	24	36	29	20	28			28	
4:00 AM	45	59	51	56	53	53			53	
5:00 AM	209	187	182	192	179	190			190	
6:00 AM	449	472	521	484	434	472			472	
7:00 AM	**811**	**844**	830	**851**	**810**	**829**			**829**	
8:00 AM	797	795	**850**	814	747	801			801	
9:00 AM	542	548	622	628	594	587			587	
10:00 AM	542	554	592	588	613	578			578	
11:00 AM	653	531	575	616	633	602			602	
12:00 PM	672	651	688	655	672	668			668	
1:00 PM	724	658	722	603	794	700			700	
2:00 PM	797	750	835	793	861	807			807	
3:00 PM	851	906	915	948	1013	927			927	
4:00 PM	912	941	935	1026	1031	969			969	
5:00 PM	**1050**	**1082**	**1099**	**1067**	**1086**	**1077**			**1077**	
6:00 PM	733	739	809	782	791	771			771	
7:00 PM	510	577	548	552	544	546			546	
8:00 PM	387	420	443	408	518	435			435	
9:00 PM	252	320	327	323	415	327			327	
10:00 PM	155	177	154	186	296	194			194	
11:00 PM	81	102	86	84	162	103			103	
Day Total	11280	11410	11916	11784	12370	11753			11753	
% Weekday Average		97.1%	101.4%	100.3%	105.2%					
% Week Average	109.4%	97.1%	101.4%	100.3%	105.2%	100.0%				
AM Peak	7:00 AM	7:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM			7:00 AM	
Volume	811	844	850	851	810	829			829	
PM Peak	5:00 PM	5:00 PM	5:00 PM	5:00 PM	5:00 PM	5:00 PM			5:00 PM	
Volume	1050	1082	1099	1067	1086	1077			1077	

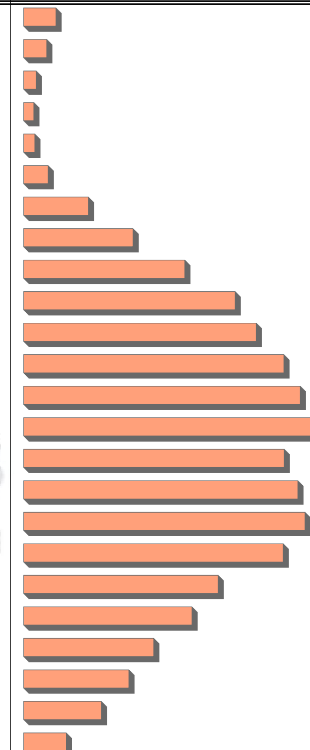


Comments:

LOCATION: 5. Silva Valley Pkwy/Allegheny Rd to Malcolm Dixon Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004737
DIRECTION: EB/WB
DATE: May 03 2014 - May 04 2014

Start Time	Sat 03-May-14	Sun 04-May-14	Average Weekend Hourly Traffic	Average Weekend Profile
12:00 AM	81	108	95	
1:00 AM	60	76	68	
2:00 AM	34	40	37	
3:00 AM	34	26	30	
4:00 AM	30	35	33	
5:00 AM	69	74	72	
6:00 AM	183	197	190	
7:00 AM	347	294	321	
8:00 AM	515	431	473	
9:00 AM	703	539	621	
10:00 AM	770	595	683	
11:00 AM	**799**	**729**	**764**	
12:00 PM	885	739	812	
1:00 PM	**954**	733	**844**	
2:00 PM	776	753	765	
3:00 PM	848	**762**	805	
4:00 PM	942	709	826	
5:00 PM	834	690	762	
6:00 PM	620	521	571	
7:00 PM	527	461	494	
8:00 PM	411	353	382	
9:00 PM	349	268	309	
10:00 PM	289	167	228	
11:00 PM	188	62	125	
Day Total	11248	9362	10310	
% Weekday Average				
% Week Average	109.1%	90.8%		
AM Peak Volume	11:00 AM 799	11:00 AM 729	11:00 AM 764	
PM Peak Volume	1:00 PM 954	3:00 PM 762	1:00 PM 844	

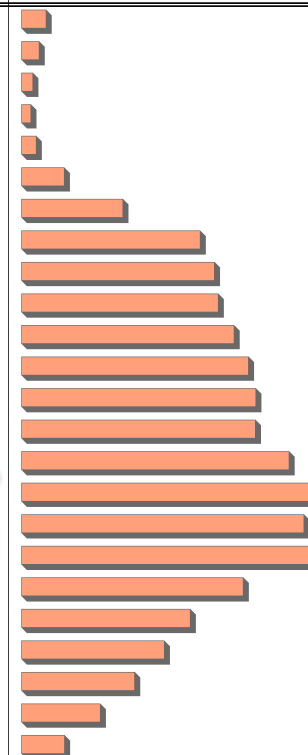


Comments:

LOCATION: 6. Malcolm Dixon Rd to Deer Valley Rd W
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004738
DIRECTION: EB/WB
DATE: May 08 2014 - May 11 2014

Start Time	Mon	Tue	Wed	Thu 08-May-14	Fri 09-May-14	Average Weekday Hourly Traffic	Sat 10-May-14	Sun 11-May-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM				39	48	44	109	98	74	
1:00 AM				36	22	29	75	80	53	
2:00 AM				23	27	25	43	41	34	
3:00 AM				30	19	25	29	35	28	
4:00 AM				57	53	55	37	27	44	
5:00 AM				186	175	181	86	70	129	
6:00 AM				488	419	454	200	119	307	
7:00 AM				**820**	**793**	**807**	347	203	541	
8:00 AM				777	687	732	520	357	585	
9:00 AM				603	631	617	644	505	596	
10:00 AM				557	626	592	749	642	644	
11:00 AM				606	628	617	**814**	**702**	**688**	
12:00 PM				638	667	653	828	705	710	
1:00 PM				583	756	670	808	689	709	
2:00 PM				780	839	810	**894**	**730**	811	
3:00 PM				925	978	952	864	716	871	
4:00 PM				992	989	991	788	655	856	
5:00 PM				**1049**	**1036**	**1043**	767	636	**872**	
6:00 PM				786	779	783	608	515	672	
7:00 PM				510	529	520	487	519	511	
8:00 PM				411	489	450	419	408	432	
9:00 PM				312	375	344	402	284	343	
10:00 PM				188	291	240	295	177	238	
11:00 PM				81	164	123	198	75	130	
Day Total				11477	12020	11757	11011	8988	10878	
% Weekday Average				97.6%	102.2%					
% Week Average				105.5%	110.5%	108.1%	101.2%	82.6%		
AM Peak Volume				7:00 AM 820	7:00 AM 793	7:00 AM 807	11:00 AM 814	11:00 AM 702	11:00 AM 688	
PM Peak Volume				5:00 PM 1049	5:00 PM 1036	5:00 PM 1043	2:00 PM 894	2:00 PM 730	5:00 PM 872	



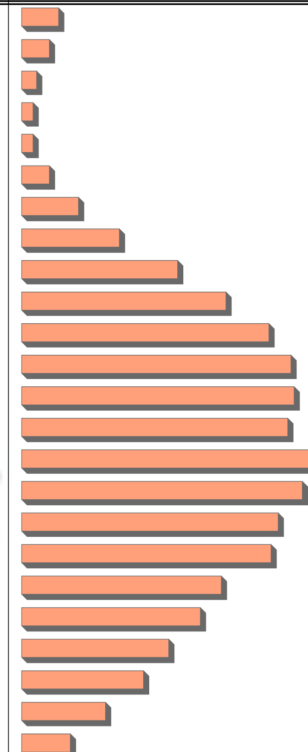
Comments:

LOCATION: 6. Malcolm Dixon Rd to Deer Valley Rd W
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004738
DIRECTION: EB/WB
DATE: May 10 2014 - May 11 2014

Start Time	Sat 10-May-14	Sun 11-May-14	Average Weekend Hourly Traffic
12:00 AM	109	98	104
1:00 AM	75	80	78
2:00 AM	43	41	42
3:00 AM	29	35	32
4:00 AM	37	27	32
5:00 AM	86	70	78
6:00 AM	200	119	160
7:00 AM	347	203	275
8:00 AM	520	357	439
9:00 AM	644	505	575
10:00 AM	749	642	696
11:00 AM	**814**	**702**	**758**
12:00 PM	828	705	767
1:00 PM	808	689	749
2:00 PM	**894**	**730**	**812**
3:00 PM	864	716	790
4:00 PM	788	655	722
5:00 PM	767	636	702
6:00 PM	608	515	562
7:00 PM	487	519	503
8:00 PM	419	408	414
9:00 PM	402	284	343
10:00 PM	295	177	236
11:00 PM	198	75	137
Day Total	11011	8988	10006
% Weekday Average			
% Week Average	110.0%	89.8%	
AM Peak Volume	11:00 AM 814	11:00 AM 702	11:00 AM 758
PM Peak Volume	2:00 PM 894	2:00 PM 730	2:00 PM 812

Average Weekend Profile

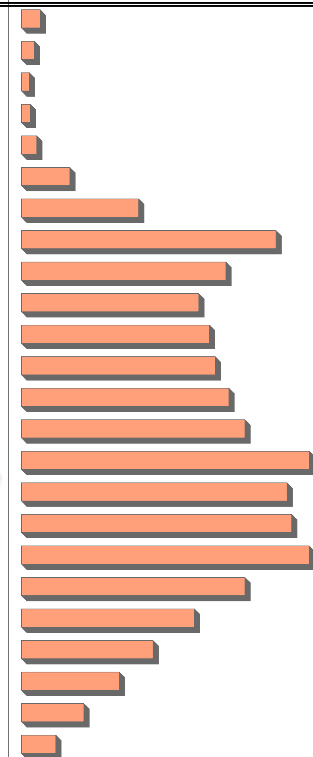


Comments:

LOCATION: 7. Deer Valley Rd W to Bass Lake Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004739
DIRECTION: EB/WB
DATE: May 05 2014 - May 11 2014

Start Time	Mon 05-May-14	Tue 06-May-14	Wed 07-May-14	Thu 08-May-14	Fri 09-May-14	Average Weekday Hourly Traffic	Sat 10-May-14	Sun 11-May-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM	37	27	45	41	46	39	105	90	56	
1:00 AM	23	23	30	34	20	26	65	77	39	
2:00 AM	13	16	15	21	27	18	38	40	24	
3:00 AM	28	24	31	29	16	26	30	34	27	
4:00 AM	44	57	52	55	51	52	39	27	46	
5:00 AM	189	177	157	165	166	171	87	72	145	
6:00 AM	394	437	482	449	387	430	196	113	351	
7:00 AM	**760**	**1131**	**1113**	**793**	**1019**	**963**	319	200	**762**	
8:00 AM	584	742	758	687	676	689	511	329	612	
9:00 AM	471	492	565	529	581	528	606	475	531	
10:00 AM	445	429	595	506	588	513	757	620	563	
11:00 AM	490	429	538	522	609	518	**809**	**663**	580	
12:00 PM	558	486	636	563	653	579	795	658	621	
1:00 PM	584	522	692	599	793	638	796	**696**	669	
2:00 PM	737	750	**982**	988	**1019**	895	**864**	695	**862**	
3:00 PM	828	644	803	839	934	810	833	684	795	
4:00 PM	859	698	797	971	956	856	724	655	809	
5:00 PM	**1000**	**794**	879	**1031**	1007	**942**	723	594	861	
6:00 PM	672	760	692	738	768	726	570	486	669	
7:00 PM	512	588	509	512	544	533	462	501	518	
8:00 PM	346	376	384	398	472	395	374	405	394	
9:00 PM	243	261	277	290	349	284	368	260	293	
10:00 PM	141	156	135	172	265	174	282	160	187	
11:00 PM	74	93	72	80	154	95	176	70	103	
Day Total	10032	10112	11239	11012	12100	10900	10529	8604	10517	
% Weekday Average	92.0%	92.8%	103.1%	101.0%	111.0%					
% Week Average	95.4%	96.1%	106.9%	104.7%	115.1%	103.6%	100.1%	81.8%		
AM Peak	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	11:00 AM	11:00 AM	7:00 AM	
Volume	760	1131	1113	793	1019	963	809	663	762	
PM Peak	5:00 PM	5:00 PM	2:00 PM	5:00 PM	2:00 PM	5:00 PM	2:00 PM	1:00 PM	2:00 PM	
Volume	1000	794	982	1031	1019	942	864	696	862	



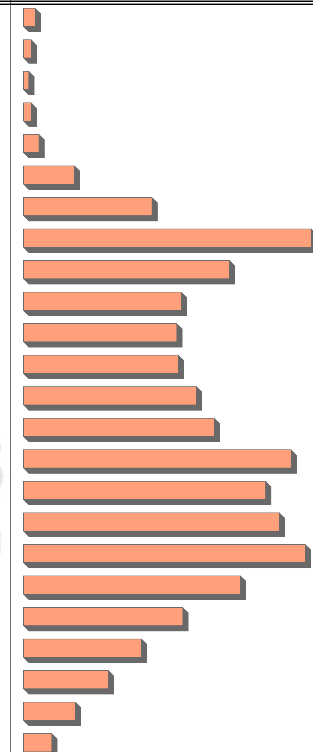
Comments:

LOCATION: 7. Deer Valley Rd W to Bass Lake Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004739
DIRECTION: EB/WB
DATE: May 05 2014 - May 09 2014

Start Time	Mon 05-May-14	Tue 06-May-14	Wed 07-May-14	Thu 08-May-14	Fri 09-May-14	Average Weekday Hourly Traffic
12:00 AM	37	27	45	41	46	39
1:00 AM	23	23	30	34	20	26
2:00 AM	13	16	15	21	27	18
3:00 AM	28	24	31	29	16	26
4:00 AM	44	57	52	55	51	52
5:00 AM	189	177	157	165	166	171
6:00 AM	394	437	482	449	387	430
7:00 AM	**760**	**1131**	**1113**	**793**	**1019**	**963**
8:00 AM	584	742	758	687	676	689
9:00 AM	471	492	565	529	581	528
10:00 AM	445	429	595	506	588	513
11:00 AM	490	429	538	522	609	518
12:00 PM	558	486	636	563	653	579
1:00 PM	584	522	692	599	793	638
2:00 PM	737	750	**982**	988	**1019**	895
3:00 PM	828	644	803	839	934	810
4:00 PM	859	698	797	971	956	856
5:00 PM	**1000**	**794**	879	**1031**	1007	**942**
6:00 PM	672	760	692	738	768	726
7:00 PM	512	588	509	512	544	533
8:00 PM	346	376	384	398	472	395
9:00 PM	243	261	277	290	349	284
10:00 PM	141	156	135	172	265	174
11:00 PM	74	93	72	80	154	95
Day Total	10032	10112	11239	11012	12100	10900
% Weekday Average	92.0%	92.8%	103.1%	101.0%	111.0%	
% Week Average						
AM Peak Volume	7:00 AM 760	7:00 AM 1131	7:00 AM 1113	7:00 AM 793	7:00 AM 1019	7:00 AM 963
PM Peak Volume	5:00 PM 1000	5:00 PM 794	2:00 PM 982	5:00 PM 1031	2:00 PM 1019	5:00 PM 942

Average Weekday Profile

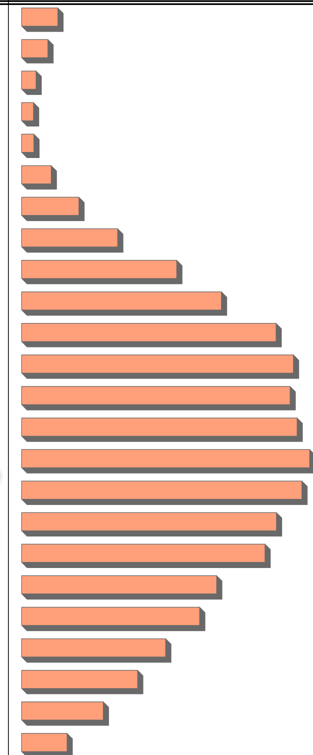


Comments:

SUMMARY - Tube Count - Volume Data (Weekend)

LOCATION: 7. Deer Valley Rd W to Bass Lake Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004739
DIRECTION: EB/WB
DATE: May 10 2014 - May 11 2014

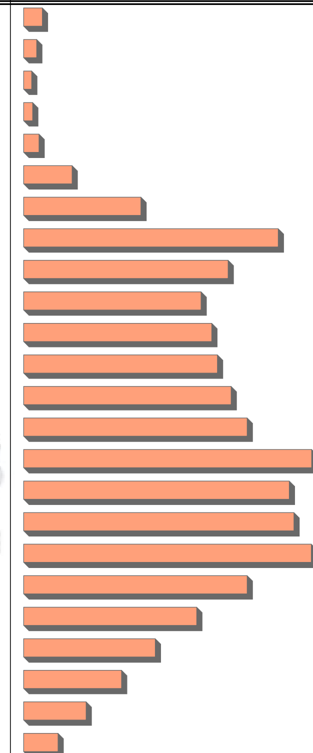
Start Time			Sat 10-May-14	Sun 11-May-14	Average Weekend Hourly Traffic	Average Weekend Profile
12:00 AM			105	90	98	
1:00 AM			65	77	71	
2:00 AM			38	40	39	
3:00 AM			30	34	32	
4:00 AM			39	27	33	
5:00 AM			87	72	80	
6:00 AM			196	113	155	
7:00 AM			319	200	260	
8:00 AM			511	329	420	
9:00 AM			606	475	541	
10:00 AM			757	620	689	
11:00 AM			**809**	**663**	**736**	
12:00 PM			795	658	727	
1:00 PM			796	**696**	746	
2:00 PM			**864**	695	**780**	
3:00 PM			833	684	759	
4:00 PM			724	655	690	
5:00 PM			723	594	659	
6:00 PM			570	486	528	
7:00 PM			462	501	482	
8:00 PM			374	405	390	
9:00 PM			368	260	314	
10:00 PM			282	160	221	
11:00 PM			176	70	123	
Day Total			10529	8604	9573	
% Weekday Average						
% Week Average			110.0%	89.9%		
AM Peak Volume			11:00 AM 809	11:00 AM 663	11:00 AM 736	
PM Peak Volume			2:00 PM 864	1:00 PM 696	2:00 PM 780	

Comments:

LOCATION: 7. Deer Valley Rd W to Bass Lake Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004739
DIRECTION: EB/WB
DATE: May 05 2014 - May 11 2014

Start Time	Mon 05-May-14	Tue 06-May-14	Wed 07-May-14	Thu 08-May-14	Fri 09-May-14	Average Weekday Hourly Traffic	Sat 10-May-14	Sun 11-May-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM	37	27	45	41	46	39	105	90	56	
1:00 AM	23	23	30	34	20	26	65	77	39	
2:00 AM	13	16	15	21	27	18	38	40	24	
3:00 AM	28	24	31	29	16	26	30	34	27	
4:00 AM	44	57	52	55	51	52	39	27	46	
5:00 AM	189	177	157	165	166	171	87	72	145	
6:00 AM	394	437	482	449	387	430	196	113	351	
7:00 AM	**760**	**1131**	**1113**	**793**	**1019**	**963**	319	200	**762**	
8:00 AM	584	742	758	687	676	689	511	329	612	
9:00 AM	471	492	565	529	581	528	606	475	531	
10:00 AM	445	429	595	506	588	513	757	620	563	
11:00 AM	490	429	538	522	609	518	**809**	**663**	580	
12:00 PM	558	486	636	563	653	579	795	658	621	
1:00 PM	584	522	692	599	793	638	796	**696**	669	
2:00 PM	737	750	**982**	988	**1019**	895	**864**	695	**862**	
3:00 PM	828	644	803	839	934	810	833	684	795	
4:00 PM	859	698	797	971	956	856	724	655	809	
5:00 PM	**1000**	**794**	879	**1031**	1007	**942**	723	594	861	
6:00 PM	672	760	692	738	768	726	570	486	669	
7:00 PM	512	588	509	512	544	533	462	501	518	
8:00 PM	346	376	384	398	472	395	374	405	394	
9:00 PM	243	261	277	290	349	284	368	260	293	
10:00 PM	141	156	135	172	265	174	282	160	187	
11:00 PM	74	93	72	80	154	95	176	70	103	
Day Total	10032	10112	11239	11012	12100	10900	10529	8604	10517	
% Weekday Average	92.0%	92.8%	103.1%	101.0%	111.0%					
% Week Average	95.4%	96.1%	106.9%	104.7%	115.1%	103.6%	100.1%	81.8%		
AM Peak	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	11:00 AM	11:00 AM	7:00 AM	
Volume	760	1131	1113	793	1019	963	809	663	762	
PM Peak	5:00 PM	5:00 PM	2:00 PM	5:00 PM	2:00 PM	5:00 PM	2:00 PM	1:00 PM	2:00 PM	
Volume	1000	794	982	1031	1019	942	864	696	862	



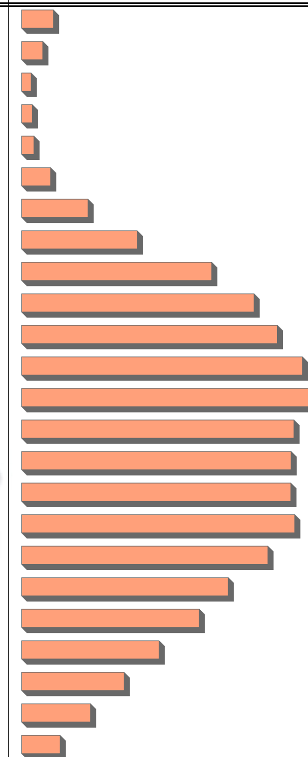
Comments:

Type of report: Tube Count - Volume Data

LOCATION: 8. Bass Lake Rd to Cameron Park Dr
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004740
DIRECTION: EB/WB
DATE: May 03 2014 - May 04 2014

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat 03-May-14	Sun 04-May-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM						**0**	95	85	90	
1:00 AM						0	62	57	60	
2:00 AM						0	29	25	27	
3:00 AM						0	31	29	30	
4:00 AM						0	36	34	35	
5:00 AM						0	93	71	82	
6:00 AM						0	197	178	188	
7:00 AM						0	377	277	327	
8:00 AM						0	613	462	538	
9:00 AM						0	732	584	658	
10:00 AM						0	823	625	724	
11:00 AM						0	**890**	**700**	**795**	
12:00 PM						**0**	**896**	731	**814**	
1:00 PM						0	857	684	771	
2:00 PM						0	807	719	763	
3:00 PM						0	791	**732**	762	
4:00 PM						0	836	710	773	
5:00 PM						0	775	618	697	
6:00 PM						0	627	542	585	
7:00 PM						0	524	481	503	
8:00 PM						0	408	369	389	
9:00 PM						0	347	232	290	
10:00 PM						0	255	135	195	
11:00 PM						0	149	68	109	
Day Total						0	11250	9148	10205	
% Weekday Average										
% Week Average						0.0%	110.2%	89.6%		
AM Peak						12:00 AM	11:00 AM	11:00 AM	11:00 AM	
Volume						0	890	700	795	
PM Peak						12:00 PM	12:00 PM	3:00 PM	12:00 PM	
Volume						0	896	732	814	

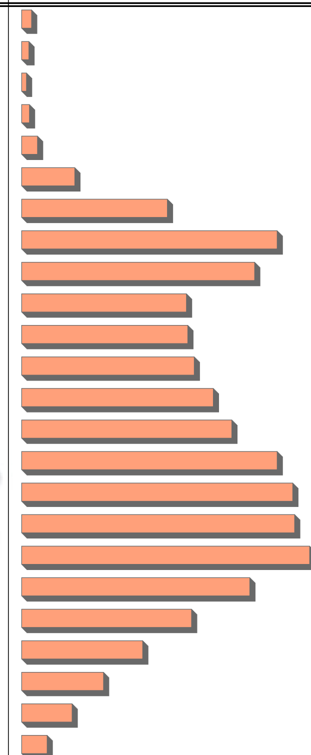


Comments:

LOCATION: 8. Bass Lake Rd to Cameron Park Dr
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004740
DIRECTION: EB/WB
DATE: May 05 2014 - May 09 2014

Start Time	Mon 05-May-14	Tue 06-May-14	Wed 07-May-14	Thu 08-May-14	Fri 09-May-14	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM	31	30	42	37	47	37			37	
1:00 AM	23	30	31	26	23	27			27	
2:00 AM	12	17	18	20	25	18			18	
3:00 AM	39	29	25	30	21	29			29	
4:00 AM	57	66	56	58	56	59			59	
5:00 AM	203	208	193	196	189	198			198	
6:00 AM	520	563	562	549	519	543			543	
7:00 AM	**954**	**971**	**956**	**934**	**943**	**952**			**952**	
8:00 AM	872	866	904	893	807	868			868	
9:00 AM	603	578	630	623	635	614			614	
10:00 AM	576	601	669	586	663	619			619	
11:00 AM	619	627	669	635	667	643			643	
12:00 PM	766	702	705	689	710	714			714	
1:00 PM	843	735	774	701	863	783			783	
2:00 PM	900	903	991	923	1041	952			952	
3:00 PM	942	991	1032	1013	**1074**	1010			1010	
4:00 PM	983	984	1016	1046	1055	1017			1017	
5:00 PM	**1064**	**1076**	**1069**	**1086**	1070	**1073**			**1073**	
6:00 PM	784	920	909	808	830	850			850	
7:00 PM	593	685	646	608	633	633			633	
8:00 PM	408	459	468	452	468	451			451	
9:00 PM	274	282	295	317	359	305			305	
10:00 PM	156	182	162	174	264	188			188	
11:00 PM	80	84	83	89	139	95			95	
Day Total	12302	12589	12905	12493	13101	12678			12678	
% Weekday Average		99.3%	101.8%	98.5%	103.3%					
% Week Average	120.5%	99.3%	101.8%	98.5%	103.3%	100.0%				
AM Peak	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM			7:00 AM	
Volume	954	971	956	934	943	952			952	
PM Peak	5:00 PM	5:00 PM	5:00 PM	5:00 PM	3:00 PM	5:00 PM			5:00 PM	
Volume	1064	1076	1069	1086	1074	1073			1073	



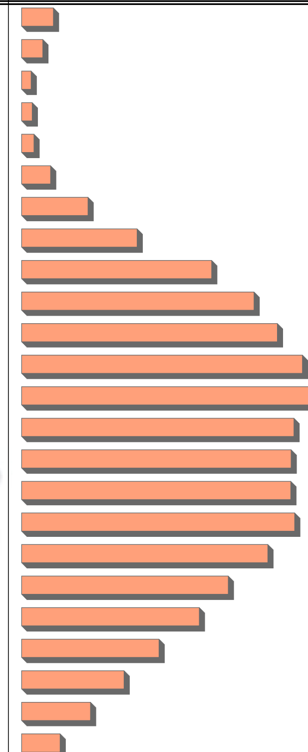
Comments:

SUMMARY - Tube Count - Volume Data (Weekend)

LOCATION: 8. Bass Lake Rd to Cameron Park Dr
SPECIFIC LOCATION: 0 ft from
CITY/STATE: El Dorado Hills, CA

QC JOB #: 12004740
DIRECTION: EB/WB
DATE: May 03 2014 - May 04 2014

Start Time			Sat 03-May-14	Sun 04-May-14	Average Weekend Hourly Traffic	Average Weekend Profile
12:00 AM			95	85	90	
1:00 AM			62	57	60	
2:00 AM			29	25	27	
3:00 AM			31	29	30	
4:00 AM			36	34	35	
5:00 AM			93	71	82	
6:00 AM			197	178	188	
7:00 AM			377	277	327	
8:00 AM			613	462	538	
9:00 AM			732	584	658	
10:00 AM			823	625	724	
11:00 AM			**890**	**700**	**795**	
12:00 PM			**896**	731	**814**	
1:00 PM			857	684	771	
2:00 PM			807	719	763	
3:00 PM			791	**732**	762	
4:00 PM			836	710	773	
5:00 PM			775	618	697	
6:00 PM			627	542	585	
7:00 PM			524	481	503	
8:00 PM			408	369	389	
9:00 PM			347	232	290	
10:00 PM			255	135	195	
11:00 PM			149	68	109	
Day Total			11250	9148	10205	
% Weekday Average						
% Week Average			110.2%	89.6%		
AM Peak Volume			11:00 AM 890	11:00 AM 700	11:00 AM 795	
PM Peak Volume			12:00 PM 896	3:00 PM 732	12:00 PM 814	



Comments:

Prepared by NDS/ATD

Volumes for: Thursday, May 17, 2012 City: El Dorado County Project #: 12-7222-001

Location: Bass Lake Road between Country Club Drive and Serrano Parkway.

Start	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	8	51			3	65				
12:15	5	67			0	62				
12:30	13	52			3	57				
12:45	7	64	33	234	2	62	8	246	41	480
1:00	5	64			6	52				
1:15	2	45			2	64				
1:30	2	74			5	65				
1:45	6	64	15	247	0	56	13	237	28	484
2:00	4	72			4	67				
2:15	3	86			1	62				
2:30	2	85			1	59				
2:45	5	78	14	321	2	83	8	271	22	592
3:00	2	102			2	89				
3:15	3	121			1	86				
3:30	4	107			4	81				
3:45	1	126	10	456	3	81	10	337	20	793
4:00	1	93			8	66				
4:15	0	112			4	70				
4:30	1	128			6	74				
4:45	2	126	4	459	19	72	37	282	41	741
5:00	1	132			20	77				
5:15	2	140			26	84				
5:30	5	130			36	80				
5:45	2	125	10	527	42	77	124	318	134	845
6:00	9	134			68	76				
6:15	10	120			73	66				
6:30	15	83			92	69				
6:45	21	101	55	438	125	57	358	268	413	706
7:00	37	96			132	54				
7:15	44	84			156	47				
7:30	44	96			142	35				
7:45	46	74	171	350	212	32	642	168	813	518
8:00	60	72			216	26				
8:15	61	60			151	24				
8:30	45	83			154	30				
8:45	36	80	202	295	130	28	651	108	853	403
9:00	44	53			114	26				
9:15	59	62			95	22				
9:30	54	56			93	17	0			
9:45	41	53	198	224	94	13	396	78	594	302
10:00	41	35			66	16				
10:15	50	33			83	14				
10:30	56	36			72	15				
10:45	42	22	189	126	79	13	300	58	489	184
11:00	31	21			79	8				
11:15	41	21			53	6				
11:30	49	13			55	7				
11:45	45	9	166	64	64	4	251	25	417	89
Total	1067	3741	1067	3741	2798	2396	2798	2396	3865	6137
Combined Total	4808		4808		5194		5194		10002	
AM Peak	11:45 AM				7:45 AM					
Vol.	215				733					
P.H.F.	0.802				0.848					
PM Peak		5:15 PM				2:45 PM				
Vol.		529				339				
P.H.F.		0.929				0.952				
Percentage	22.2%	77.8%			53.9%	46.1%				

Prepared by NDS/ATD

Volumes for: Thursday, May 17, 2012 City: El Dorado County Project #: 12-7222-002

Location: Bass Lake Road north of Serrano Parkway.

Start	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	8	41			1	52				
12:15	5	53			1	55				
12:30	12	43			4	43				
12:45	6	58	31	195	2	46	8	196	39	391
1:00	4	63			6	46				
1:15	4	51			2	62				
1:30	1	64			2	48				
1:45	5	62	14	240	0	53	10	209	24	449
2:00	5	66			4	52				
2:15	2	63			3	46				
2:30	1	77			0	47				
2:45	6	81	14	287	2	63	9	208	23	495
3:00	1	73			2	72				
3:15	2	88			1	65				
3:30	4	97			3	64				
3:45	1	108	8	366	3	54	9	255	17	621
4:00	1	97			9	52				
4:15	0	109			5	54				
4:30	0	109			4	74				
4:45	2	110	3	425	16	55	34	235	37	660
5:00	2	131			20	69				
5:15	1	120			21	64				
5:30	3	131			35	68				
5:45	3	118	9	500	40	65	116	266	125	766
6:00	10	120			60	70				
6:15	7	114			67	52				
6:30	11	90			86	53				
6:45	16	90	44	414	108	38	321	213	365	627
7:00	22	81			115	47				
7:15	27	86			145	47				
7:30	25	91			135	25				
7:45	23	79	97	337	167	25	562	144	659	481
8:00	41	73			163	29				
8:15	50	61			137	21				
8:30	29	55			122	19				
8:45	29	67	149	256	106	24	528	93	677	349
9:00	32	54			97	25				
9:15	43	57			71	25				
9:30	35	40			86	18	0			
9:45	31	44	141	195	77	14	331	82	472	277
10:00	27	29			59	16				
10:15	31	29			72	8				
10:30	42	38			62	14				
10:45	34	20	134	116	65	12	258	50	392	166
11:00	24	13			65	6				
11:15	34	18			41	4				
11:30	39	12			55	6				
11:45	48	11	145	54	52	2	213	18	358	72
Total	789	3385	789	3385	2399	1969	2399	1969	3188	5354
Combined Total	4174		4174		4368		4368		8542	
AM Peak	11:45 AM				7:15 AM					
Vol.	185				610					
P.H.F.	0.873				0.913					
PM Peak		5:00 PM				5:15 PM				
Vol.		500				267				
P.H.F.		0.979				0.954				
Percentage	18.9%	81.1%			54.9%	45.1%				

Appendix A

Existing Conditions

Technical Calculations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	161	219	229	59	812	108	291	169	8	114	293	368
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1776	1845	1900	1881	1863	1845	1863	1900	1845	1881	1881
Adj Flow Rate, veh/h	199	270	45	68	933	24	346	201	6	148	381	300
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	1	1	1
Peak Hour Factor	0.81	0.81	0.81	0.87	0.87	0.87	0.84	0.84	0.84	0.77	0.77	0.77
Percent Heavy Veh, %	5	7	3	0	1	2	3	2	2	3	1	1
Cap, veh/h	264	1049	486	88	1003	443	415	1201	36	179	606	514
Arrive On Green	0.08	0.31	0.31	0.05	0.28	0.28	0.12	0.34	0.34	0.10	0.32	0.32
Sat Flow, veh/h	3343	3374	1563	1810	3574	1580	3408	3509	104	1757	1881	1596
Grp Volume(v), veh/h	199	270	45	68	933	24	346	101	106	148	381	300
Grp Sat Flow(s),veh/h/ln	1672	1687	1563	1810	1787	1580	1704	1770	1844	1757	1881	1596
Q Serve(g_s), s	5.8	6.0	2.0	3.7	25.3	1.1	9.9	4.0	4.0	8.2	17.2	15.6
Cycle Q Clear(g_c), s	5.8	6.0	2.0	3.7	25.3	1.1	9.9	4.0	4.0	8.2	17.2	15.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	264	1049	486	88	1003	443	415	605	631	179	606	514
V/C Ratio(X)	0.75	0.26	0.09	0.77	0.93	0.05	0.83	0.17	0.17	0.83	0.63	0.58
Avail Cap(c_a), veh/h	403	1083	502	163	1015	449	615	605	631	335	606	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	25.7	24.4	46.9	34.9	26.2	42.8	22.9	22.9	43.9	28.7	28.2
Incr Delay (d2), s/veh	1.7	0.1	0.1	5.3	14.2	0.0	4.0	0.6	0.6	3.7	4.9	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.8	0.9	2.0	14.4	0.5	4.9	2.0	2.1	4.2	9.7	7.6
LnGrp Delay(d),s/veh	46.6	25.8	24.4	52.2	49.1	26.2	46.8	23.5	23.5	47.6	33.6	33.0
LnGrp LOS	D	C	C	D	D	C	D	C	C	D	C	C
Approach Vol, veh/h		514			1025			553			829	
Approach Delay, s/veh		33.7			48.8			38.1			35.9	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	36.7	16.1	49.3	11.9	33.7	14.1	51.3
Change Period (Y+Rc), s	4.0	5.7	4.0	* 5.9	4.0	5.7	4.0	* 5.9
Max Green Setting (Gmax), s	9.0	32.0	18.0	* 32	12.0	28.3	19.0	* 31
Max Q Clear Time (g_c+I1), s	5.7	8.0	11.9	19.2	7.8	27.3	10.2	6.0
Green Ext Time (p_c), s	0.0	7.0	0.2	3.1	0.1	0.6	0.1	3.7

Intersection Summary		
HCM 2010 Ctrl Delay		40.5
HCM 2010 LOS		D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	298	11	64	760	39	41	60	32	93	219	162
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1727	1810	1900	1792	1863	1900	1900	1776	1900	1900	1881	1881
Adj Flow Rate, veh/h	37	363	12	74	874	44	64	94	27	109	258	19
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	1
Peak Hour Factor	0.82	0.82	0.82	0.87	0.87	0.87	0.64	0.64	0.64	0.85	0.85	0.85
Percent Heavy Veh, %	10	5	5	6	2	2	0	7	7	1	1	1
Cap, veh/h	45	775	26	94	831	42	176	129	37	101	238	291
Arrive On Green	0.03	0.44	0.44	0.05	0.47	0.47	0.10	0.10	0.10	0.18	0.18	0.18
Sat Flow, veh/h	1645	1742	58	1707	1758	89	1810	1324	380	551	1303	1590
Grp Volume(v), veh/h	37	0	375	74	0	918	64	0	121	367	0	19
Grp Sat Flow(s),veh/h/ln	1645	0	1799	1707	0	1847	1810	0	1704	1854	0	1590
Q Serve(g_s), s	2.1	0.0	13.6	4.0	0.0	44.0	3.1	0.0	6.4	17.0	0.0	0.9
Cycle Q Clear(g_c), s	2.1	0.0	13.6	4.0	0.0	44.0	3.1	0.0	6.4	17.0	0.0	0.9
Prop In Lane	1.00		0.03	1.00		0.05	1.00		0.22	0.30		1.00
Lane Grp Cap(c), veh/h	45	0	800	94	0	873	176	0	165	339	0	291
V/C Ratio(X)	0.83	0.00	0.47	0.79	0.00	1.05	0.36	0.00	0.73	1.08	0.00	0.07
Avail Cap(c_a), veh/h	150	0	800	156	0	873	428	0	403	339	0	291
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.1	0.0	18.1	43.4	0.0	24.5	39.3	0.0	40.8	38.0	0.0	31.5
Incr Delay (d2), s/veh	24.1	0.0	0.9	10.3	0.0	44.8	0.5	0.0	2.3	73.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	7.0	2.1	0.0	33.2	1.6	0.0	3.1	15.5	0.0	0.4
LnGrp Delay(d),s/veh	69.1	0.0	19.0	53.8	0.0	69.3	39.8	0.0	43.2	111.2	0.0	31.5
LnGrp LOS	E		B	D		F	D		D	F		C
Approach Vol, veh/h		412			992			185			386	
Approach Delay, s/veh		23.5			68.2			42.0			107.2	
Approach LOS		C			E			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.6	47.4		22.5	6.0	50.0		14.5
Change Period (Y+Rc), s	3.5	6.0		5.5	3.5	6.0		5.5
Max Green Setting (Gmax), s	8.5	34.0		17.0	8.5	44.0		22.0
Max Q Clear Time (g_c+I1), s	6.0	15.6		19.0	4.1	46.0		8.4
Green Ext Time (p_c), s	0.0	13.2		0.0	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	64.0
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	207	213	66	597	11	264	56	51	2	41	2
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1792	1827	1881	1863	1900	1881	1900	1900	1900	1845	1900
Adj Flow Rate, veh/h	4	259	56	75	678	11	352	75	37	3	55	0
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.80	0.80	0.80	0.88	0.88	0.88	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	0	6	4	1	2	2	1	0	0	3	3	3
Cap, veh/h	8	713	616	97	818	13	414	277	137	4	79	0
Arrive On Green	0.00	0.40	0.40	0.05	0.45	0.45	0.23	0.23	0.23	0.05	0.05	0.00
Sat Flow, veh/h	1810	1792	1549	1792	1828	30	1792	1200	592	95	1745	0
Grp Volume(v), veh/h	4	259	56	75	0	689	352	0	112	58	0	0
Grp Sat Flow(s),veh/h/ln	1810	1792	1549	1792	0	1857	1792	0	1792	1840	0	0
Q Serve(g_s), s	0.1	6.8	1.5	2.8	0.0	21.9	12.6	0.0	3.4	2.1	0.0	0.0
Cycle Q Clear(g_c), s	0.1	6.8	1.5	2.8	0.0	21.9	12.6	0.0	3.4	2.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.33	0.05		0.00
Lane Grp Cap(c), veh/h	8	713	616	97	0	831	414	0	414	83	0	0
V/C Ratio(X)	0.52	0.36	0.09	0.77	0.00	0.83	0.85	0.00	0.27	0.70	0.00	0.00
Avail Cap(c_a), veh/h	323	1332	1151	320	0	1381	650	0	650	602	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	33.4	14.3	12.7	31.4	0.0	16.3	24.7	0.0	21.2	31.7	0.0	0.0
Incr Delay (d2), s/veh	34.3	0.3	0.1	9.3	0.0	2.2	5.3	0.0	0.3	7.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.4	0.7	1.6	0.0	11.6	6.9	0.0	1.7	1.2	0.0	0.0
LnGrp Delay(d),s/veh	67.7	14.6	12.7	40.7	0.0	18.5	30.0	0.0	21.5	39.4	0.0	0.0
LnGrp LOS	E	B	B	D		B	C		C	D		
Approach Vol, veh/h		319			764			464			58	
Approach Delay, s/veh		14.9			20.7			27.9			39.4	
Approach LOS		B			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.3	35.8		7.0	7.6	32.4		20.1
Change Period (Y+Rc), s	4.0	5.7		4.0	4.0	5.7		4.6
Max Green Setting (Gmax), s	12.0	50.0		22.0	12.0	50.0		24.4
Max Q Clear Time (g_c+I1), s	2.1	23.9		4.1	4.8	8.8		14.6
Green Ext Time (p_c), s	0.0	6.2		0.1	0.1	6.7		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	5	294	12	7	514	4	16	0	14
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	450	-	450	450	-	450	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	88	88	88	75	75	75
Heavy Vehicles, %	0	3	0	10	2	0	6	0	0
Mvmt Flow	6	342	14	8	584	5	21	0	19

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	586	0	0	344	0	0	981	957	346
Stage 1	-	-	-	-	-	-	355	355	-
Stage 2	-	-	-	-	-	-	626	602	-
Critical Hdwy	4.1	-	-	4.2	-	-	7.16	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.5	-
Follow-up Hdwy	2.2	-	-	2.29	-	-	3.554	4	3.3
Pot Cap-1 Maneuver	999	-	-	1172	-	-	225	260	702
Stage 1	-	-	-	-	-	-	654	633	-
Stage 2	-	-	-	-	-	-	465	492	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	997	-	-	1170	-	-	201	256	700
Mov Cap-2 Maneuver	-	-	-	-	-	-	201	256	-
Stage 1	-	-	-	-	-	-	649	628	-
Stage 2	-	-	-	-	-	-	417	488	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.1	18.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	301	997	-	-	1170	-	-	385
HCM Lane V/C Ratio	0.133	0.006	-	-	0.007	-	-	0.164
HCM Control Delay (s)	18.8	8.6	-	-	8.1	-	-	16.2
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.6

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	12	1	37
Conflicting Peds, #/hr	2	0	2
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	79	79	79
Heavy Vehicles, %	0	0	3
Mvmt Flow	15	1	47

Major/Minor	Minor2		
Conflicting Flow All	967	957	588
Stage 1	602	602	-
Stage 2	365	355	-
Critical Hdwy	7.1	6.5	6.23
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.327
Pot Cap-1 Maneuver	236	260	507
Stage 1	490	492	-
Stage 2	658	633	-
Platoon blocked, %			
Mov Cap-1 Maneuver	227	256	505
Mov Cap-2 Maneuver	227	256	-
Stage 1	486	488	-
Stage 2	636	628	-

Approach	SB
HCM Control Delay, s	16.2
HCM LOS	C

Minor Lane/Major Mvmt

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	283	37	321	476	49	27
Number	2	12	1	6	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1900	1881	1863	1900	1652
Adj Flow Rate, veh/h	329	36	434	643	122	1
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.86	0.86	0.74	0.74	0.40	0.40
Percent Heavy Veh, %	5	5	1	2	0	15
Cap, veh/h	503	55	522	1302	164	128
Arrive On Green	0.31	0.31	0.29	0.70	0.09	0.09
Sat Flow, veh/h	1603	175	1792	1863	1810	1404
Grp Volume(v), veh/h	0	365	434	643	122	1
Grp Sat Flow(s),veh/h/ln	0	1778	1792	1863	1810	1404
Q Serve(g_s), s	0.0	7.6	9.7	6.8	2.8	0.0
Cycle Q Clear(g_c), s	0.0	7.6	9.7	6.8	2.8	0.0
Prop In Lane		0.10	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	558	522	1302	164	128
V/C Ratio(X)	0.00	0.65	0.83	0.49	0.74	0.01
Avail Cap(c_a), veh/h	0	1829	1215	1916	804	624
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	12.7	14.2	3.0	19.0	17.7
Incr Delay (d2), s/veh	0.0	0.5	2.6	0.1	6.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.7	5.1	3.4	1.7	0.0
LnGrp Delay(d),s/veh	0.0	13.2	16.8	3.1	25.4	17.7
LnGrp LOS		B	B	A	C	B
Approach Vol, veh/h	365			1077	123	
Approach Delay, s/veh	13.2			8.6	25.4	
Approach LOS	B			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	16.5	18.4		7.9		34.9		
Change Period (Y+Rc), s	4.0	5.0		4.0		5.0		
Max Green Setting (Gmax), s	29.0	44.0		19.0		44.0		
Max Q Clear Time (g_c+I1), s	11.7	9.6		4.8		8.8		
Green Ext Time (p_c), s	0.8	3.7		0.2		3.8		

Intersection Summary			
HCM 2010 Ctrl Delay			11.0
HCM 2010 LOS			B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	559	3	4	796	1	3
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	650	2	5	1076	2	0
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.86	0.86	0.74	0.74	0.46	0.46
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1231	1045	7	1409	108	96
Arrive On Green	0.66	0.66	0.00	0.76	0.06	0.00
Sat Flow, veh/h	1863	1581	1774	1863	1774	1583
Grp Volume(v), veh/h	650	2	5	1076	2	0
Grp Sat Flow(s),veh/h/ln	1863	1581	1774	1863	1774	1583
Q Serve(g_s), s	8.9	0.0	0.1	16.4	0.1	0.0
Cycle Q Clear(g_c), s	8.9	0.0	0.1	16.4	0.1	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1231	1045	7	1409	108	96
V/C Ratio(X)	0.53	0.00	0.70	0.76	0.02	0.00
Avail Cap(c_a), veh/h	2269	1926	360	2647	900	804
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.3	2.8	24.5	3.5	21.7	0.0
Incr Delay (d2), s/veh	0.4	0.0	36.9	0.9	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	0.1	8.4	0.0	0.0
LnGrp Delay(d),s/veh	4.7	2.8	61.4	4.3	22.0	0.0
LnGrp LOS	A	A	E	A	C	
Approach Vol, veh/h	652			1081	2	
Approach Delay, s/veh	4.7			4.6	22.0	
Approach LOS	A			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	4.7	37.1				41.8		7.5
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	10.0	60.0				70.0		25.0
Max Q Clear Time (g_c+I1), s	2.1	10.9				18.4		2.1
Green Ext Time (p_c), s	0.0	18.6				18.8		0.0

Intersection Summary			
HCM 2010 Ctrl Delay			4.7
HCM 2010 LOS			A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	415	142	172	613	5	187	2	77	1	2	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1863	1900	1863	1863	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	8	680	220	236	840	7	292	3	0	2	3	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.61	0.61	0.61	0.73	0.73	0.73	0.64	0.64	0.64	0.63	0.63	0.63
Percent Heavy Veh, %	20	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	12	676	219	270	1191	10	329	3	297	4	6	0
Arrive On Green	0.01	0.50	0.50	0.15	0.65	0.65	0.18	0.18	0.00	0.01	0.01	0.00
Sat Flow, veh/h	1508	1348	436	1774	1845	15	1792	18	1615	745	1118	0
Grp Volume(v), veh/h	8	0	900	236	0	847	295	0	0	5	0	0
Grp Sat Flow(s),veh/h/ln	1508	0	1784	1774	0	1860	1810	0	1615	1863	0	0
Q Serve(g_s), s	0.6	0.0	54.0	14.0	0.0	31.9	17.1	0.0	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	54.0	14.0	0.0	31.9	17.1	0.0	0.0	0.3	0.0	0.0
Prop In Lane	1.00		0.24	1.00		0.01	0.99		1.00	0.40		0.00
Lane Grp Cap(c), veh/h	12	0	894	270	0	1200	333	0	297	10	0	0
V/C Ratio(X)	0.67	0.00	1.01	0.88	0.00	0.71	0.89	0.00	0.00	0.52	0.00	0.00
Avail Cap(c_a), veh/h	266	0	894	478	0	1200	403	0	360	242	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	53.3	0.0	26.9	44.7	0.0	12.4	42.9	0.0	0.0	53.4	0.0	0.0
Incr Delay (d2), s/veh	39.1	0.0	31.7	6.7	0.0	1.8	18.1	0.0	0.0	37.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	34.2	7.4	0.0	16.8	10.2	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	92.4	0.0	58.5	51.4	0.0	14.2	61.0	0.0	0.0	90.8	0.0	0.0
LnGrp LOS	F		F	D		B	E			F		
Approach Vol, veh/h		908			1083			295			5	
Approach Delay, s/veh		58.8			22.3			61.0			90.8	
Approach LOS		E			C			E			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.4	59.0		4.6	4.9	74.5		23.8				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	29.0	54.0		14.0	19.0	54.0		24.0				
Max Q Clear Time (g_c+I1), s	16.0	56.0		2.3	2.6	33.9		19.1				
Green Ext Time (p_c), s	0.4	0.0		0.0	0.0	9.9		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			41.9									
HCM 2010 LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	417	69	18	577	0	183	5	45	12	7	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1845	1900	1881	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	11	642	100	23	749	0	286	8	0	19	11	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.65	0.65	0.65	0.77	0.77	0.77	0.64	0.64	0.64	0.63	0.63	0.63
Percent Heavy Veh, %	0	1	1	0	3	3	1	0	0	0	0	0
Cap, veh/h	20	823	128	37	972	0	337	357	0	43	25	0
Arrive On Green	0.01	0.52	0.52	0.02	0.53	0.00	0.19	0.19	0.00	0.04	0.04	0.00
Sat Flow, veh/h	1810	1589	248	1810	1845	0	1792	1900	0	1166	675	0
Grp Volume(v), veh/h	11	0	742	23	749	0	286	8	0	30	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1837	1810	1845	0	1792	1900	0	1842	0	0
Q Serve(g_s), s	0.4	0.0	24.0	0.9	23.8	0.0	11.3	0.3	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	0.4	0.0	24.0	0.9	23.8	0.0	11.3	0.3	0.0	1.2	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.00	1.00		0.00	0.63		0.00
Lane Grp Cap(c), veh/h	20	0	951	37	972	0	337	357	0	69	0	0
V/C Ratio(X)	0.56	0.00	0.78	0.62	0.77	0.00	0.85	0.02	0.00	0.44	0.00	0.00
Avail Cap(c_a), veh/h	394	0	951	394	1682	0	488	517	0	626	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.2	0.0	14.3	35.7	13.8	0.0	28.8	24.3	0.0	34.6	0.0	0.0
Incr Delay (d2), s/veh	12.4	0.0	4.3	8.9	1.4	0.0	9.5	0.0	0.0	4.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	13.1	0.6	12.2	0.0	6.5	0.1	0.0	0.7	0.0	0.0
LnGrp Delay(d),s/veh	48.6	0.0	18.6	44.6	15.3	0.0	38.4	24.4	0.0	39.1	0.0	0.0
LnGrp LOS	D		B	D	B		D	C		D		
Approach Vol, veh/h		753			772			294			30	
Approach Delay, s/veh		19.1			16.1			38.0			39.1	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	43.8		17.6	4.4	44.4		7.0
Change Period (Y+Rc), s	3.6	5.7		3.8	3.6	5.7		4.3
Max Green Setting (Gmax), s	16.0	37.0		20.0	16.0	67.0		25.0
Max Q Clear Time (g_c+I1), s	2.9	26.0		13.3	2.4	25.8		3.2
Green Ext Time (p_c), s	0.0	6.9		0.5	0.0	13.0		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		21.2
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	37	0	245	0	0	0	123	117	0	0	547	85
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	43	0	11	0	0	0	156	148	0	0	636	34
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.86	0.86	0.86	0.25	0.25	0.25	0.79	0.79	0.79	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	130	0	98	4	4	0	267	1288	1095	4	820	695
Arrive On Green	0.07	0.00	0.06	0.00	0.00	0.00	0.15	0.70	0.00	0.00	0.44	0.44
Sat Flow, veh/h	1757	0	1559	1757	1845	0	1757	1845	1568	1757	1845	1564
Grp Volume(v), veh/h	43	0	11	0	0	0	156	148	0	0	636	34
Grp Sat Flow(s),veh/h/ln	1757	0	1559	1757	1845	0	1757	1845	1568	1757	1845	1564
Q Serve(g_s), s	1.0	0.0	0.3	0.0	0.0	0.0	3.7	1.2	0.0	0.0	13.2	0.6
Cycle Q Clear(g_c), s	1.0	0.0	0.3	0.0	0.0	0.0	3.7	1.2	0.0	0.0	13.2	0.6
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	130	0	98	4	4	0	267	1288	1095	4	820	695
V/C Ratio(X)	0.33	0.00	0.11	0.00	0.00	0.00	0.58	0.11	0.00	0.00	0.78	0.05
Avail Cap(c_a), veh/h	1166	0	1035	1166	1225	0	467	1288	1095	467	1139	966
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	19.9	0.0	20.0	0.0	0.0	0.0	17.8	2.2	0.0	0.0	10.6	7.1
Incr Delay (d2), s/veh	0.6	0.0	0.2	0.0	0.0	0.0	0.8	0.1	0.0	0.0	2.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.1	0.0	0.0	0.0	1.9	0.6	0.0	0.0	7.2	0.2
LnGrp Delay(d),s/veh	20.4	0.0	20.2	0.0	0.0	0.0	18.6	2.3	0.0	0.0	13.5	7.2
LnGrp LOS	C		C				B	A			B	A
Approach Vol, veh/h		54			0			304			670	
Approach Delay, s/veh		20.4			0.0			10.7			13.2	
Approach LOS		C						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	37.2	0.0	7.9	11.5	25.8	7.9	0.0
Change Period (Y+Rc), s	4.6	5.7	4.6	5.1	4.6	5.7	4.6	5.1
Max Green Setting (Gmax), s	12.0	28.0	30.0	30.0	12.0	27.9	30.0	30.0
Max Q Clear Time (g_c+I1), s	0.0	3.2	0.0	2.3	5.7	15.2	3.0	0.0
Green Ext Time (p_c), s	0.0	7.6	0.0	0.0	0.0	4.7	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	445	805	295	137	503	93	298	243	22	113	187	203
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1881	1863	1881	1881	1900	1881	1863	1863
Adj Flow Rate, veh/h	468	847	74	156	572	14	324	264	17	131	217	49
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.92	0.92	0.92	0.86	0.86	0.86
Percent Heavy Veh, %	0	1	1	0	1	2	1	1	1	1	2	2
Cap, veh/h	533	1037	462	188	865	382	394	1085	69	161	549	459
Arrive On Green	0.15	0.29	0.29	0.10	0.24	0.24	0.11	0.32	0.32	0.09	0.29	0.29
Sat Flow, veh/h	3510	3574	1593	1810	3574	1579	3476	3410	218	1792	1863	1560
Grp Volume(v), veh/h	468	847	74	156	572	14	324	138	143	131	217	49
Grp Sat Flow(s),veh/h/ln	1755	1787	1593	1810	1787	1579	1738	1787	1842	1792	1863	1560
Q Serve(g_s), s	12.9	21.8	3.4	8.4	14.3	0.7	9.0	5.6	5.7	7.1	9.2	2.3
Cycle Q Clear(g_c), s	12.9	21.8	3.4	8.4	14.3	0.7	9.0	5.6	5.7	7.1	9.2	2.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	533	1037	462	188	865	382	394	568	586	161	549	459
V/C Ratio(X)	0.88	0.82	0.16	0.83	0.66	0.04	0.82	0.24	0.24	0.81	0.40	0.11
Avail Cap(c_a), veh/h	568	1168	521	238	1060	468	563	568	586	254	549	459
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	32.6	26.1	43.4	33.8	28.6	42.8	24.9	24.9	44.2	27.8	25.4
Incr Delay (d2), s/veh	13.3	4.0	0.1	14.6	1.0	0.0	4.4	1.0	1.0	5.0	2.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	11.3	1.5	4.9	7.1	0.3	4.6	2.9	3.1	3.8	5.0	1.0
LnGrp Delay(d),s/veh	54.3	36.7	26.2	58.0	34.8	28.7	47.2	25.9	25.9	49.2	30.0	25.9
LnGrp LOS	D	D	C	E	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1389			742			605			397	
Approach Delay, s/veh		42.0			39.5			37.3			35.8	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	34.4	15.2	46.2	19.0	29.6	12.9	48.5
Change Period (Y+Rc), s	4.0	5.7	4.0	* 5.9	4.0	5.7	4.0	* 5.9
Max Green Setting (Gmax), s	13.0	32.3	16.0	* 29	16.0	29.3	14.0	* 31
Max Q Clear Time (g_c+I1), s	10.4	23.8	11.0	11.2	14.9	16.3	9.1	7.7
Green Ext Time (p_c), s	0.0	4.8	0.2	2.2	0.1	6.3	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	39.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	128	823	21	29	532	89	45	127	55	65	94	83
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1863	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	138	885	23	33	605	101	51	143	62	70	101	89
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.89	0.89	0.89	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	1	0	1	1	2	1	1	0	0	0
Cap, veh/h	151	855	22	42	639	107	247	172	74	128	184	269
Arrive On Green	0.08	0.47	0.47	0.02	0.41	0.41	0.14	0.14	0.14	0.17	0.17	0.17
Sat Flow, veh/h	1810	1824	47	1810	1566	261	1774	1233	535	762	1100	1605
Grp Volume(v), veh/h	138	0	908	33	0	706	51	0	205	171	0	89
Grp Sat Flow(s),veh/h/ln	1810	0	1872	1810	0	1828	1774	0	1768	1862	0	1605
Q Serve(g_s), s	7.7	0.0	47.6	1.8	0.0	37.9	2.6	0.0	11.5	8.6	0.0	5.0
Cycle Q Clear(g_c), s	7.7	0.0	47.6	1.8	0.0	37.9	2.6	0.0	11.5	8.6	0.0	5.0
Prop In Lane	1.00		0.03	1.00		0.14	1.00		0.30	0.41		1.00
Lane Grp Cap(c), veh/h	151	0	877	42	0	746	247	0	246	312	0	269
V/C Ratio(X)	0.91	0.00	1.04	0.79	0.00	0.95	0.21	0.00	0.83	0.55	0.00	0.33
Avail Cap(c_a), veh/h	151	0	877	151	0	791	384	0	383	312	0	269
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.2	0.0	27.0	49.4	0.0	29.0	38.7	0.0	42.6	38.8	0.0	37.3
Incr Delay (d2), s/veh	47.6	0.0	39.9	21.6	0.0	20.5	0.2	0.0	5.0	6.8	0.0	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	34.1	1.2	0.0	23.3	1.3	0.0	5.9	5.0	0.0	2.4
LnGrp Delay(d),s/veh	93.7	0.0	66.8	71.0	0.0	49.5	38.9	0.0	47.5	45.6	0.0	40.6
LnGrp LOS	F		F	E		D	D		D	D		D
Approach Vol, veh/h		1046			739			256			260	
Approach Delay, s/veh		70.4			50.4			45.8			43.9	
Approach LOS		E			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.8	53.6		22.5	12.0	47.5		19.7
Change Period (Y+Rc), s	3.5	6.0		5.5	3.5	6.0		5.5
Max Green Setting (Gmax), s	8.5	34.0		17.0	8.5	44.0		22.0
Max Q Clear Time (g_c+I1), s	3.8	49.6		10.6	9.7	39.9		13.5
Green Ext Time (p_c), s	0.0	0.0		0.4	0.0	1.6		0.5

Intersection Summary			
HCM 2010 Ctrl Delay			58.3
HCM 2010 LOS			E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	649	290	36	400	7	247	29	56	1	8	3
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1881	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	4	698	195	45	500	9	287	34	7	2	16	0
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.93	0.93	0.93	0.80	0.80	0.80	0.86	0.86	0.86	0.50	0.50	0.50
Percent Heavy Veh, %	0	1	0	0	1	1	1	0	0	0	0	0
Cap, veh/h	8	893	765	62	929	17	346	293	60	4	35	0
Arrive On Green	0.00	0.47	0.47	0.03	0.50	0.50	0.19	0.19	0.19	0.02	0.02	0.00
Sat Flow, veh/h	1810	1881	1612	1810	1842	33	1792	1521	313	210	1680	0
Grp Volume(v), veh/h	4	698	195	45	0	509	287	0	41	18	0	0
Grp Sat Flow(s),veh/h/ln	1810	1881	1612	1810	0	1875	1792	0	1835	1890	0	0
Q Serve(g_s), s	0.1	20.4	4.8	1.6	0.0	12.2	10.1	0.0	1.2	0.6	0.0	0.0
Cycle Q Clear(g_c), s	0.1	20.4	4.8	1.6	0.0	12.2	10.1	0.0	1.2	0.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.17	0.11		0.00
Lane Grp Cap(c), veh/h	8	893	765	62	0	946	346	0	354	40	0	0
V/C Ratio(X)	0.52	0.78	0.25	0.73	0.00	0.54	0.83	0.00	0.12	0.46	0.00	0.00
Avail Cap(c_a), veh/h	329	1427	1222	329	0	1422	663	0	679	631	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.8	14.5	10.4	31.5	0.0	11.1	25.6	0.0	22.0	31.9	0.0	0.0
Incr Delay (d2), s/veh	34.3	1.5	0.2	11.6	0.0	0.5	3.9	0.0	0.1	5.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	10.9	2.1	1.0	0.0	6.3	5.4	0.0	0.6	0.4	0.0	0.0
LnGrp Delay(d),s/veh	67.0	16.0	10.5	43.1	0.0	11.6	29.5	0.0	22.1	37.8	0.0	0.0
LnGrp LOS	E	B	B	D		B	C		C	D		
Approach Vol, veh/h		897			554			328			18	
Approach Delay, s/veh		15.0			14.2			28.5			37.8	
Approach LOS		B			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.3	38.9		5.4	6.2	37.0		17.3
Change Period (Y+Rc), s	4.0	5.7		4.0	4.0	5.7		4.6
Max Green Setting (Gmax), s	12.0	50.0		22.0	12.0	50.0		24.4
Max Q Clear Time (g_c+I1), s	2.1	14.2		2.6	3.6	22.4		12.1
Green Ext Time (p_c), s	0.0	9.5		0.0	0.0	8.8		0.6

Intersection Summary		
HCM 2010 Ctrl Delay		17.5
HCM 2010 LOS		B

Intersection										
Int Delay, s/veh	2									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	38	607	21	14	377	6	14	1	13
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	450	-	450	450	-	450	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	82	82	82	70	70	70
Heavy Vehicles, %	2	1	0	0	1	0	0	0	0
Mvmt Flow	41	660	23	17	460	7	20	1	19

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	462	0	0	662	0	0	1258	1240	664
Stage 1	-	-	-	-	-	-	744	744	-
Stage 2	-	-	-	-	-	-	514	496	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1099	-	-	936	-	-	149	177	464
Stage 1	-	-	-	-	-	-	410	424	-
Stage 2	-	-	-	-	-	-	547	549	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1097	-	-	934	-	-	133	167	462
Mov Cap-2 Maneuver	-	-	-	-	-	-	133	167	-
Stage 1	-	-	-	-	-	-	394	407	-
Stage 2	-	-	-	-	-	-	503	538	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	0.3	27.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	201	1097	-	-	934	-	-	302
HCM Lane V/C Ratio	0.199	0.038	-	-	0.018	-	-	0.168
HCM Control Delay (s)	27.3	8.4	-	-	8.9	-	-	19.3
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.1	-	-	0.6

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	1	26
Conflicting Peds, #/hr	2	0	2
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	73	73	73
Heavy Vehicles, %	0	0	0
Mvmt Flow	14	1	36

Major/Minor	Minor2		
Conflicting Flow All	1250	1240	464
Stage 1	496	496	-
Stage 2	754	744	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	151	177	602
Stage 1	559	549	-
Stage 2	404	424	-
Platoon blocked, %			
Mov Cap-1 Maneuver	137	167	600
Mov Cap-2 Maneuver	137	167	-
Stage 1	537	538	-
Stage 2	371	407	-

Approach	SB
HCM Control Delay, s	19.3
HCM LOS	C

Minor Lane/Major Mvmt

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	620	10	243	387	10	20
Number	2	12	1	6	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1900	1759
Adj Flow Rate, veh/h	861	14	304	484	31	0
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.72	0.72	0.80	0.80	0.32	0.32
Percent Heavy Veh, %	2	2	2	2	0	8
Cap, veh/h	972	16	368	1511	50	41
Arrive On Green	0.53	0.53	0.21	0.81	0.03	0.00
Sat Flow, veh/h	1828	30	1774	1863	1810	1495
Grp Volume(v), veh/h	0	875	304	484	31	0
Grp Sat Flow(s),veh/h/ln	0	1857	1774	1863	1810	1495
Q Serve(g_s), s	0.0	23.2	9.1	3.7	0.9	0.0
Cycle Q Clear(g_c), s	0.0	23.2	9.1	3.7	0.9	0.0
Prop In Lane		0.02	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	988	368	1511	50	41
V/C Ratio(X)	0.00	0.89	0.83	0.32	0.63	0.00
Avail Cap(c_a), veh/h	0	1466	923	1511	617	510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	11.5	21.1	1.3	26.8	0.0
Incr Delay (d2), s/veh	0.0	3.4	3.5	0.0	12.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.6	4.8	1.8	0.6	0.0
LnGrp Delay(d),s/veh	0.0	15.0	24.7	1.4	39.1	0.0
LnGrp LOS		B	C	A	D	
Approach Vol, veh/h	875			788	31	
Approach Delay, s/veh	15.0			10.4	39.1	
Approach LOS	B			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.6	34.6		5.5		50.2		
Change Period (Y+Rc), s	4.0	5.0		4.0		5.0		
Max Green Setting (Gmax), s	29.0	44.0		19.0		44.0		
Max Q Clear Time (g_c+I1), s	11.1	25.2		2.9		5.7		
Green Ext Time (p_c), s	0.5	4.4		0.0		5.6		

Intersection Summary		
HCM 2010 Ctrl Delay		13.3
HCM 2010 LOS		B

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	652	3	4	629	1	3		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	906	3	5	786	2	0		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.72	0.72	0.80	0.80	0.46	0.46		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1287	1092	7	1483	4	4		
Arrive On Green	0.69	0.69	0.00	0.80	0.00	0.00		
Sat Flow, veh/h	1863	1581	1774	1863	1774	1583		
Grp Volume(v), veh/h	906	3	5	786	2	0		
Grp Sat Flow(s),veh/h/ln	1863	1581	1774	1863	1774	1583		
Q Serve(g_s), s	13.0	0.0	0.1	6.6	0.1	0.0		
Cycle Q Clear(g_c), s	13.0	0.0	0.1	6.6	0.1	0.0		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1287	1092	7	1483	4	4		
V/C Ratio(X)	0.70	0.00	0.70	0.53	0.50	0.00		
Avail Cap(c_a), veh/h	2512	2132	120	2930	997	890		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	4.1	2.1	22.1	1.6	22.2	0.0		
Incr Delay (d2), s/veh	0.7	0.0	36.5	0.3	192.4	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	6.5	0.0	0.1	3.4	0.2	0.0		
LnGrp Delay(d),s/veh	4.9	2.1	58.7	1.9	214.6	0.0		
LnGrp LOS	A	A	E	A	F			
Approach Vol, veh/h	909			791	2			
Approach Delay, s/veh	4.8			2.3	214.5			
Approach LOS	A			A	F			
Timer	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	4.7	35.2				39.9		4.6
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	3.0	60.0				70.0		25.0
Max Q Clear Time (g_c+I1), s	2.1	15.0				8.6		2.1
Green Ext Time (p_c), s	0.0	15.7				16.8		0.0
Intersection Summary								
HCM 2010 Ctrl Delay			3.9					
HCM 2010 LOS			A					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	550	101	92	452	3	175	3	165	7	2	6
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1900	1900	1881	1900	1900	1900
Adj Flow Rate, veh/h	5	632	111	100	491	3	216	4	0	12	3	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.81	0.81	0.81	0.60	0.60	0.60
Percent Heavy Veh, %	0	1	1	0	1	1	0	0	1	0	0	0
Cap, veh/h	10	758	133	132	1036	6	286	5	258	21	5	0
Arrive On Green	0.01	0.49	0.49	0.07	0.55	0.55	0.16	0.16	0.00	0.01	0.01	0.00
Sat Flow, veh/h	1810	1558	274	1810	1868	11	1778	33	1599	1462	365	0
Grp Volume(v), veh/h	5	0	743	100	0	494	220	0	0	15	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1832	1810	0	1879	1811	0	1599	1827	0	0
Q Serve(g_s), s	0.2	0.0	22.5	3.5	0.0	10.2	7.5	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	22.5	3.5	0.0	10.2	7.5	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.01	0.98		1.00	0.80		0.00
Lane Grp Cap(c), veh/h	10	0	892	132	0	1042	292	0	258	27	0	0
V/C Ratio(X)	0.52	0.00	0.83	0.76	0.00	0.47	0.75	0.00	0.00	0.56	0.00	0.00
Avail Cap(c_a), veh/h	535	0	1540	817	0	1579	676	0	597	398	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.9	0.0	14.2	29.2	0.0	8.7	25.7	0.0	0.0	31.5	0.0	0.0
Incr Delay (d2), s/veh	28.7	0.0	1.6	6.4	0.0	0.2	3.9	0.0	0.0	17.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	11.5	2.0	0.0	5.3	4.0	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	60.6	0.0	15.8	35.6	0.0	8.9	29.7	0.0	0.0	48.6	0.0	0.0
LnGrp LOS	E		B	D		A	C			D		
Approach Vol, veh/h		748			594			220			15	
Approach Delay, s/veh		16.1			13.4			29.7			48.6	
Approach LOS		B			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	36.3		4.9	4.3	40.6		14.4
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0
Max Green Setting (Gmax), s	29.0	54.0		14.0	19.0	54.0		24.0
Max Q Clear Time (g_c+I1), s	5.5	24.5		2.5	2.2	12.2		9.5
Green Ext Time (p_c), s	0.2	6.8		0.0	0.0	7.1		0.9

Intersection Summary			
HCM 2010 Ctrl Delay			17.3
HCM 2010 LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	562	138	41	405	7	128	11	59	8	5	14
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1900	1900	1881	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	23	598	142	44	435	8	154	13	0	10	6	1
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.83	0.83	0.83	0.80	0.80	0.80
Percent Heavy Veh, %	0	1	1	0	0	0	1	0	0	0	0	0
Cap, veh/h	39	773	184	63	1009	19	207	219	0	29	17	3
Arrive On Green	0.02	0.53	0.53	0.03	0.54	0.54	0.12	0.12	0.00	0.03	0.03	0.03
Sat Flow, veh/h	1810	1462	347	1810	1860	34	1792	1900	0	1074	644	107
Grp Volume(v), veh/h	23	0	740	44	0	443	154	13	0	17	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1809	1810	0	1894	1792	1900	0	1826	0	0
Q Serve(g_s), s	0.7	0.0	19.3	1.4	0.0	8.3	4.9	0.4	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	0.7	0.0	19.3	1.4	0.0	8.3	4.9	0.4	0.0	0.5	0.0	0.0
Prop In Lane	1.00		0.19	1.00		0.02	1.00		0.00	0.59		0.06
Lane Grp Cap(c), veh/h	39	0	957	63	0	1027	207	219	0	49	0	0
V/C Ratio(X)	0.60	0.00	0.77	0.70	0.00	0.43	0.75	0.06	0.00	0.34	0.00	0.00
Avail Cap(c_a), veh/h	489	0	2049	489	0	1505	606	642	0	772	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.7	0.0	11.1	28.2	0.0	8.1	25.3	23.3	0.0	28.3	0.0	0.0
Incr Delay (d2), s/veh	7.7	0.0	1.5	7.3	0.0	0.3	5.5	0.1	0.0	4.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	9.9	0.8	0.0	4.4	2.8	0.2	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	36.4	0.0	12.6	35.5	0.0	8.4	30.8	23.4	0.0	32.5	0.0	0.0
LnGrp LOS	D		B	D		A	C	C		C		
Approach Vol, veh/h		763			487			167			17	
Approach Delay, s/veh		13.3			10.9			30.2			32.5	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	37.0		10.6	4.9	37.8		5.9
Change Period (Y+Rc), s	3.6	5.7		3.8	3.6	5.7		4.3
Max Green Setting (Gmax), s	16.0	67.0		20.0	16.0	47.0		25.0
Max Q Clear Time (g_c+I1), s	3.4	21.3		6.9	2.7	10.3		2.5
Green Ext Time (p_c), s	0.0	10.0		0.4	0.0	9.6		0.0

Intersection Summary			
HCM 2010 Ctrl Delay			14.7
HCM 2010 LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	111	0	116	0	0	0	67	347	0	0	246	54
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1900	1900	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	121	0	25	0	0	0	70	361	0	0	262	19
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.25	0.25	0.25	0.96	0.96	0.96	0.94	0.94	0.94
Percent Heavy Veh, %	3	0	0	0	0	0	3	3	0	0	3	3
Cap, veh/h	274	0	221	5	5	0	196	1031	903	5	590	500
Arrive On Green	0.16	0.00	0.14	0.00	0.00	0.00	0.11	0.56	0.00	0.00	0.32	0.32
Sat Flow, veh/h	1757	0	1561	1810	1900	0	1757	1845	1615	1810	1845	1563
Grp Volume(v), veh/h	121	0	25	0	0	0	70	361	0	0	262	19
Grp Sat Flow(s),veh/h/ln	1757	0	1561	1810	1900	0	1757	1845	1615	1810	1845	1563
Q Serve(g_s), s	2.3	0.0	0.5	0.0	0.0	0.0	1.3	3.9	0.0	0.0	4.1	0.3
Cycle Q Clear(g_c), s	2.3	0.0	0.5	0.0	0.0	0.0	1.3	3.9	0.0	0.0	4.1	0.3
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	274	0	221	5	5	0	196	1031	903	5	590	500
V/C Ratio(X)	0.44	0.00	0.11	0.00	0.00	0.00	0.36	0.35	0.00	0.00	0.44	0.04
Avail Cap(c_a), veh/h	1460	0	1297	1503	1579	0	584	1431	1252	601	1431	1212
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	13.8	0.0	13.5	0.0	0.0	0.0	14.8	4.4	0.0	0.0	9.7	8.5
Incr Delay (d2), s/veh	0.4	0.0	0.1	0.0	0.0	0.0	0.4	0.3	0.0	0.0	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.2	0.0	0.0	0.0	0.7	2.0	0.0	0.0	2.2	0.1
LnGrp Delay(d),s/veh	14.2	0.0	13.6	0.0	0.0	0.0	15.2	4.7	0.0	0.0	10.5	8.5
LnGrp LOS	B		B				B	A			B	A
Approach Vol, veh/h		146			0			431			281	
Approach Delay, s/veh		14.1			0.0			6.4			10.3	
Approach LOS		B						A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	25.9	0.0	10.2	8.6	17.2	10.2	0.0
Change Period (Y+Rc), s	4.6	5.7	4.6	5.1	4.6	5.7	4.6	5.1
Max Green Setting (Gmax), s	12.0	28.0	30.0	30.0	12.0	28.0	30.0	30.0
Max Q Clear Time (g_c+I1), s	0.0	5.9	0.0	2.5	3.3	6.1	4.3	0.0
Green Ext Time (p_c), s	0.0	5.2	0.0	0.0	0.0	5.2	0.1	0.0

Intersection Summary		
HCM 2010 Ctrl Delay	9.0	
HCM 2010 LOS	A	

Appendix A

Existing Plus Project Conditions

Technical Calculations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	160	220	230	60	820	110	290	170	10	115	295	370
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1776	1845	1900	1881	1863	1845	1863	1900	1845	1881	1881
Adj Flow Rate, veh/h	198	272	46	69	943	26	345	202	8	149	383	303
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	1	1	1
Peak Hour Factor	0.81	0.81	0.81	0.87	0.87	0.87	0.84	0.84	0.84	0.77	0.77	0.77
Percent Heavy Veh, %	5	7	3	0	1	2	3	2	2	3	1	1
Cap, veh/h	263	1049	486	89	1007	445	414	1184	47	180	605	514
Arrive On Green	0.08	0.31	0.31	0.05	0.28	0.28	0.12	0.34	0.34	0.10	0.32	0.32
Sat Flow, veh/h	3343	3374	1563	1810	3574	1580	3408	3471	137	1757	1881	1596
Grp Volume(v), veh/h	198	272	46	69	943	26	345	103	107	149	383	303
Grp Sat Flow(s),veh/h/ln	1672	1687	1563	1810	1787	1580	1704	1770	1838	1757	1881	1596
Q Serve(g_s), s	5.8	6.0	2.1	3.8	25.7	1.2	9.9	4.0	4.1	8.3	17.3	15.9
Cycle Q Clear(g_c), s	5.8	6.0	2.1	3.8	25.7	1.2	9.9	4.0	4.1	8.3	17.3	15.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	263	1049	486	89	1007	445	414	603	627	180	605	514
V/C Ratio(X)	0.75	0.26	0.09	0.77	0.94	0.06	0.83	0.17	0.17	0.83	0.63	0.59
Avail Cap(c_a), veh/h	402	1082	501	163	1014	448	615	603	627	335	605	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	25.8	24.4	46.9	35.0	26.2	42.8	23.0	23.0	43.9	28.8	28.3
Incr Delay (d2), s/veh	1.7	0.1	0.1	5.2	15.2	0.0	4.0	0.6	0.6	3.7	5.0	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.8	0.9	2.0	14.8	0.5	4.9	2.1	2.2	4.2	9.8	7.7
LnGrp Delay(d),s/veh	46.7	25.9	24.5	52.1	50.2	26.2	46.8	23.6	23.6	47.6	33.8	33.2
LnGrp LOS	D	C	C	D	D	C	D	C	C	D	C	C
Approach Vol, veh/h		516			1038			555			835	
Approach Delay, s/veh		33.7			49.7			38.0			36.1	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	36.7	16.1	49.2	11.8	33.8	14.2	51.2
Change Period (Y+Rc), s	4.0	5.7	4.0	* 5.9	4.0	5.7	4.0	* 5.9
Max Green Setting (Gmax), s	9.0	32.0	18.0	* 32	12.0	28.3	19.0	* 31
Max Q Clear Time (g_c+I1), s	5.8	8.0	11.9	19.3	7.8	27.7	10.3	6.1
Green Ext Time (p_c), s	0.0	7.1	0.2	3.1	0.1	0.4	0.1	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	40.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	300	10	65	774	40	40	60	30	95	220	160
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1727	1810	1900	1792	1863	1900	1900	1776	1900	1900	1881	1881
Adj Flow Rate, veh/h	37	366	11	75	890	45	62	94	24	112	259	16
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	1
Peak Hour Factor	0.82	0.82	0.82	0.87	0.87	0.87	0.64	0.64	0.64	0.85	0.85	0.85
Percent Heavy Veh, %	10	5	5	6	2	2	0	7	7	1	1	1
Cap, veh/h	45	778	23	95	833	42	172	130	33	102	237	291
Arrive On Green	0.03	0.45	0.45	0.06	0.47	0.47	0.10	0.10	0.10	0.18	0.18	0.18
Sat Flow, veh/h	1645	1748	53	1707	1758	89	1810	1362	348	559	1294	1590
Grp Volume(v), veh/h	37	0	377	75	0	935	62	0	118	371	0	16
Grp Sat Flow(s),veh/h/ln	1645	0	1800	1707	0	1847	1810	0	1710	1853	0	1590
Q Serve(g_s), s	2.1	0.0	13.6	4.0	0.0	44.0	3.0	0.0	6.2	17.0	0.0	0.8
Cycle Q Clear(g_c), s	2.1	0.0	13.6	4.0	0.0	44.0	3.0	0.0	6.2	17.0	0.0	0.8
Prop In Lane	1.00		0.03	1.00		0.05	1.00		0.20	0.30		1.00
Lane Grp Cap(c), veh/h	45	0	802	95	0	875	172	0	163	339	0	291
V/C Ratio(X)	0.83	0.00	0.47	0.79	0.00	1.07	0.36	0.00	0.73	1.09	0.00	0.05
Avail Cap(c_a), veh/h	151	0	802	156	0	875	429	0	405	339	0	291
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	18.1	43.3	0.0	24.4	39.4	0.0	40.8	37.9	0.0	31.3
Incr Delay (d2), s/veh	24.1	0.0	0.9	10.2	0.0	50.3	0.5	0.0	2.3	76.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	7.0	2.2	0.0	34.4	1.5	0.0	3.1	15.8	0.0	0.4
LnGrp Delay(d),s/veh	69.1	0.0	19.0	53.5	0.0	74.8	39.8	0.0	43.1	114.1	0.0	31.7
LnGrp LOS	E		B	D		F	D		D	F		C
Approach Vol, veh/h		414			1010			180			387	
Approach Delay, s/veh		23.5			73.2			42.0			110.7	
Approach LOS		C			E			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	47.3		22.5	6.0	50.0		14.3
Change Period (Y+Rc), s	3.5	6.0		5.5	3.5	6.0		5.5
Max Green Setting (Gmax), s	8.5	34.0		17.0	8.5	44.0		22.0
Max Q Clear Time (g_c+I1), s	6.0	15.6		19.0	4.1	46.0		8.2
Green Ext Time (p_c), s	0.0	13.3		0.0	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	67.3
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	205	215	65	614	10	265	55	50	0	40	0
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1792	1827	1881	1863	1900	1881	1900	1900	1900	1845	1900
Adj Flow Rate, veh/h	6	256	59	74	698	10	353	73	36	0	53	-3
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.80	0.80	0.80	0.88	0.88	0.88	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	0	6	4	1	2	2	1	0	0	3	3	3
Cap, veh/h	12	780	674	95	882	13	434	291	143	0	343	0
Arrive On Green	0.01	0.44	0.44	0.05	0.48	0.48	0.24	0.24	0.24	0.00	0.00	0.00
Sat Flow, veh/h	1810	1792	1549	1792	1832	26	1792	1201	592	0	1976	-112
Grp Volume(v), veh/h	6	256	59	74	0	708	353	0	109	0	0	0
Grp Sat Flow(s),veh/h/ln	1810	1792	1549	1792	0	1858	1792	0	1793	0	0	0
Q Serve(g_s), s	0.2	5.0	1.2	2.2	0.0	16.9	9.9	0.0	2.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	5.0	1.2	2.2	0.0	16.9	9.9	0.0	2.6	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	1.00		0.33	0.00		-0.06
Lane Grp Cap(c), veh/h	12	780	674	95	0	895	434	0	434	0	0	0
V/C Ratio(X)	0.52	0.33	0.09	0.78	0.00	0.79	0.81	0.00	0.25	0.00	0.00	0.00
Avail Cap(c_a), veh/h	410	1691	1462	406	0	1753	825	0	825	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	26.2	9.9	8.8	24.8	0.0	11.5	19.0	0.0	16.2	0.0	0.0	0.0
Incr Delay (d2), s/veh	24.3	0.2	0.1	10.0	0.0	1.6	2.8	0.0	0.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.5	0.5	1.3	0.0	8.9	5.1	0.0	1.3	0.0	0.0	0.0
LnGrp Delay(d),s/veh	50.6	10.1	8.8	34.8	0.0	13.1	21.8	0.0	16.4	0.0	0.0	0.0
LnGrp LOS	D	B	A	C		B	C		B			
Approach Vol, veh/h		321			782			462			0	
Approach Delay, s/veh		10.6			15.2			20.5			0.0	
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.3	31.2		0.0	6.8	28.8		17.4
Change Period (Y+Rc), s	4.0	5.7		4.0	4.0	5.7		4.6
Max Green Setting (Gmax), s	12.0	50.0		22.0	12.0	50.0		24.4
Max Q Clear Time (g_c+I1), s	2.2	18.9		0.0	4.2	7.0		11.9
Green Ext Time (p_c), s	0.0	6.6		0.0	0.1	6.9		1.0

Intersection Summary			
HCM 2010 Ctrl Delay			15.8
HCM 2010 LOS			B

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	300	10	10	530	10	15	0	15
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	450	-	450	450	-	450	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	88	88	88	75	75	75
Heavy Vehicles, %	0	3	0	10	2	0	6	0	0
Mvmt Flow	0	349	12	11	602	11	20	0	20

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	604	0	0	351	0	0	997	978	353
Stage 1	-	-	-	-	-	-	351	351	-
Stage 2	-	-	-	-	-	-	646	627	-
Critical Hdwy	4.1	-	-	4.2	-	-	7.16	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.5	-
Follow-up Hdwy	2.2	-	-	2.29	-	-	3.554	4	3.3
Pot Cap-1 Maneuver	984	-	-	1165	-	-	219	252	695
Stage 1	-	-	-	-	-	-	657	636	-
Stage 2	-	-	-	-	-	-	454	479	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	982	-	-	1163	-	-	200	249	693
Mov Cap-2 Maneuver	-	-	-	-	-	-	200	249	-
Stage 1	-	-	-	-	-	-	656	635	-
Stage 2	-	-	-	-	-	-	414	474	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	18.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	310	982	-	-	1163	-	-	314
HCM Lane V/C Ratio	0.129	-	-	-	0.01	-	-	0.222
HCM Control Delay (s)	18.3	0	-	-	8.1	-	-	19.7
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.8

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	25	0	30
Conflicting Peds, #/hr	2	0	2
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	79	79	79
Heavy Vehicles, %	0	0	3
Mvmt Flow	32	0	38

Major/Minor	Minor2		
Conflicting Flow All	988	978	606
Stage 1	627	627	-
Stage 2	361	351	-
Critical Hdwy	7.1	6.5	6.23
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.327
Pot Cap-1 Maneuver	228	252	495
Stage 1	475	479	-
Stage 2	662	636	-
Platoon blocked, %			
Mov Cap-1 Maneuver	219	249	493
Mov Cap-2 Maneuver	219	249	-
Stage 1	474	474	-
Stage 2	642	635	-

Approach	SB
HCM Control Delay, s	19.7
HCM LOS	C

Minor Lane/Major Mvmt

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	305	35	320	500	50	25
Number	2	12	1	6	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1900	1881	1863	1900	1652
Adj Flow Rate, veh/h	355	34	432	676	125	-5
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.86	0.86	0.74	0.74	0.40	0.40
Percent Heavy Veh, %	5	5	1	2	0	15
Cap, veh/h	531	51	517	1314	165	128
Arrive On Green	0.33	0.33	0.29	0.71	0.09	0.00
Sat Flow, veh/h	1626	156	1792	1863	1810	1404
Grp Volume(v), veh/h	0	389	432	676	125	-5
Grp Sat Flow(s),veh/h/ln	0	1781	1792	1863	1810	1404
Q Serve(g_s), s	0.0	8.3	10.0	7.4	3.0	0.0
Cycle Q Clear(g_c), s	0.0	8.3	10.0	7.4	3.0	0.0
Prop In Lane		0.09	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	582	517	1314	165	128
V/C Ratio(X)	0.00	0.67	0.84	0.51	0.76	-0.04
Avail Cap(c_a), veh/h	0	1770	1173	1851	776	603
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	12.8	14.8	3.0	19.6	0.0
Incr Delay (d2), s/veh	0.0	0.5	2.7	0.1	6.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.1	5.3	3.6	1.8	0.0
LnGrp Delay(d),s/veh	0.0	13.3	17.5	3.1	26.6	0.0
LnGrp LOS		B	B	A	C	
Approach Vol, veh/h	389			1108	120	
Approach Delay, s/veh	13.3			8.7	27.7	
Approach LOS	B			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	16.8	19.5		8.0		36.2		
Change Period (Y+Rc), s	4.0	5.0		4.0		5.0		
Max Green Setting (Gmax), s	29.0	44.0		19.0		44.0		
Max Q Clear Time (g_c+I1), s	12.0	10.3		5.0		9.4		
Green Ext Time (p_c), s	0.8	4.0		0.2		4.0		

Intersection Summary			
HCM 2010 Ctrl Delay			11.2
HCM 2010 LOS			B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	530	50	10	760	60	5
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	616	57	14	1027	130	4
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.86	0.86	0.74	0.74	0.46	0.46
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1146	973	19	1321	221	198
Arrive On Green	0.62	0.62	0.01	0.71	0.12	0.12
Sat Flow, veh/h	1863	1581	1774	1863	1774	1583
Grp Volume(v), veh/h	616	57	14	1027	130	4
Grp Sat Flow(s),veh/h/ln	1863	1581	1774	1863	1774	1583
Q Serve(g_s), s	10.3	0.8	0.4	19.4	3.7	0.1
Cycle Q Clear(g_c), s	10.3	0.8	0.4	19.4	3.7	0.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1146	973	19	1321	221	198
V/C Ratio(X)	0.54	0.06	0.75	0.78	0.59	0.02
Avail Cap(c_a), veh/h	2063	1751	328	2407	819	731
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.0	4.2	26.7	5.1	22.4	20.8
Incr Delay (d2), s/veh	0.4	0.0	19.7	1.0	8.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.3	0.3	9.8	2.4	0.1
LnGrp Delay(d),s/veh	6.4	4.2	46.4	6.1	31.1	20.9
LnGrp LOS	A	A	D	A	C	C
Approach Vol, veh/h	673			1041	134	
Approach Delay, s/veh	6.2			6.7	30.8	
Approach LOS	A			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.1	37.8				42.9		11.3
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	10.0	60.0				70.0		25.0
Max Q Clear Time (g_c+I1), s	2.4	12.3				21.4		5.7
Green Ext Time (p_c), s	0.0	16.9				17.0		1.0

Intersection Summary			
HCM 2010 Ctrl Delay			8.2
HCM 2010 LOS			A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	420	110	165	625	5	145	0	75	0	0	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1863	1900	1863	1863	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	8	689	167	226	856	7	227	0	-3	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.61	0.61	0.61	0.73	0.73	0.73	0.64	0.64	0.64	0.63	0.63	0.63
Percent Heavy Veh, %	20	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	12	772	187	269	1249	10	283	0	254	0	2	0
Arrive On Green	0.01	0.53	0.53	0.15	0.68	0.68	0.16	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1508	1448	351	1774	1845	15	1798	0	1615	0	1900	0
Grp Volume(v), veh/h	8	0	856	226	0	863	227	0	-3	0	0	0
Grp Sat Flow(s),veh/h/ln	1508	0	1799	1774	0	1860	1798	0	1615	0	1900	0
Q Serve(g_s), s	0.4	0.0	35.0	10.2	0.0	23.1	10.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.4	0.0	35.0	10.2	0.0	23.1	10.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.20	1.00		0.01	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	12	0	959	269	0	1259	283	0	254	0	2	0
V/C Ratio(X)	0.65	0.00	0.89	0.84	0.00	0.69	0.80	0.00	-0.01	0.00	0.00	0.00
Avail Cap(c_a), veh/h	347	0	1178	624	0	1259	523	0	470	0	323	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	40.8	0.0	17.2	34.0	0.0	8.0	33.5	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	36.1	0.0	7.3	5.2	0.0	1.5	5.2	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	19.1	5.4	0.0	12.0	5.4	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	76.8	0.0	24.5	39.2	0.0	9.5	38.7	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	E		C	D		A	D					
Approach Vol, veh/h		864			1089			224			0	
Approach Delay, s/veh		25.0			15.7			39.2			0.0	
Approach LOS		C			B			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.5	49.0		0.0	4.7	60.8		17.0
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0
Max Green Setting (Gmax), s	29.0	54.0		14.0	19.0	54.0		24.0
Max Q Clear Time (g_c+I1), s	12.2	37.0		0.0	2.4	25.1		12.0
Green Ext Time (p_c), s	0.4	7.0		0.0	0.0	11.4		0.9

Intersection Summary			
HCM 2010 Ctrl Delay			21.8
HCM 2010 LOS			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	420	70	20	575	0	190	5	45	10	5	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1845	1900	1881	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	8	646	102	26	747	0	297	8	0	16	8	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.65	0.65	0.65	0.77	0.77	0.77	0.64	0.64	0.64	0.63	0.63	0.63
Percent Heavy Veh, %	0	1	1	0	3	3	1	0	0	0	0	0
Cap, veh/h	15	816	129	41	975	0	347	368	0	40	20	0
Arrive On Green	0.01	0.51	0.51	0.02	0.53	0.00	0.19	0.19	0.00	0.03	0.03	0.00
Sat Flow, veh/h	1810	1586	250	1810	1845	0	1792	1900	0	1226	613	0
Grp Volume(v), veh/h	8	0	748	26	747	0	297	8	0	24	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1836	1810	1845	0	1792	1900	0	1839	0	0
Q Serve(g_s), s	0.3	0.0	24.5	1.0	23.6	0.0	11.8	0.3	0.0	0.9	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	24.5	1.0	23.6	0.0	11.8	0.3	0.0	0.9	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.00	1.00		0.00	0.67		0.00
Lane Grp Cap(c), veh/h	15	0	945	41	975	0	347	368	0	60	0	0
V/C Ratio(X)	0.54	0.00	0.79	0.64	0.77	0.00	0.85	0.02	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	394	0	945	394	1681	0	487	517	0	625	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.3	0.0	14.6	35.6	13.7	0.0	28.6	24.0	0.0	34.9	0.0	0.0
Incr Delay (d2), s/veh	15.3	0.0	4.7	8.7	1.4	0.0	10.4	0.0	0.0	4.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	13.5	0.6	12.2	0.0	6.8	0.1	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	51.7	0.0	19.3	44.4	15.1	0.0	39.0	24.0	0.0	39.3	0.0	0.0
LnGrp LOS	D		B	D	B		D	C		D		
Approach Vol, veh/h		756			773			305			24	
Approach Delay, s/veh		19.7			16.1			38.6			39.3	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	43.5		18.1	4.2	44.6		6.7
Change Period (Y+Rc), s	3.6	5.7		3.8	3.6	5.7		4.3
Max Green Setting (Gmax), s	16.0	37.0		20.0	16.0	67.0		25.0
Max Q Clear Time (g_c+I1), s	3.0	26.5		13.8	2.3	25.6		2.9
Green Ext Time (p_c), s	0.0	6.7		0.5	0.0	13.3		0.1

Intersection Summary			
HCM 2010 Ctrl Delay			21.6
HCM 2010 LOS			C

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBU	SBL	SBR
Vol, veh/h	0	60	165	0	425	10	0	10	55
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	65	179	0	462	11	0	11	60
Number of Lanes	0	1	1	0	1	1	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	9.4	15.7	8.9
HCM LOS	A	C	A

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	60	165	425	10	10	55
LT Vol	0	165	425	0	0	0
Through Vol	0	0	0	10	0	55
RT Vol	60	0	0	0	10	0
Lane Flow Rate	65	179	462	11	11	60
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.102	0.255	0.635	0.013	0.02	0.092
Departure Headway (Hd)	5.615	5.112	4.95	4.247	6.725	5.513
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	638	701	730	842	531	647
Service Time	3.353	2.849	2.682	1.979	4.483	3.27
HCM Lane V/C Ratio	0.102	0.255	0.633	0.013	0.021	0.093
HCM Control Delay	9	9.6	15.9	7	9.6	8.8
HCM Lane LOS	A	A	C	A	A	A
HCM 95th-tile Q	0.3	1	4.6	0	0.1	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	0	245	0	0	0	125	115	0	0	535	85
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	41	0	11	0	0	0	158	146	0	0	622	34
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.86	0.86	0.86	0.25	0.25	0.25	0.79	0.79	0.79	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	125	0	94	4	4	0	271	1287	1094	4	813	689
Arrive On Green	0.07	0.00	0.06	0.00	0.00	0.00	0.15	0.70	0.00	0.00	0.44	0.44
Sat Flow, veh/h	1757	0	1559	1757	1845	0	1757	1845	1568	1757	1845	1564
Grp Volume(v), veh/h	41	0	11	0	0	0	158	146	0	0	622	34
Grp Sat Flow(s),veh/h/ln	1757	0	1559	1757	1845	0	1757	1845	1568	1757	1845	1564
Q Serve(g_s), s	1.0	0.0	0.3	0.0	0.0	0.0	3.7	1.2	0.0	0.0	12.7	0.6
Cycle Q Clear(g_c), s	1.0	0.0	0.3	0.0	0.0	0.0	3.7	1.2	0.0	0.0	12.7	0.6
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	125	0	94	4	4	0	271	1287	1094	4	813	689
V/C Ratio(X)	0.33	0.00	0.12	0.00	0.00	0.00	0.58	0.11	0.00	0.00	0.77	0.05
Avail Cap(c_a), veh/h	1181	0	1048	1181	1240	0	473	1287	1094	473	1154	978
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	19.7	0.0	19.8	0.0	0.0	0.0	17.5	2.2	0.0	0.0	10.5	7.1
Incr Delay (d2), s/veh	0.6	0.0	0.2	0.0	0.0	0.0	0.7	0.1	0.0	0.0	2.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.1	0.0	0.0	0.0	1.9	0.6	0.0	0.0	7.0	0.2
LnGrp Delay(d),s/veh	20.3	0.0	20.0	0.0	0.0	0.0	18.3	2.3	0.0	0.0	13.1	7.2
LnGrp LOS	C		C				B	A			B	A
Approach Vol, veh/h		52			0			304			656	
Approach Delay, s/veh		20.2			0.0			10.6			12.8	
Approach LOS		C						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	36.8	0.0	7.8	11.5	25.4	7.8	0.0
Change Period (Y+Rc), s	4.6	5.7	4.6	5.1	4.6	5.7	4.6	5.1
Max Green Setting (Gmax), s	12.0	28.0	30.0	30.0	12.0	27.9	30.0	30.0
Max Q Clear Time (g_c+I1), s	0.0	3.2	0.0	2.3	5.7	14.7	3.0	0.0
Green Ext Time (p_c), s	0.0	7.4	0.0	0.0	0.0	4.8	0.0	0.0

Intersection Summary			
HCM 2010 Ctrl Delay			12.5
HCM 2010 LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	445	795	295	135	505	95	300	245	20	115	185	205
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1881	1863	1881	1881	1900	1881	1863	1863
Adj Flow Rate, veh/h	468	837	74	153	574	16	326	266	15	134	215	51
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.92	0.92	0.92	0.86	0.86	0.86
Percent Heavy Veh, %	0	1	1	0	1	2	1	1	1	1	2	2
Cap, veh/h	533	1032	460	185	854	377	396	1095	61	164	551	462
Arrive On Green	0.15	0.29	0.29	0.10	0.24	0.24	0.11	0.32	0.32	0.09	0.30	0.30
Sat Flow, veh/h	3510	3574	1593	1810	3574	1579	3476	3440	193	1792	1863	1560
Grp Volume(v), veh/h	468	837	74	153	574	16	326	138	143	134	215	51
Grp Sat Flow(s),veh/h/ln	1755	1787	1593	1810	1787	1579	1738	1787	1846	1792	1863	1560
Q Serve(g_s), s	12.8	21.4	3.4	8.2	14.3	0.8	9.0	5.6	5.6	7.2	9.0	2.3
Cycle Q Clear(g_c), s	12.8	21.4	3.4	8.2	14.3	0.8	9.0	5.6	5.6	7.2	9.0	2.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	533	1032	460	185	854	377	396	569	587	164	551	462
V/C Ratio(X)	0.88	0.81	0.16	0.83	0.67	0.04	0.82	0.24	0.24	0.82	0.39	0.11
Avail Cap(c_a), veh/h	571	1174	523	239	1065	470	565	569	587	255	551	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	32.5	26.1	43.3	33.9	28.8	42.6	24.8	24.8	43.9	27.6	25.2
Incr Delay (d2), s/veh	13.1	3.8	0.1	13.6	1.0	0.0	4.4	1.0	1.0	5.7	2.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	11.1	1.5	4.8	7.2	0.3	4.6	2.9	3.0	3.8	5.0	1.1
LnGrp Delay(d),s/veh	53.9	36.2	26.2	56.9	35.0	28.8	47.0	25.8	25.8	49.6	29.6	25.7
LnGrp LOS	D	D	C	E	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1379			743			607			400	
Approach Delay, s/veh		41.7			39.3			37.2			35.8	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	34.1	15.2	46.6	18.9	29.2	13.0	48.8
Change Period (Y+Rc), s	4.0	5.7	4.0	* 5.9	4.0	5.7	4.0	* 5.9
Max Green Setting (Gmax), s	13.0	32.3	16.0	* 29	16.0	29.3	14.0	* 31
Max Q Clear Time (g_c+I1), s	10.2	23.4	11.0	11.0	14.8	16.3	9.2	7.6
Green Ext Time (p_c), s	0.0	4.9	0.2	2.2	0.1	6.3	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	39.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	130	822	20	30	532	90	45	125	55	65	95	85
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1863	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	140	884	22	34	605	102	51	140	62	70	102	91
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.89	0.89	0.89	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	1	0	1	1	2	1	1	0	0	0
Cap, veh/h	152	856	21	43	639	108	244	169	75	127	185	269
Arrive On Green	0.08	0.47	0.47	0.02	0.41	0.41	0.14	0.14	0.14	0.17	0.17	0.17
Sat Flow, veh/h	1810	1826	45	1810	1564	264	1774	1224	542	758	1104	1605
Grp Volume(v), veh/h	140	0	906	34	0	707	51	0	202	172	0	91
Grp Sat Flow(s),veh/h/ln	1810	0	1872	1810	0	1827	1774	0	1766	1862	0	1605
Q Serve(g_s), s	7.8	0.0	47.5	1.9	0.0	37.9	2.6	0.0	11.3	8.6	0.0	5.1
Cycle Q Clear(g_c), s	7.8	0.0	47.5	1.9	0.0	37.9	2.6	0.0	11.3	8.6	0.0	5.1
Prop In Lane	1.00		0.02	1.00		0.14	1.00		0.31	0.41		1.00
Lane Grp Cap(c), veh/h	152	0	877	43	0	747	244	0	243	312	0	269
V/C Ratio(X)	0.92	0.00	1.03	0.79	0.00	0.95	0.21	0.00	0.83	0.55	0.00	0.34
Avail Cap(c_a), veh/h	152	0	877	152	0	793	385	0	383	312	0	269
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.1	0.0	26.9	49.3	0.0	28.9	38.8	0.0	42.6	38.7	0.0	37.3
Incr Delay (d2), s/veh	50.5	0.0	39.1	20.9	0.0	20.4	0.2	0.0	4.5	6.8	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.0	33.9	1.2	0.0	23.3	1.3	0.0	5.8	5.0	0.0	2.5
LnGrp Delay(d),s/veh	96.6	0.0	66.0	70.2	0.0	49.4	39.0	0.0	47.0	45.6	0.0	40.6
LnGrp LOS	F		F	E		D	D		D	D		D
Approach Vol, veh/h		1046			741			253			263	
Approach Delay, s/veh		70.1			50.3			45.4			43.9	
Approach LOS		E			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	53.5		22.5	12.0	47.5		19.5
Change Period (Y+Rc), s	3.5	6.0		5.5	3.5	6.0		5.5
Max Green Setting (Gmax), s	8.5	34.0		17.0	8.5	44.0		22.0
Max Q Clear Time (g_c+I1), s	3.9	49.5		10.6	9.8	39.9		13.3
Green Ext Time (p_c), s	0.0	0.0		0.4	0.0	1.6		0.5

Intersection Summary			
HCM 2010 Ctrl Delay			58.0
HCM 2010 LOS			E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	647	290	35	402	5	245	30	55	0	10	5
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1881	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	5	696	195	44	502	6	285	35	6	0	20	4
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.93	0.93	0.93	0.80	0.80	0.80	0.86	0.86	0.86	0.50	0.50	0.50
Percent Heavy Veh, %	0	1	0	0	1	1	1	0	0	0	0	0
Cap, veh/h	10	890	762	61	930	11	343	302	52	0	39	8
Arrive On Green	0.01	0.47	0.47	0.03	0.50	0.50	0.19	0.19	0.19	0.00	0.03	0.03
Sat Flow, veh/h	1810	1881	1612	1810	1855	22	1792	1574	270	0	1533	307
Grp Volume(v), veh/h	5	696	195	44	0	508	285	0	41	0	0	24
Grp Sat Flow(s),veh/h/ln	1810	1881	1612	1810	0	1877	1792	0	1844	0	0	1840
Q Serve(g_s), s	0.2	20.5	4.8	1.6	0.0	12.2	10.1	0.0	1.2	0.0	0.0	0.9
Cycle Q Clear(g_c), s	0.2	20.5	4.8	1.6	0.0	12.2	10.1	0.0	1.2	0.0	0.0	0.9
Prop In Lane	1.00		1.00	1.00		0.01	1.00		0.15	0.00		0.17
Lane Grp Cap(c), veh/h	10	890	762	61	0	941	343	0	353	0	0	47
V/C Ratio(X)	0.52	0.78	0.26	0.73	0.00	0.54	0.83	0.00	0.12	0.00	0.00	0.51
Avail Cap(c_a), veh/h	328	1422	1218	328	0	1419	661	0	680	0	0	612
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	32.8	14.6	10.5	31.7	0.0	11.3	25.7	0.0	22.1	0.0	0.0	31.8
Incr Delay (d2), s/veh	28.8	1.5	0.2	11.5	0.0	0.5	3.9	0.0	0.1	0.0	0.0	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	10.8	2.1	1.0	0.0	6.5	5.4	0.0	0.6	0.0	0.0	0.5
LnGrp Delay(d),s/veh	61.6	16.1	10.6	43.2	0.0	11.8	29.6	0.0	22.2	0.0	0.0	38.2
LnGrp LOS	E	B	B	D		B	C		C			D
Approach Vol, veh/h		896			552			326			24	
Approach Delay, s/veh		15.2			14.3			28.7			38.2	
Approach LOS		B			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.4	38.9		5.7	6.2	37.0		17.3
Change Period (Y+Rc), s	4.0	5.7		4.0	4.0	5.7		4.6
Max Green Setting (Gmax), s	12.0	50.0		22.0	12.0	50.0		24.4
Max Q Clear Time (g_c+I1), s	2.2	14.2		2.9	3.6	22.5		12.1
Green Ext Time (p_c), s	0.0	9.4		0.0	0.0	8.8		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	17.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	25	630	10	25	380	30	10	0	15
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	450	-	450	450	-	450	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	82	82	82	70	70	70
Heavy Vehicles, %	2	1	0	0	1	0	0	0	0
Mvmt Flow	27	685	11	30	463	37	14	0	21

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	465	0	0	687	0	0	1281	1267	689
Stage 1	-	-	-	-	-	-	741	741	-
Stage 2	-	-	-	-	-	-	540	526	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1096	-	-	916	-	-	144	170	449
Stage 1	-	-	-	-	-	-	411	426	-
Stage 2	-	-	-	-	-	-	530	532	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1094	-	-	914	-	-	131	160	448
Mov Cap-2 Maneuver	-	-	-	-	-	-	131	160	-
Stage 1	-	-	-	-	-	-	400	415	-
Stage 2	-	-	-	-	-	-	488	514	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.5	23.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	228	1094	-	-	914	-	-	237
HCM Lane V/C Ratio	0.157	0.025	-	-	0.033	-	-	0.202
HCM Control Delay (s)	23.7	8.4	-	-	9.1	-	-	24
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0.1	-	-	0.7

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	15	0	20
Conflicting Peds, #/hr	2	0	2
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	73	73	73
Heavy Vehicles, %	0	0	0
Mvmt Flow	21	0	27

Major/Minor	Minor2		
Conflicting Flow All	1278	1267	467
Stage 1	526	526	-
Stage 2	752	741	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	144	170	600
Stage 1	539	532	-
Stage 2	405	426	-
Platoon blocked, %			
Mov Cap-1 Maneuver	131	160	598
Mov Cap-2 Maneuver	131	160	-
Stage 1	525	514	-
Stage 2	375	415	-

Approach	SB
HCM Control Delay, s	24
HCM LOS	C

Minor Lane/Major Mvmt

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	650	10	245	425	10	20
Number	2	12	1	6	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1900	1759
Adj Flow Rate, veh/h	903	14	306	531	31	0
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.72	0.72	0.80	0.80	0.32	0.32
Percent Heavy Veh, %	2	2	2	2	0	8
Cap, veh/h	990	15	368	1523	49	41
Arrive On Green	0.54	0.54	0.21	0.82	0.03	0.00
Sat Flow, veh/h	1829	28	1774	1863	1810	1495
Grp Volume(v), veh/h	0	917	306	531	31	0
Grp Sat Flow(s),veh/h/ln	0	1858	1774	1863	1810	1495
Q Serve(g_s), s	0.0	25.9	9.6	4.2	1.0	0.0
Cycle Q Clear(g_c), s	0.0	25.9	9.6	4.2	1.0	0.0
Prop In Lane		0.02	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1005	368	1523	49	41
V/C Ratio(X)	0.00	0.91	0.83	0.35	0.63	0.00
Avail Cap(c_a), veh/h	0	1409	887	1523	593	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	12.1	22.0	1.3	27.9	0.0
Incr Delay (d2), s/veh	0.0	5.8	3.7	0.1	12.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	14.6	5.1	2.1	0.7	0.0
LnGrp Delay(d),s/veh	0.0	17.8	25.7	1.4	40.6	0.0
LnGrp LOS		B	C	A	D	
Approach Vol, veh/h	917			837	31	
Approach Delay, s/veh	17.8			10.3	40.6	
Approach LOS	B			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	16.0	36.4		5.6		52.4		
Change Period (Y+Rc), s	4.0	5.0		4.0		5.0		
Max Green Setting (Gmax), s	29.0	44.0		19.0		44.0		
Max Q Clear Time (g_c+I1), s	11.6	27.9		3.0		6.2		
Green Ext Time (p_c), s	0.5	3.5		0.0		6.2		

Intersection Summary			
HCM 2010 Ctrl Delay			14.7
HCM 2010 LOS			B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	625	60	10	595	75	10
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	868	82	12	744	163	15
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.72	0.72	0.80	0.80	0.46	0.46
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1149	975	16	1313	245	219
Arrive On Green	0.62	0.62	0.01	0.70	0.14	0.14
Sat Flow, veh/h	1863	1581	1774	1863	1774	1583
Grp Volume(v), veh/h	868	82	12	744	163	15
Grp Sat Flow(s),veh/h/ln	1863	1581	1774	1863	1774	1583
Q Serve(g_s), s	19.1	1.2	0.4	11.2	5.0	0.5
Cycle Q Clear(g_c), s	19.1	1.2	0.4	11.2	5.0	0.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1149	975	16	1313	245	219
V/C Ratio(X)	0.76	0.08	0.74	0.57	0.67	0.07
Avail Cap(c_a), veh/h	1952	1656	93	2277	774	691
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.9	4.4	28.3	4.2	23.4	21.5
Incr Delay (d2), s/veh	1.0	0.0	21.7	0.4	10.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	0.5	0.3	5.7	3.2	0.2
LnGrp Delay(d),s/veh	8.9	4.5	50.0	4.5	34.1	22.0
LnGrp LOS	A	A	D	A	C	C
Approach Vol, veh/h	950			756	178	
Approach Delay, s/veh	8.5			5.3	33.1	
Approach LOS	A			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.0	39.8				44.9		12.4
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	3.0	60.0				70.0		25.0
Max Q Clear Time (g_c+I1), s	2.4	21.1				13.2		7.0
Green Ext Time (p_c), s	0.0	14.2				15.5		1.4

Intersection Summary			
HCM 2010 Ctrl Delay			9.5
HCM 2010 LOS			A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	565	65	90	460	5	140	5	155	5	0	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1900	1900	1881	1900	1900	1900
Adj Flow Rate, veh/h	6	649	70	98	500	5	173	6	-13	8	0	-2
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.81	0.81	0.81	0.60	0.60	0.60
Percent Heavy Veh, %	0	1	1	0	1	1	0	0	1	0	0	0
Cap, veh/h	12	845	91	129	1062	11	245	9	224	194	65	0
Arrive On Green	0.01	0.51	0.51	0.07	0.57	0.57	0.14	0.14	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1810	1669	180	1810	1859	19	1752	61	1599	2514	0	-628
Grp Volume(v), veh/h	6	0	719	98	0	505	179	0	-13	0	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1849	1810	0	1878	1812	0	1599	0	0	0
Q Serve(g_s), s	0.2	0.0	14.5	2.4	0.0	7.3	4.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	14.5	2.4	0.0	7.3	4.3	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.01	0.97		1.00	1.33		-0.33
Lane Grp Cap(c), veh/h	12	0	936	129	0	1072	254	0	224	0	0	0
V/C Ratio(X)	0.52	0.00	0.77	0.76	0.00	0.47	0.71	0.00	-0.06	0.00	0.00	0.00
Avail Cap(c_a), veh/h	747	0	2169	1140	0	2204	945	0	834	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	22.8	0.0	9.2	21.0	0.0	5.8	18.9	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	23.9	0.0	1.0	6.6	0.0	0.2	3.6	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	7.5	1.5	0.0	3.7	2.4	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	46.7	0.0	10.2	27.6	0.0	6.0	22.5	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	D		B	C		A	C					
Approach Vol, veh/h		725			603			166			0	
Approach Delay, s/veh		10.5			9.5			24.2			0.0	
Approach LOS		B			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.3	28.3		0.0	4.3	31.3		10.4
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0
Max Green Setting (Gmax), s	29.0	54.0		14.0	19.0	54.0		24.0
Max Q Clear Time (g_c+I1), s	4.4	16.5		0.0	2.2	9.3		6.3
Green Ext Time (p_c), s	0.2	6.8		0.0	0.0	6.9		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	565	140	40	410	5	130	10	60	10	5	15
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1900	1900	1881	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	21	601	144	43	441	5	157	12	1	12	6	2
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.83	0.83	0.83	0.80	0.80	0.80
Percent Heavy Veh, %	0	1	1	0	0	0	1	0	0	0	0	0
Cap, veh/h	36	773	185	62	1021	12	210	202	17	33	16	5
Arrive On Green	0.02	0.53	0.53	0.03	0.54	0.54	0.12	0.12	0.12	0.03	0.03	0.03
Sat Flow, veh/h	1810	1459	350	1810	1875	21	1792	1725	144	1087	543	181
Grp Volume(v), veh/h	21	0	745	43	0	446	157	0	13	20	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1809	1810	0	1896	1792	0	1869	1811	0	0
Q Serve(g_s), s	0.7	0.0	19.8	1.4	0.0	8.4	5.1	0.0	0.4	0.7	0.0	0.0
Cycle Q Clear(g_c), s	0.7	0.0	19.8	1.4	0.0	8.4	5.1	0.0	0.4	0.7	0.0	0.0
Prop In Lane	1.00		0.19	1.00		0.01	1.00		0.08	0.60		0.10
Lane Grp Cap(c), veh/h	36	0	959	62	0	1032	210	0	219	54	0	0
V/C Ratio(X)	0.59	0.00	0.78	0.70	0.00	0.43	0.75	0.00	0.06	0.37	0.00	0.00
Avail Cap(c_a), veh/h	481	0	2013	481	0	1480	595	0	621	752	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.3	0.0	11.3	28.8	0.0	8.2	25.7	0.0	23.6	28.6	0.0	0.0
Incr Delay (d2), s/veh	8.1	0.0	1.5	7.4	0.0	0.3	5.5	0.0	0.1	4.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	10.1	0.8	0.0	4.4	2.9	0.0	0.2	0.4	0.0	0.0
LnGrp Delay(d),s/veh	37.4	0.0	12.8	36.2	0.0	8.5	31.2	0.0	23.8	32.9	0.0	0.0
LnGrp LOS	D		B	D		A	C		C	C		
Approach Vol, veh/h		766			489			170			20	
Approach Delay, s/veh		13.5			10.9			30.7			32.9	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	37.6		10.8	4.8	38.5		6.1
Change Period (Y+Rc), s	3.6	5.7		3.8	3.6	5.7		4.3
Max Green Setting (Gmax), s	16.0	67.0		20.0	16.0	47.0		25.0
Max Q Clear Time (g_c+I1), s	3.4	21.8		7.1	2.7	10.4		2.7
Green Ext Time (p_c), s	0.0	10.1		0.4	0.0	9.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	11.5
Intersection LOS	B

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBU	SBL	SBR
Vol, veh/h	0	80	365	0	200	10	0	10	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	87	397	0	217	11	0	11	65
Number of Lanes	0	1	1	0	1	1	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	12.6	10.2	8.9
HCM LOS	B	B	A

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	365	200	10	10	60
LT Vol	0	365	200	0	0	0
Through Vol	0	0	0	10	0	60
RT Vol	80	0	0	0	10	0
Lane Flow Rate	87	397	217	11	11	65
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.131	0.544	0.313	0.013	0.02	0.099
Departure Headway (Hd)	5.439	4.937	5.176	4.471	6.683	5.471
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	659	730	693	799	535	653
Service Time	3.17	2.668	2.913	2.208	4.436	3.224
HCM Lane V/C Ratio	0.132	0.544	0.313	0.014	0.021	0.1
HCM Control Delay	9	13.4	10.3	7.3	9.6	8.8
HCM Lane LOS	A	B	B	A	A	A
HCM 95th-tile Q	0.4	3.3	1.3	0	0.1	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	0	115	0	0	0	65	355	0	0	245	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1900	1900	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	120	0	24	0	0	0	68	370	0	0	261	21
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.25	0.25	0.25	0.96	0.96	0.96	0.94	0.94	0.94
Percent Heavy Veh, %	3	0	0	0	0	0	3	3	0	0	3	3
Cap, veh/h	273	0	221	5	5	0	193	1031	903	5	594	503
Arrive On Green	0.16	0.00	0.14	0.00	0.00	0.00	0.11	0.56	0.00	0.00	0.32	0.32
Sat Flow, veh/h	1757	0	1561	1810	1900	0	1757	1845	1615	1810	1845	1563
Grp Volume(v), veh/h	120	0	24	0	0	0	68	370	0	0	261	21
Grp Sat Flow(s),veh/h/ln	1757	0	1561	1810	1900	0	1757	1845	1615	1810	1845	1563
Q Serve(g_s), s	2.2	0.0	0.5	0.0	0.0	0.0	1.3	4.0	0.0	0.0	4.0	0.3
Cycle Q Clear(g_c), s	2.2	0.0	0.5	0.0	0.0	0.0	1.3	4.0	0.0	0.0	4.0	0.3
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	273	0	221	5	5	0	193	1031	903	5	594	503
V/C Ratio(X)	0.44	0.00	0.11	0.00	0.00	0.00	0.35	0.36	0.00	0.00	0.44	0.04
Avail Cap(c_a), veh/h	1462	0	1299	1506	1581	0	585	1433	1254	602	1433	1214
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	13.8	0.0	13.5	0.0	0.0	0.0	14.9	4.4	0.0	0.0	9.7	8.4
Incr Delay (d2), s/veh	0.4	0.0	0.1	0.0	0.0	0.0	0.4	0.3	0.0	0.0	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.2	0.0	0.0	0.0	0.6	2.0	0.0	0.0	2.2	0.1
LnGrp Delay(d),s/veh	14.2	0.0	13.6	0.0	0.0	0.0	15.3	4.7	0.0	0.0	10.4	8.4
LnGrp LOS	B		B				B	A			B	A
Approach Vol, veh/h		144			0			438			282	
Approach Delay, s/veh		14.1			0.0			6.3			10.2	
Approach LOS		B						A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	25.9	0.0	10.2	8.6	17.3	10.2	0.0
Change Period (Y+Rc), s	4.6	5.7	4.6	5.1	4.6	5.7	4.6	5.1
Max Green Setting (Gmax), s	12.0	28.0	30.0	30.0	12.0	28.0	30.0	30.0
Max Q Clear Time (g_c+I1), s	0.0	6.0	0.0	2.5	3.3	6.0	4.2	0.0
Green Ext Time (p_c), s	0.0	5.3	0.0	0.0	0.0	5.3	0.1	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		8.9
HCM 2010 LOS		A

Appendix A

Cumulative No Project Conditions

Technical Calculations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	140	300	210	110	905	120	235	220	40	145	320	325
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1776	1845	1900	1881	1863	1845	1863	1900	1845	1881	1881
Adj Flow Rate, veh/h	173	370	21	126	1040	38	280	262	44	188	416	244
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	1	1	1
Peak Hour Factor	0.81	0.81	0.81	0.87	0.87	0.87	0.84	0.84	0.84	0.77	0.77	0.77
Percent Heavy Veh, %	5	7	3	0	1	2	3	2	2	3	1	1
Cap, veh/h	225	1365	633	152	1505	666	334	705	117	214	481	408
Arrive On Green	0.07	0.40	0.40	0.08	0.42	0.42	0.10	0.23	0.23	0.12	0.26	0.26
Sat Flow, veh/h	3343	3374	1564	1810	3574	1581	3408	3038	503	1757	1881	1595
Grp Volume(v), veh/h	173	370	21	126	1040	38	280	151	155	188	416	244
Grp Sat Flow(s),veh/h/ln	1672	1687	1564	1810	1787	1581	1704	1770	1772	1757	1881	1595
Q Serve(g_s), s	6.3	9.1	1.0	8.5	29.5	1.8	10.0	8.9	9.1	13.1	26.2	16.7
Cycle Q Clear(g_c), s	6.3	9.1	1.0	8.5	29.5	1.8	10.0	8.9	9.1	13.1	26.2	16.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	225	1365	633	152	1505	666	334	410	411	214	481	408
V/C Ratio(X)	0.77	0.27	0.03	0.83	0.69	0.06	0.84	0.37	0.38	0.88	0.86	0.60
Avail Cap(c_a), veh/h	296	1365	633	248	1505	666	439	472	472	340	623	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	24.7	22.3	56.0	29.3	21.3	55.0	40.1	40.1	53.6	44.1	40.6
Incr Delay (d2), s/veh	5.9	0.5	0.1	5.2	2.6	0.2	8.4	0.5	0.5	9.2	9.5	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	4.3	0.4	4.5	15.0	0.8	5.1	4.4	4.5	6.9	14.9	7.5
LnGrp Delay(d),s/veh	62.9	25.2	22.4	61.2	32.0	21.5	63.4	40.5	40.6	62.9	53.6	41.8
LnGrp LOS	E	C	C	E	C	C	E	D	D	E	D	D
Approach Vol, veh/h		564			1204			586			848	
Approach Delay, s/veh		36.7			34.7			51.5			52.3	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.4	71.7	16.2	37.7	12.3	73.8	19.1	34.7
Change Period (Y+Rc), s	4.0	5.7	4.0	* 5.9	4.0	5.7	4.0	* 5.9
Max Green Setting (Gmax), s	17.0	46.3	16.0	* 41	11.0	52.3	24.0	* 33
Max Q Clear Time (g_c+I1), s	10.5	11.1	12.0	28.2	8.3	31.5	15.1	11.1
Green Ext Time (p_c), s	0.0	9.4	0.1	3.5	0.0	8.0	0.1	4.2

Intersection Summary	
HCM 2010 Ctrl Delay	42.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	463	10	130	1055	80	40	25	55	145	260	110
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1727	1810	1900	1792	1863	1900	1900	1776	1900	1881	1881	1881
Adj Flow Rate, veh/h	12	565	11	149	1213	91	62	39	63	171	306	-43
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.82	0.82	0.82	0.87	0.87	0.87	0.64	0.64	0.64	0.85	0.85	0.85
Percent Heavy Veh, %	10	5	5	6	2	2	0	7	7	1	1	1
Cap, veh/h	14	1691	33	176	1952	146	80	53	85	230	356	302
Arrive On Green	0.00	0.16	0.16	0.21	1.00	1.00	0.04	0.09	0.09	0.13	0.19	0.00
Sat Flow, veh/h	1645	3449	67	1707	3338	250	1810	609	984	1792	1881	1599
Grp Volume(v), veh/h	12	281	295	149	642	662	62	0	102	171	306	-43
Grp Sat Flow(s),veh/h/ln	1645	1719	1798	1707	1770	1818	1810	0	1594	1792	1881	1599
Q Serve(g_s), s	0.8	15.5	15.5	9.0	0.0	0.0	3.6	0.0	6.7	9.8	16.8	0.0
Cycle Q Clear(g_c), s	0.8	15.5	15.5	9.0	0.0	0.0	3.6	0.0	6.7	9.8	16.8	0.0
Prop In Lane	1.00		0.04	1.00		0.14	1.00		0.62	1.00		1.00
Lane Grp Cap(c), veh/h	14	843	881	176	1035	1063	80	0	138	230	356	302
V/C Ratio(X)	0.87	0.33	0.33	0.85	0.62	0.62	0.77	0.00	0.74	0.74	0.86	-0.14
Avail Cap(c_a), veh/h	100	843	881	344	1035	1063	178	0	479	311	742	631
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.62	0.62	0.62	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.1	29.3	29.3	41.5	0.0	0.0	50.4	0.0	47.6	44.8	41.9	0.0
Incr Delay (d2), s/veh	65.1	1.1	1.0	5.2	1.8	1.7	5.7	0.0	2.9	3.8	2.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	7.6	8.0	4.4	0.5	0.5	1.9	0.0	3.1	5.1	9.0	0.0
LnGrp Delay(d),s/veh	118.2	30.4	30.3	46.8	1.8	1.7	56.2	0.0	50.5	48.6	44.3	0.0
LnGrp LOS	F	C	C	D	A	A	E		D	D	D	
Approach Vol, veh/h		588			1453			164			434	
Approach Delay, s/veh		32.1			6.4			52.7			50.4	
Approach LOS		C			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.5	91.6	8.2	25.7	4.4	101.7	19.2	14.7
Change Period (Y+Rc), s	3.5	6.0	3.5	5.5	3.5	6.0	5.5	* 5.5
Max Green Setting (Gmax), s	21.5	47.4	10.5	42.1	6.5	62.4	18.5	* 32
Max Q Clear Time (g_c+I1), s	11.0	17.5	5.6	18.8	2.8	2.0	11.8	8.7
Green Ext Time (p_c), s	0.2	23.4	0.0	1.2	0.0	39.0	0.7	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	398	260	115	820	10	400	60	85	5	50	45
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1792	1827	1881	1863	1900	1881	1900	1900	1900	1845	1900
Adj Flow Rate, veh/h	6	498	115	131	932	10	533	80	82	7	67	57
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	0	1	0
Peak Hour Factor	0.80	0.80	0.80	0.88	0.88	0.88	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	0	6	4	1	2	2	1	0	0	3	3	3
Cap, veh/h	11	1023	465	162	1379	15	576	277	284	9	90	76
Arrive On Green	0.01	0.40	0.40	0.09	0.38	0.38	0.32	0.32	0.32	0.10	0.10	0.10
Sat Flow, veh/h	1810	3406	1548	1792	3587	38	1792	860	882	91	872	741
Grp Volume(v), veh/h	6	498	115	131	460	482	533	0	162	131	0	0
Grp Sat Flow(s),veh/h/ln	1810	1703	1548	1792	1770	1856	1792	0	1742	1704	0	0
Q Serve(g_s), s	0.3	11.1	5.1	7.3	22.1	22.1	29.4	0.0	7.1	7.6	0.0	0.0
Cycle Q Clear(g_c), s	0.3	11.1	5.1	7.3	22.1	22.1	29.4	0.0	7.1	7.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.51	0.05		0.44
Lane Grp Cap(c), veh/h	11	1023	465	162	680	714	576	0	560	175	0	0
V/C Ratio(X)	0.54	0.49	0.25	0.81	0.68	0.68	0.93	0.00	0.29	0.75	0.00	0.00
Avail Cap(c_a), veh/h	195	1023	465	298	680	714	726	0	706	533	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	50.5	24.8	23.0	45.6	26.2	26.2	33.5	0.0	25.9	44.6	0.0	0.0
Incr Delay (d2), s/veh	25.2	1.5	1.2	7.0	5.3	5.1	14.8	0.0	0.2	4.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	5.4	2.3	4.0	11.7	12.3	16.9	0.0	3.5	3.8	0.0	0.0
LnGrp Delay(d),s/veh	75.8	26.4	24.2	52.7	31.5	31.2	48.3	0.0	26.1	49.2	0.0	0.0
LnGrp LOS	E	C	C	D	C	C	D		C	D		
Approach Vol, veh/h		619			1073			695			131	
Approach Delay, s/veh		26.4			34.0			43.2			49.2	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.6	82.8		15.1	13.2	74.2		37.5
Change Period (Y+Rc), s	4.0	5.7		4.6	4.0	5.7		4.6
Max Green Setting (Gmax), s	11.0	36.7		32.0	17.0	30.7		41.4
Max Q Clear Time (g_c+I1), s	2.3	24.1		9.6	9.3	13.1		31.4
Green Ext Time (p_c), s	0.0	6.8		0.5	0.1	8.3		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	35.4
HCM 2010 LOS	D

Intersection									
Int Delay, s/veh	5.1								

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	520	65	35	625	10	55	0	35
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	450	-	450	450	-	450	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	88	88	88	75	75	75
Heavy Vehicles, %	0	3	0	10	2	0	6	0	0
Mvmt Flow	23	605	76	40	710	11	73	0	47

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	712	0	0	607	0	0	1093	1445	306
Stage 1	-	-	-	-	-	-	653	653	-
Stage 2	-	-	-	-	-	-	440	792	-
Critical Hdwy	4.1	-	-	4.3	-	-	7.62	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.62	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.62	5.5	-
Follow-up Hdwy	2.2	-	-	2.3	-	-	3.56	4	3.3
Pot Cap-1 Maneuver	897	-	-	915	-	-	164	133	696
Stage 1	-	-	-	-	-	-	413	467	-
Stage 2	-	-	-	-	-	-	555	404	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	896	-	-	913	-	-	133	123	694
Mov Cap-2 Maneuver	-	-	-	-	-	-	133	123	-
Stage 1	-	-	-	-	-	-	402	454	-
Stage 2	-	-	-	-	-	-	464	386	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.5	49.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	194	896	-	-	913	-	-	317
HCM Lane V/C Ratio	0.619	0.026	-	-	0.044	-	-	0.299
HCM Control Delay (s)	49.7	9.1	-	-	9.1	-	-	21.1
HCM Lane LOS	E	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	3.5	0.1	-	-	0.1	-	-	1.2

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	15	5	55
Conflicting Peds, #/hr	2	0	2
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	79	79	79
Heavy Vehicles, %	0	0	3
Mvmt Flow	19	6	70

Major/Minor	Minor2		
Conflicting Flow All	1143	1445	359
Stage 1	792	792	-
Stage 2	351	653	-
Critical Hdwy	7.5	6.5	6.96
Critical Hdwy Stg 1	6.5	5.5	-
Critical Hdwy Stg 2	6.5	5.5	-
Follow-up Hdwy	3.5	4	3.33
Pot Cap-1 Maneuver	157	133	635
Stage 1	353	404	-
Stage 2	644	467	-
Platoon blocked, %			
Mov Cap-1 Maneuver	138	123	633
Mov Cap-2 Maneuver	138	123	-
Stage 1	343	386	-
Stage 2	584	454	-

Approach	SB
HCM Control Delay, s	21.1
HCM LOS	C

Minor Lane/Major Mvmt

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	535	40	320	620	50	30
Number	2	12	1	6	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1900	1881	1863	1900	1652
Adj Flow Rate, veh/h	622	40	432	838	125	8
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.86	0.86	0.74	0.74	0.40	0.40
Percent Heavy Veh, %	5	5	1	2	0	15
Cap, veh/h	754	49	488	1449	167	130
Arrive On Green	0.45	0.45	0.27	0.78	0.09	0.09
Sat Flow, veh/h	1682	108	1792	1863	1810	1404
Grp Volume(v), veh/h	0	662	432	838	125	8
Grp Sat Flow(s),veh/h/ln	0	1790	1792	1863	1810	1404
Q Serve(g_s), s	0.0	22.5	16.1	12.6	4.7	0.4
Cycle Q Clear(g_c), s	0.0	22.5	16.1	12.6	4.7	0.4
Prop In Lane		0.06	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	803	488	1449	167	130
V/C Ratio(X)	0.00	0.82	0.89	0.58	0.75	0.06
Avail Cap(c_a), veh/h	0	1417	928	2546	547	424
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	16.8	24.3	3.1	30.7	28.8
Incr Delay (d2), s/veh	0.0	0.8	4.3	0.1	6.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.2	8.5	6.3	2.6	0.1
LnGrp Delay(d),s/veh	0.0	17.6	28.5	3.2	37.3	29.0
LnGrp LOS		B	C	A	D	C
Approach Vol, veh/h	662			1270	133	
Approach Delay, s/veh	17.6			11.8	36.8	
Approach LOS	B			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	22.9	36.2		10.4		59.1		
Change Period (Y+Rc), s	4.0	5.0		4.0		5.0		
Max Green Setting (Gmax), s	36.0	55.0		21.0		95.0		
Max Q Clear Time (g_c+I1), s	18.1	24.5		6.7		14.6		
Green Ext Time (p_c), s	0.8	6.7		0.3		7.0		

Intersection Summary			
HCM 2010 Ctrl Delay			15.3
HCM 2010 LOS			B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	800	10	10	925	15	20
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	930	11	14	1250	33	36
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.86	0.86	0.74	0.74	0.46	0.46
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1419	1205	18	1554	75	67
Arrive On Green	0.76	0.76	0.01	0.83	0.04	0.04
Sat Flow, veh/h	1863	1581	1774	1863	1774	1583
Grp Volume(v), veh/h	930	11	14	1250	33	36
Grp Sat Flow(s),veh/h/ln	1863	1581	1774	1863	1774	1583
Q Serve(g_s), s	17.3	0.1	0.6	24.6	1.3	1.6
Cycle Q Clear(g_c), s	17.3	0.1	0.6	24.6	1.3	1.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1419	1205	18	1554	75	67
V/C Ratio(X)	0.66	0.01	0.78	0.80	0.44	0.54
Avail Cap(c_a), veh/h	1933	1641	256	2317	622	555
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	4.1	2.1	35.9	3.0	34.0	34.1
Incr Delay (d2), s/veh	0.5	0.0	22.7	1.3	14.1	22.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.1	0.4	12.4	0.9	1.1
LnGrp Delay(d),s/veh	4.6	2.1	58.6	4.4	48.1	56.5
LnGrp LOS	A	A	E	A	D	E
Approach Vol, veh/h	941			1264	69	
Approach Delay, s/veh	4.6			5.0	52.5	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.2	59.9				65.2		7.6
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	10.5	75.5				90.5		25.5
Max Q Clear Time (g_c+I1), s	2.6	19.3				26.6		3.6
Green Ext Time (p_c), s	0.0	31.9				34.1		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	6.2
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	620	195	230	695	5	240	5	195	5	5	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1863	1900	1863	1863	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	8	1016	307	315	952	7	375	8	185	8	8	8
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.61	0.61	0.61	0.73	0.73	0.73	0.64	0.64	0.64	0.63	0.63	0.63
Percent Heavy Veh, %	20	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	11	759	229	254	1272	9	303	6	274	10	10	10
Arrive On Green	0.01	0.55	0.55	0.14	0.69	0.69	0.17	0.17	0.17	0.02	0.02	0.02
Sat Flow, veh/h	1508	1373	415	1774	1847	14	1773	38	1606	581	581	581
Grp Volume(v), veh/h	8	0	1323	315	0	959	383	0	185	24	0	0
Grp Sat Flow(s),veh/h/ln	1508	0	1788	1774	0	1860	1811	0	1606	1742	0	0
Q Serve(g_s), s	0.8	0.0	81.0	21.0	0.0	48.5	25.0	0.0	15.8	2.0	0.0	0.0
Cycle Q Clear(g_c), s	0.8	0.0	81.0	21.0	0.0	48.5	25.0	0.0	15.8	2.0	0.0	0.0
Prop In Lane	1.00		0.23	1.00		0.01	0.98		1.00	0.33		0.33
Lane Grp Cap(c), veh/h	11	0	988	254	0	1281	309	0	274	30	0	0
V/C Ratio(X)	0.70	0.00	1.34	1.24	0.00	0.75	1.24	0.00	0.68	0.81	0.00	0.00
Avail Cap(c_a), veh/h	62	0	988	254	0	1281	309	0	274	71	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	72.5	0.0	32.8	62.8	0.0	14.7	60.8	0.0	56.9	71.8	0.0	0.0
Incr Delay (d2), s/veh	44.2	0.0	159.2	136.4	0.0	2.4	132.2	0.0	6.4	37.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	83.5	19.9	0.0	25.6	23.8	0.0	7.5	1.3	0.0	0.0
LnGrp Delay(d),s/veh	116.7	0.0	192.0	199.1	0.0	17.0	192.9	0.0	63.4	109.5	0.0	0.0
LnGrp LOS	F		F	F		B	F		E	F		
Approach Vol, veh/h		1331			1274			568			24	
Approach Delay, s/veh		191.5			62.0			150.7			109.5	
Approach LOS		F			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.0	86.0		6.5	5.1	105.9		29.0
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0
Max Green Setting (Gmax), s	21.0	81.0		6.0	6.0	96.0		25.0
Max Q Clear Time (g_c+I1), s	23.0	83.0		4.0	2.8	50.5		27.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	25.6		0.0

Intersection Summary			
HCM 2010 Ctrl Delay			132.1
HCM 2010 LOS			F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	535	265	55	635	0	255	10	100	10	15	40
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1845	1900	1881	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	23	823	402	71	825	0	398	16	86	16	24	15
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.65	0.65	0.65	0.77	0.77	0.77	0.64	0.64	0.64	0.63	0.63	0.63
Percent Heavy Veh, %	0	1	1	0	3	3	1	0	0	0	0	0
Cap, veh/h	32	697	340	91	1137	0	328	47	254	24	36	22
Arrive On Green	0.02	0.58	0.58	0.05	0.62	0.00	0.18	0.18	0.18	0.05	0.05	0.05
Sat Flow, veh/h	1810	1194	583	1810	1845	0	1792	258	1388	517	775	484
Grp Volume(v), veh/h	23	0	1225	71	825	0	398	0	102	55	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1777	1810	1845	0	1792	0	1646	1776	0	0
Q Serve(g_s), s	1.6	0.0	74.0	4.9	39.4	0.0	23.2	0.0	6.8	3.9	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	74.0	4.9	39.4	0.0	23.2	0.0	6.8	3.9	0.0	0.0
Prop In Lane	1.00		0.33	1.00		0.00	1.00		0.84	0.29		0.27
Lane Grp Cap(c), veh/h	32	0	1037	91	1137	0	328	0	301	82	0	0
V/C Ratio(X)	0.73	0.00	1.18	0.78	0.73	0.00	1.21	0.00	0.34	0.67	0.00	0.00
Avail Cap(c_a), veh/h	91	0	1037	163	1149	0	328	0	301	336	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	62.0	0.0	26.4	59.5	16.9	0.0	51.8	0.0	45.1	59.5	0.0	0.0
Incr Delay (d2), s/veh	15.5	0.0	91.6	7.6	2.3	0.0	121.2	0.0	0.7	9.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	62.4	2.7	20.7	0.0	22.4	0.0	3.2	2.1	0.0	0.0
LnGrp Delay(d),s/veh	77.5	0.0	118.0	67.1	19.2	0.0	173.0	0.0	45.8	69.1	0.0	0.0
LnGrp LOS	E		F	E	B		F		D	E		
Approach Vol, veh/h		1248			896			500			55	
Approach Delay, s/veh		117.3			23.0			147.0			69.1	
Approach LOS		F			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	79.7		27.0	5.8	83.9		10.1
Change Period (Y+Rc), s	3.6	5.7		3.8	3.6	5.7		4.3
Max Green Setting (Gmax), s	11.4	74.0		23.2	6.4	79.0		24.0
Max Q Clear Time (g_c+I1), s	6.9	76.0		25.2	3.6	41.4		5.9
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	25.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	90.5
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	105	10	360	65	30	25	140	240	10	20	570	320
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	122	12	145	260	120	100	177	304	13	23	663	307
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	1
Peak Hour Factor	0.86	0.86	0.86	0.25	0.25	0.25	0.79	0.79	0.79	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	171	242	216	241	335	258	215	1475	659	71	1187	530
Arrive On Green	0.10	0.14	0.14	0.14	0.18	0.18	0.12	0.42	0.42	0.04	0.34	0.34
Sat Flow, veh/h	1757	1752	1561	1757	1887	1449	1757	3505	1566	1757	3505	1565
Grp Volume(v), veh/h	122	12	145	260	111	109	177	304	13	23	663	307
Grp Sat Flow(s),veh/h/ln	1757	1752	1561	1757	1752	1583	1757	1752	1566	1757	1752	1565
Q Serve(g_s), s	5.1	0.5	6.7	10.4	4.2	4.6	7.5	4.2	0.4	1.0	11.7	12.2
Cycle Q Clear(g_c), s	5.1	0.5	6.7	10.4	4.2	4.6	7.5	4.2	0.4	1.0	11.7	12.2
Prop In Lane	1.00		1.00	1.00		0.91	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	171	242	216	241	312	281	215	1475	659	71	1187	530
V/C Ratio(X)	0.71	0.05	0.67	1.08	0.36	0.39	0.82	0.21	0.02	0.32	0.56	0.58
Avail Cap(c_a), veh/h	403	1153	1027	241	1037	937	588	2509	1121	241	1816	811
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	28.4	31.1	32.7	27.4	27.5	32.5	13.9	12.8	35.4	20.5	20.6
Incr Delay (d2), s/veh	2.1	0.0	1.4	80.7	0.3	0.3	3.0	0.1	0.0	1.0	0.6	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.2	2.9	10.4	2.1	2.0	3.8	2.0	0.2	0.5	5.7	5.4
LnGrp Delay(d),s/veh	35.3	28.4	32.4	113.5	27.6	27.9	35.5	14.0	12.9	36.3	21.0	22.1
LnGrp LOS	D	C	C	F	C	C	D	B	B	D	C	C
Approach Vol, veh/h		279			480			494			993	
Approach Delay, s/veh		33.5			74.2			21.7			21.7	
Approach LOS		C			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	37.6	15.0	15.6	13.9	31.4	12.0	18.6
Change Period (Y+Rc), s	4.6	5.7	4.6	5.1	4.6	5.7	4.6	5.1
Max Green Setting (Gmax), s	10.4	54.3	10.4	49.9	25.4	39.3	17.4	44.9
Max Q Clear Time (g_c+I1), s	3.0	6.2	12.4	8.7	9.5	14.2	7.1	6.6
Green Ext Time (p_c), s	0.0	14.4	0.0	1.5	0.1	11.4	0.1	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	34.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	350	1003	245	170	608	140	260	305	90	145	220	175
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1881	1863	1881	1881	1900	1881	1863	1863
Adj Flow Rate, veh/h	368	1056	21	193	691	67	283	332	91	169	256	16
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.92	0.92	0.92	0.86	0.86	0.86
Percent Heavy Veh, %	0	1	1	0	1	2	1	1	1	1	2	2
Cap, veh/h	422	1415	631	215	1411	624	336	629	170	194	443	371
Arrive On Green	0.12	0.40	0.40	0.24	0.79	0.79	0.10	0.23	0.23	0.11	0.24	0.24
Sat Flow, veh/h	3510	3574	1595	1810	3574	1581	3476	2780	751	1792	1863	1559
Grp Volume(v), veh/h	368	1056	21	193	691	67	283	212	211	169	256	16
Grp Sat Flow(s),veh/h/ln	1755	1787	1595	1810	1787	1581	1738	1787	1744	1792	1863	1559
Q Serve(g_s), s	13.4	33.0	1.0	13.5	8.7	1.3	10.4	13.5	13.9	12.1	15.8	1.0
Cycle Q Clear(g_c), s	13.4	33.0	1.0	13.5	8.7	1.3	10.4	13.5	13.9	12.1	15.8	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.43	1.00		1.00
Lane Grp Cap(c), veh/h	422	1415	631	215	1411	624	336	404	395	194	443	371
V/C Ratio(X)	0.87	0.75	0.03	0.90	0.49	0.11	0.84	0.52	0.54	0.87	0.58	0.04
Avail Cap(c_a), veh/h	566	1415	631	292	1411	624	454	404	395	261	443	371
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.3	33.7	24.1	48.8	9.2	8.4	57.9	44.2	44.4	57.2	43.8	38.2
Incr Delay (d2), s/veh	8.9	3.6	0.1	19.2	1.2	0.3	7.9	4.8	5.1	16.9	5.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	17.0	0.5	7.8	4.2	0.6	5.4	7.2	7.3	6.9	8.8	0.5
LnGrp Delay(d),s/veh	65.2	37.4	24.2	68.0	10.4	8.8	65.8	49.0	49.5	74.0	49.2	38.4
LnGrp LOS	E	D	C	E	B	A	E	D	D	E	D	D
Approach Vol, veh/h		1445			951			706			441	
Approach Delay, s/veh		44.3			22.0			55.9			58.3	
Approach LOS		D			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.5	67.0	16.6	36.9	19.7	66.9	18.1	35.4
Change Period (Y+Rc), s	4.0	5.7	4.0	* 5.9	4.0	5.7	4.0	* 5.9
Max Green Setting (Gmax), s	21.0	51.4	17.0	* 31	21.0	51.4	19.0	* 29
Max Q Clear Time (g_c+I1), s	15.5	35.0	12.4	17.8	15.4	10.7	14.1	15.9
Green Ext Time (p_c), s	0.1	8.9	0.2	2.7	0.2	13.2	0.1	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	42.4
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	75	1175	20	95	765	135	40	145	125	135	60	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1863	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	81	1263	22	108	869	148	45	163	127	145	65	-40
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.89	0.89	0.89	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	1	0	1	1	2	1	1	0	0	0
Cap, veh/h	102	1736	30	131	1520	259	58	182	142	172	504	428
Arrive On Green	0.11	0.97	0.97	0.14	1.00	1.00	0.03	0.19	0.19	0.09	0.27	0.00
Sat Flow, veh/h	1810	3593	63	1810	3044	518	1774	974	759	1810	1900	1615
Grp Volume(v), veh/h	81	628	657	108	510	507	45	0	290	145	65	-40
Grp Sat Flow(s),veh/h/ln	1810	1787	1868	1810	1787	1776	1774	0	1732	1810	1900	1615
Q Serve(g_s), s	5.5	5.0	5.0	7.3	0.1	0.1	3.2	0.0	20.6	10.0	3.3	0.0
Cycle Q Clear(g_c), s	5.5	5.0	5.0	7.3	0.1	0.1	3.2	0.0	20.6	10.0	3.3	0.0
Prop In Lane	1.00		0.03	1.00		0.29	1.00		0.44	1.00		1.00
Lane Grp Cap(c), veh/h	102	864	903	131	892	886	58	0	324	172	504	428
V/C Ratio(X)	0.79	0.73	0.73	0.82	0.57	0.57	0.78	0.00	0.89	0.84	0.13	-0.09
Avail Cap(c_a), veh/h	179	864	903	165	892	886	129	0	446	208	599	509
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.78	0.78	0.78	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.3	1.2	1.2	53.2	0.0	0.0	60.6	0.0	50.1	56.2	35.3	0.0
Incr Delay (d2), s/veh	9.9	5.3	5.1	17.4	2.1	2.1	8.1	0.0	13.1	19.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	2.6	2.7	4.3	0.5	0.5	1.7	0.0	11.1	5.9	1.7	0.0
LnGrp Delay(d),s/veh	65.2	6.5	6.3	70.6	2.1	2.1	68.7	0.0	63.2	76.0	35.3	0.0
LnGrp LOS	E	A	A	E	A	A	E		E	E	D	
Approach Vol, veh/h		1366			1125			335			170	
Approach Delay, s/veh		9.9			8.7			63.9			78.3	
Approach LOS		A			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	80.8	7.6	39.0	10.6	82.8	17.5	29.1
Change Period (Y+Rc), s	3.5	6.0	3.5	5.5	3.5	6.0	5.5	* 5.5
Max Green Setting (Gmax), s	11.5	61.0	9.2	39.8	12.5	60.0	14.5	* 33
Max Q Clear Time (g_c+I1), s	9.3	7.0	5.2	5.3	7.5	2.1	12.0	22.6
Green Ext Time (p_c), s	0.0	43.8	0.0	0.4	0.0	46.4	0.1	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	930	445	65	605	10	335	40	125	5	10	55
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1881	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	65	1000	361	81	756	12	390	47	87	10	20	104
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	0	1	0
Peak Hour Factor	0.93	0.93	0.93	0.80	0.80	0.80	0.86	0.86	0.86	0.50	0.50	0.50
Percent Heavy Veh, %	0	1	0	0	1	1	1	0	0	0	0	0
Cap, veh/h	84	1531	690	104	1582	25	432	143	264	13	26	136
Arrive On Green	0.05	0.43	0.43	0.06	0.44	0.44	0.24	0.24	0.24	0.11	0.11	0.11
Sat Flow, veh/h	1810	3574	1611	1810	3601	57	1792	592	1095	124	247	1287
Grp Volume(v), veh/h	65	1000	361	81	375	393	390	0	134	134	0	0
Grp Sat Flow(s),veh/h/ln	1810	1787	1611	1810	1787	1871	1792	0	1687	1658	0	0
Q Serve(g_s), s	3.8	23.5	17.5	4.7	15.8	15.8	22.3	0.0	6.9	8.3	0.0	0.0
Cycle Q Clear(g_c), s	3.8	23.5	17.5	4.7	15.8	15.8	22.3	0.0	6.9	8.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.65	0.07		0.78
Lane Grp Cap(c), veh/h	84	1531	690	104	785	822	432	0	407	175	0	0
V/C Ratio(X)	0.77	0.65	0.52	0.78	0.48	0.48	0.90	0.00	0.33	0.76	0.00	0.00
Avail Cap(c_a), veh/h	188	1531	690	188	785	822	610	0	574	470	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.60	0.60	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.9	24.0	22.3	49.2	21.1	21.1	38.9	0.0	33.1	46.0	0.0	0.0
Incr Delay (d2), s/veh	6.5	1.3	1.7	8.9	2.1	2.0	12.0	0.0	0.3	5.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	11.8	8.1	2.6	8.2	8.5	12.5	0.0	3.3	4.0	0.0	0.0
LnGrp Delay(d),s/veh	56.4	25.3	24.0	58.1	23.1	23.0	50.9	0.0	33.4	51.1	0.0	0.0
LnGrp LOS	E	C	C	E	C	C	D		C	D		
Approach Vol, veh/h		1426			849			524			134	
Approach Delay, s/veh		26.4			26.4			46.5			51.1	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	86.4		15.2	10.1	85.2		29.5
Change Period (Y+Rc), s	4.0	5.7		4.0	4.0	5.7		4.0
Max Green Setting (Gmax), s	11.0	45.3		30.0	11.0	45.3		36.0
Max Q Clear Time (g_c+I1), s	5.8	17.8		10.3	6.7	25.5		24.3
Green Ext Time (p_c), s	0.0	14.4		0.5	0.0	11.9		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	31.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	37.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	135	745	55	35	595	10	55	5	40
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	450	-	450	450	-	450	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	82	82	82	70	70	70
Heavy Vehicles, %	2	1	0	0	1	0	0	0	0
Mvmt Flow	147	810	60	43	726	12	79	7	57

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	728	0	0	812	0	0	1559	1918	409
Stage 1	-	-	-	-	-	-	1105	1105	-
Stage 2	-	-	-	-	-	-	454	813	-
Critical Hdwy	4.14	-	-	4.1	-	-	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.22	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	871	-	-	823	-	-	~ 78	68	597
Stage 1	-	-	-	-	-	-	228	289	-
Stage 2	-	-	-	-	-	-	560	395	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	870	-	-	822	-	-	~ 52	53	595
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 52	53	-
Stage 1	-	-	-	-	-	-	189	240	-
Stage 2	-	-	-	-	-	-	464	374	-

Approach	EB	WB	NB
HCM Control Delay, s	1.4	0.5	$ 465.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	82	870	-	-	822	-	-	141
HCM Lane V/C Ratio	1.742	0.169	-	-	0.052	-	-	0.729
HCM Control Delay (s)	$ 465.5	10	-	-	9.6	-	-	79.5
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	12.1	0.6	-	-	0.2	-	-	4.3

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	20	5	50
Conflicting Peds, #/hr	2	0	2
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	73	73	73
Heavy Vehicles, %	0	0	0
Mvmt Flow	27	7	68

Major/Minor	Minor2		
Conflicting Flow All	1517	1918	367
Stage 1	813	813	-
Stage 2	704	1105	-
Critical Hdwy	7.5	6.5	6.9
Critical Hdwy Stg 1	6.5	5.5	-
Critical Hdwy Stg 2	6.5	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	83	68	636
Stage 1	343	395	-
Stage 2	398	289	-
Platoon blocked, %			
Mov Cap-1 Maneuver	56	53	634
Mov Cap-2 Maneuver	56	53	-
Stage 1	285	374	-
Stage 2	290	240	-

Approach	SB
HCM Control Delay, s	79.5
HCM LOS	F

Minor Lane/Major Mvmt

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	795	10	245	630	10	20
Number	2	12	1	6	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1900	1759
Adj Flow Rate, veh/h	1104	14	306	788	31	0
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.72	0.72	0.80	0.80	0.32	0.32
Percent Heavy Veh, %	2	2	2	2	0	8
Cap, veh/h	1185	15	323	1627	44	36
Arrive On Green	0.65	0.65	0.18	0.87	0.02	0.00
Sat Flow, veh/h	1835	23	1774	1863	1810	1495
Grp Volume(v), veh/h	0	1118	306	788	31	0
Grp Sat Flow(s),veh/h/ln	0	1859	1774	1863	1810	1495
Q Serve(g_s), s	0.0	47.0	15.0	8.2	1.5	0.0
Cycle Q Clear(g_c), s	0.0	47.0	15.0	8.2	1.5	0.0
Prop In Lane		0.01	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1200	323	1627	44	36
V/C Ratio(X)	0.00	0.93	0.95	0.48	0.71	0.00
Avail Cap(c_a), veh/h	0	1376	323	1909	433	358
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	13.8	35.5	1.2	42.5	0.0
Incr Delay (d2), s/veh	0.0	10.1	36.0	0.1	18.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	27.0	10.5	4.0	1.0	0.0
LnGrp Delay(d),s/veh	0.0	23.9	71.5	1.3	61.5	0.0
LnGrp LOS		C	E	A	E	
Approach Vol, veh/h	1118			1094	31	
Approach Delay, s/veh	23.9			20.9	61.5	
Approach LOS	C			C	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	20.0	61.7		6.1		81.7		
Change Period (Y+Rc), s	4.0	5.0		4.0		5.0		
Max Green Setting (Gmax), s	16.0	65.0		21.0		90.0		
Max Q Clear Time (g_c+I1), s	17.0	49.0		3.5		10.2		
Green Ext Time (p_c), s	0.0	7.7		0.0		11.2		

Intersection Summary			
HCM 2010 Ctrl Delay			23.0
HCM 2010 LOS			C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	800	30	20	830	45	15
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1111	41	25	1038	98	26
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.72	0.72	0.80	0.80	0.46	0.46
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1361	1155	30	1497	150	134
Arrive On Green	0.73	0.73	0.02	0.80	0.08	0.08
Sat Flow, veh/h	1863	1581	1774	1863	1774	1583
Grp Volume(v), veh/h	1111	41	25	1038	98	26
Grp Sat Flow(s),veh/h/ln	1863	1581	1774	1863	1774	1583
Q Serve(g_s), s	31.9	0.6	1.1	19.8	4.3	1.2
Cycle Q Clear(g_c), s	31.9	0.6	1.1	19.8	4.3	1.2
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1361	1155	30	1497	150	134
V/C Ratio(X)	0.82	0.04	0.85	0.69	0.65	0.19
Avail Cap(c_a), veh/h	1753	1488	122	1985	564	503
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.2	3.0	39.4	3.5	35.6	34.2
Incr Delay (d2), s/veh	2.4	0.0	20.6	0.7	16.3	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.0	0.3	0.7	10.1	2.8	0.6
LnGrp Delay(d),s/veh	9.6	3.0	60.0	4.2	51.9	36.7
LnGrp LOS	A	A	E	A	D	D
Approach Vol, veh/h	1152			1063	124	
Approach Delay, s/veh	9.4			5.5	48.7	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.8	63.1				69.0		11.3
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	75.5				85.5		25.5
Max Q Clear Time (g_c+I1), s	3.1	33.9				21.8		6.3
Green Ext Time (p_c), s	0.0	24.7				30.6		0.9

Intersection Summary			
HCM 2010 Ctrl Delay			9.7
HCM 2010 LOS			A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	660	150	210	645	5	200	5	270	10	5	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1900	1900	1881	1900	1900	1900
Adj Flow Rate, veh/h	6	759	167	228	701	5	247	6	129	17	8	7
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.81	0.81	0.81	0.60	0.60	0.60
Percent Heavy Veh, %	0	1	1	0	1	1	0	0	1	0	0	0
Cap, veh/h	11	774	170	243	1206	9	285	7	256	22	10	9
Arrive On Green	0.01	0.52	0.52	0.13	0.65	0.65	0.16	0.16	0.16	0.02	0.02	0.02
Sat Flow, veh/h	1810	1493	329	1810	1866	13	1769	43	1589	942	443	388
Grp Volume(v), veh/h	6	0	926	228	0	706	253	0	129	32	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1822	1810	0	1879	1812	0	1589	1772	0	0
Q Serve(g_s), s	0.3	0.0	51.8	13.0	0.0	22.2	14.2	0.0	7.7	1.9	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	51.8	13.0	0.0	22.2	14.2	0.0	7.7	1.9	0.0	0.0
Prop In Lane	1.00		0.18	1.00		0.01	0.98		1.00	0.53		0.22
Lane Grp Cap(c), veh/h	11	0	944	243	0	1214	292	0	256	41	0	0
V/C Ratio(X)	0.54	0.00	0.98	0.94	0.00	0.58	0.87	0.00	0.50	0.78	0.00	0.00
Avail Cap(c_a), veh/h	104	0	945	243	0	1214	331	0	290	102	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	51.6	0.0	24.6	44.6	0.0	10.4	42.6	0.0	39.9	50.6	0.0	0.0
Incr Delay (d2), s/veh	27.2	0.0	24.6	40.4	0.0	0.6	19.3	0.0	1.5	26.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	32.4	9.2	0.0	11.6	8.7	0.0	3.5	1.2	0.0	0.0
LnGrp Delay(d),s/veh	78.8	0.0	49.2	85.0	0.0	11.0	61.9	0.0	41.4	76.9	0.0	0.0
LnGrp LOS	E		D	F		B	E		D	E		
Approach Vol, veh/h		932			934			382			32	
Approach Delay, s/veh		49.3			29.1			55.0			76.9	
Approach LOS		D			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.0	58.9		6.4	4.6	72.3		20.8
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0
Max Green Setting (Gmax), s	14.0	54.0		6.0	6.0	62.0		19.0
Max Q Clear Time (g_c+I1), s	15.0	53.8		3.9	2.3	24.2		16.2
Green Ext Time (p_c), s	0.0	0.1		0.0	0.0	11.4		0.5

Intersection Summary			
HCM 2010 Ctrl Delay			42.4
HCM 2010 LOS			D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	620	285	95	550	10	290	20	105	10	10	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1900	1900	1881	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	32	660	298	102	591	11	349	24	56	12	12	8
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.83	0.83	0.83	0.80	0.80	0.80
Percent Heavy Veh, %	0	1	1	0	0	0	1	0	0	0	0	0
Cap, veh/h	41	691	312	95	1110	21	369	102	239	22	22	15
Arrive On Green	0.02	0.57	0.57	0.05	0.60	0.60	0.21	0.21	0.21	0.03	0.03	0.03
Sat Flow, veh/h	1810	1218	550	1810	1859	35	1792	497	1161	666	666	444
Grp Volume(v), veh/h	32	0	958	102	0	602	349	0	80	32	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1768	1810	0	1894	1792	0	1658	1775	0	0
Q Serve(g_s), s	2.2	0.0	62.7	6.4	0.0	23.0	23.5	0.0	4.9	2.2	0.0	0.0
Cycle Q Clear(g_c), s	2.2	0.0	62.7	6.4	0.0	23.0	23.5	0.0	4.9	2.2	0.0	0.0
Prop In Lane	1.00		0.31	1.00		0.02	1.00		0.70	0.37		0.25
Lane Grp Cap(c), veh/h	41	0	1002	95	0	1130	369	0	341	58	0	0
V/C Ratio(X)	0.79	0.00	0.96	1.08	0.00	0.53	0.95	0.00	0.23	0.55	0.00	0.00
Avail Cap(c_a), veh/h	95	0	1039	95	0	1130	369	0	341	348	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	59.6	0.0	25.1	58.0	0.0	14.6	48.0	0.0	40.6	58.3	0.0	0.0
Incr Delay (d2), s/veh	16.1	0.0	18.0	115.5	0.0	0.5	33.3	0.0	0.4	8.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	35.3	6.2	0.0	12.0	15.0	0.0	2.3	1.2	0.0	0.0
LnGrp Delay(d),s/veh	75.6	0.0	43.0	173.8	0.0	15.1	81.3	0.0	41.0	66.5	0.0	0.0
LnGrp LOS	E		D	F		B	F		D	E		
Approach Vol, veh/h		990			704			429			32	
Approach Delay, s/veh		44.1			38.1			73.8			66.5	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	75.2		29.0	6.4	78.8		8.3
Change Period (Y+Rc), s	3.6	5.7		3.8	3.6	5.7		4.3
Max Green Setting (Gmax), s	6.4	72.0		25.2	6.4	72.0		24.0
Max Q Clear Time (g_c+I1), s	8.4	64.7		25.5	4.2	25.0		4.2
Green Ext Time (p_c), s	0.0	4.7		0.0	0.0	16.9		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	48.4
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	355	45	200	30	20	35	215	375	50	40	385	135
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1855	1900	1900	1900	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	386	49	116	120	80	140	224	391	52	43	410	106
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.25	0.25	0.25	0.96	0.96	0.96	0.94	0.94	0.94
Percent Heavy Veh, %	3	0	0	0	0	0	3	3	0	0	3	3
Cap, veh/h	426	500	446	168	242	215	261	1096	504	111	790	352
Arrive On Green	0.24	0.28	0.28	0.09	0.13	0.13	0.15	0.31	0.31	0.06	0.23	0.23
Sat Flow, veh/h	1757	1762	1573	1810	1805	1608	1757	3505	1612	1810	3505	1564
Grp Volume(v), veh/h	386	49	116	120	80	140	224	391	52	43	410	106
Grp Sat Flow(s),veh/h/ln	1757	1762	1573	1810	1805	1608	1757	1752	1612	1810	1752	1564
Q Serve(g_s), s	17.1	1.6	4.6	5.2	3.2	6.6	10.0	6.9	1.8	1.8	8.2	4.5
Cycle Q Clear(g_c), s	17.1	1.6	4.6	5.2	3.2	6.6	10.0	6.9	1.8	1.8	8.2	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	426	500	446	168	242	215	261	1096	504	111	790	352
V/C Ratio(X)	0.91	0.10	0.26	0.71	0.33	0.65	0.86	0.36	0.10	0.39	0.52	0.30
Avail Cap(c_a), veh/h	557	1316	1175	235	1011	900	337	1718	790	235	1281	571
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.5	21.2	22.2	35.3	31.5	32.9	33.3	21.3	19.6	36.2	27.2	25.8
Incr Delay (d2), s/veh	13.5	0.0	0.1	2.6	0.3	1.2	13.1	0.3	0.1	0.8	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.9	0.8	2.0	2.7	1.6	3.0	5.8	3.4	0.8	0.9	4.1	2.0
LnGrp Delay(d),s/veh	43.0	21.2	22.3	38.0	31.8	34.2	46.4	21.6	19.7	37.0	28.0	26.5
LnGrp LOS	D	C	C	D	C	C	D	C	B	D	C	C
Approach Vol, veh/h		551			340			667			559	
Approach Delay, s/veh		36.7			34.9			29.8			28.4	
Approach LOS		D			C			C			C	
Timer	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.5	30.8	12.0	27.8	16.5	23.8	24.0	15.8				
Change Period (Y+Rc), s	4.6	5.7	4.6	5.1	4.6	5.7	4.6	5.1				
Max Green Setting (Gmax), s	10.4	39.3	10.4	59.9	15.4	29.3	25.4	44.9				
Max Q Clear Time (g_c+I1), s	3.8	8.9	7.2	6.6	12.0	10.2	19.1	8.6				
Green Ext Time (p_c), s	0.0	9.0	0.0	1.5	0.0	7.4	0.3	1.5				
Intersection Summary												
HCM 2010 Ctrl Delay			32.0									
HCM 2010 LOS			C									

Appendix A

Cumulative Plus Project Conditions

Technical Calculations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	140	302	210	115	915	120	235	220	40	145	330	310
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1776	1845	1900	1881	1863	1845	1863	1900	1845	1881	1881
Adj Flow Rate, veh/h	173	373	21	132	1052	38	280	262	44	188	429	225
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	1	1	1
Peak Hour Factor	0.81	0.81	0.81	0.87	0.87	0.87	0.84	0.84	0.84	0.77	0.77	0.77
Percent Heavy Veh, %	5	7	3	0	1	2	3	2	2	3	1	1
Cap, veh/h	224	1341	622	157	1492	660	333	721	119	214	492	417
Arrive On Green	0.07	0.40	0.40	0.12	0.56	0.56	0.10	0.24	0.24	0.12	0.26	0.26
Sat Flow, veh/h	3343	3374	1564	1810	3574	1581	3408	3038	504	1757	1881	1595
Grp Volume(v), veh/h	173	373	21	132	1052	38	280	151	155	188	429	225
Grp Sat Flow(s),veh/h/ln	1672	1687	1564	1810	1787	1581	1704	1770	1772	1757	1881	1595
Q Serve(g_s), s	6.4	9.4	1.0	9.0	27.0	1.4	10.1	8.9	9.2	13.2	27.3	15.2
Cycle Q Clear(g_c), s	6.4	9.4	1.0	9.0	27.0	1.4	10.1	8.9	9.2	13.2	27.3	15.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	224	1341	622	157	1492	660	333	420	421	214	492	417
V/C Ratio(X)	0.77	0.28	0.03	0.84	0.71	0.06	0.84	0.36	0.37	0.88	0.87	0.54
Avail Cap(c_a), veh/h	293	1341	622	245	1492	660	435	467	468	336	617	523
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	25.6	23.0	54.6	22.2	16.5	55.6	39.8	39.9	54.1	44.3	39.8
Incr Delay (d2), s/veh	6.2	0.5	0.1	8.1	2.8	0.2	8.7	0.4	0.5	9.7	10.7	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	4.4	0.5	4.8	13.8	0.6	5.2	4.4	4.5	7.0	15.6	6.8
LnGrp Delay(d),s/veh	63.7	26.1	23.1	62.6	25.1	16.7	64.3	40.3	40.4	63.8	54.9	40.7
LnGrp LOS	E	C	C	E	C	B	E	D	D	E	D	D
Approach Vol, veh/h		567			1222			586			842	
Approach Delay, s/veh		37.5			28.9			51.8			53.1	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	70.2	16.3	38.6	12.4	72.7	19.3	35.6
Change Period (Y+Rc), s	4.0	5.7	4.0	* 5.9	4.0	5.7	4.0	* 5.9
Max Green Setting (Gmax), s	17.0	46.3	16.0	* 41	11.0	52.3	24.0	* 33
Max Q Clear Time (g_c+I1), s	11.0	11.4	12.1	29.3	8.4	29.0	15.2	11.2
Green Ext Time (p_c), s	0.0	9.6	0.1	3.4	0.0	8.5	0.1	4.2

Intersection Summary			
HCM 2010 Ctrl Delay			40.9
HCM 2010 LOS			D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	465	10	125	1070	80	40	25	55	145	260	110
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1727	1810	1900	1792	1863	1900	1900	1776	1900	1881	1881	1881
Adj Flow Rate, veh/h	12	567	11	144	1230	91	62	39	63	171	306	-43
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.82	0.82	0.82	0.87	0.87	0.87	0.64	0.64	0.64	0.85	0.85	0.85
Percent Heavy Veh, %	10	5	5	6	2	2	0	7	7	1	1	1
Cap, veh/h	14	1701	33	171	1954	144	80	53	85	230	356	302
Arrive On Green	0.00	0.16	0.16	0.20	1.00	1.00	0.04	0.09	0.09	0.13	0.19	0.00
Sat Flow, veh/h	1645	3450	67	1707	3341	247	1810	609	984	1792	1881	1599
Grp Volume(v), veh/h	12	282	296	144	650	671	62	0	102	171	306	-43
Grp Sat Flow(s),veh/h/ln	1645	1719	1798	1707	1770	1819	1810	0	1594	1792	1881	1599
Q Serve(g_s), s	0.8	15.5	15.5	8.7	0.0	0.0	3.6	0.0	6.7	9.8	16.8	0.0
Cycle Q Clear(g_c), s	0.8	15.5	15.5	8.7	0.0	0.0	3.6	0.0	6.7	9.8	16.8	0.0
Prop In Lane	1.00		0.04	1.00		0.14	1.00		0.62	1.00		1.00
Lane Grp Cap(c), veh/h	14	848	886	171	1035	1064	80	0	138	230	356	302
V/C Ratio(X)	0.87	0.33	0.33	0.84	0.63	0.63	0.77	0.00	0.74	0.74	0.86	-0.14
Avail Cap(c_a), veh/h	100	848	886	344	1035	1064	178	0	479	311	742	631
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.62	0.62	0.62	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.1	29.1	29.1	41.9	0.0	0.0	50.4	0.0	47.6	44.8	41.9	0.0
Incr Delay (d2), s/veh	65.1	1.1	1.0	5.2	1.8	1.8	5.7	0.0	2.9	3.8	2.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	7.6	8.0	4.3	0.5	0.5	1.9	0.0	3.1	5.1	9.0	0.0
LnGrp Delay(d),s/veh	118.2	30.2	30.2	47.0	1.8	1.8	56.2	0.0	50.5	48.6	44.3	0.0
LnGrp LOS	F	C	C	D	A	A	E		D	D	D	
Approach Vol, veh/h		590			1465			164			434	
Approach Delay, s/veh		32.0			6.2			52.7			50.4	
Approach LOS		C			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	91.9	8.2	25.7	4.4	101.7	19.2	14.7
Change Period (Y+Rc), s	3.5	6.0	3.5	5.5	3.5	6.0	5.5	* 5.5
Max Green Setting (Gmax), s	21.5	47.4	10.5	42.1	6.5	62.4	18.5	* 32
Max Q Clear Time (g_c+I1), s	10.7	17.5	5.6	18.8	2.8	2.0	11.8	8.7
Green Ext Time (p_c), s	0.2	23.6	0.0	1.2	0.0	39.6	0.7	0.3

Intersection Summary		
HCM 2010 Ctrl Delay		22.0
HCM 2010 LOS		C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	405	255	105	830	10	400	60	85	5	50	45
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1792	1827	1881	1863	1900	1881	1900	1900	1900	1845	1900
Adj Flow Rate, veh/h	6	506	109	119	943	10	533	80	82	7	67	57
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	0	1	0
Peak Hour Factor	0.80	0.80	0.80	0.88	0.88	0.88	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	0	6	4	1	2	2	1	0	0	3	3	3
Cap, veh/h	11	1036	471	149	1368	15	577	277	284	9	90	76
Arrive On Green	0.01	0.40	0.40	0.08	0.38	0.38	0.32	0.32	0.32	0.10	0.10	0.10
Sat Flow, veh/h	1810	3406	1548	1792	3587	38	1792	860	882	91	872	741
Grp Volume(v), veh/h	6	506	109	119	465	488	533	0	162	131	0	0
Grp Sat Flow(s),veh/h/ln	1810	1703	1548	1792	1770	1856	1792	0	1742	1704	0	0
Q Serve(g_s), s	0.3	11.1	4.7	6.6	22.3	22.3	29.0	0.0	7.0	7.5	0.0	0.0
Cycle Q Clear(g_c), s	0.3	11.1	4.7	6.6	22.3	22.3	29.0	0.0	7.0	7.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.51	0.05		0.44
Lane Grp Cap(c), veh/h	11	1036	471	149	675	708	577	0	561	176	0	0
V/C Ratio(X)	0.54	0.49	0.23	0.80	0.69	0.69	0.92	0.00	0.29	0.75	0.00	0.00
Avail Cap(c_a), veh/h	197	1036	471	302	675	708	735	0	715	541	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.9	24.2	22.3	45.4	26.2	26.2	33.0	0.0	25.6	43.9	0.0	0.0
Incr Delay (d2), s/veh	25.2	1.5	1.1	7.2	5.7	5.4	14.3	0.0	0.2	4.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	5.4	2.1	3.6	11.9	12.5	16.5	0.0	3.4	3.8	0.0	0.0
LnGrp Delay(d),s/veh	75.0	25.7	23.3	52.6	31.9	31.6	47.3	0.0	25.8	48.6	0.0	0.0
LnGrp LOS	E	C	C	D	C	C	D		C	D		
Approach Vol, veh/h		621			1072			695			131	
Approach Delay, s/veh		25.8			34.1			42.3			48.6	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.6	83.3		15.0	12.4	75.5		37.1
Change Period (Y+Rc), s	4.0	5.7		4.6	4.0	5.7		4.6
Max Green Setting (Gmax), s	11.0	36.7		32.0	17.0	30.7		41.4
Max Q Clear Time (g_c+I1), s	2.3	24.3		9.5	8.6	13.1		31.0
Green Ext Time (p_c), s	0.0	6.8		0.5	0.1	8.4		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	35.0
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	550	60	45	650	10	45	0	40
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	450	-	450	450	-	450	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	88	88	88	75	75	75
Heavy Vehicles, %	0	3	0	10	2	0	6	0	0
Mvmt Flow	23	640	70	51	739	11	60	0	53

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	741	0	0	642	0	0	1165	1531	324
Stage 1	-	-	-	-	-	-	688	688	-
Stage 2	-	-	-	-	-	-	477	843	-
Critical Hdwy	4.1	-	-	4.3	-	-	7.62	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.62	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.62	5.5	-
Follow-up Hdwy	2.2	-	-	2.3	-	-	3.56	4	3.3
Pot Cap-1 Maneuver	875	-	-	886	-	-	145	118	678
Stage 1	-	-	-	-	-	-	393	450	-
Stage 2	-	-	-	-	-	-	528	382	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	874	-	-	885	-	-	118	108	676
Mov Cap-2 Maneuver	-	-	-	-	-	-	118	108	-
Stage 1	-	-	-	-	-	-	382	437	-
Stage 2	-	-	-	-	-	-	443	359	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.6	47.2
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	193	874	-	-	885	-	-	229
HCM Lane V/C Ratio	0.587	0.027	-	-	0.058	-	-	0.415
HCM Control Delay (s)	47.2	9.2	-	-	9.3	-	-	31.4
HCM Lane LOS	E	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	3.2	0.1	-	-	0.2	-	-	1.9

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	25	5	45
Conflicting Peds, #/hr	2	0	2
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	79	79	79
Heavy Vehicles, %	0	0	3
Mvmt Flow	32	6	57

Major/Minor	Minor2		
Conflicting Flow All	1211	1531	373
Stage 1	843	843	-
Stage 2	368	688	-
Critical Hdwy	7.5	6.5	6.96
Critical Hdwy Stg 1	6.5	5.5	-
Critical Hdwy Stg 2	6.5	5.5	-
Follow-up Hdwy	3.5	4	3.33
Pot Cap-1 Maneuver	140	118	622
Stage 1	329	382	-
Stage 2	630	450	-
Platoon blocked, %			
Mov Cap-1 Maneuver	120	108	620
Mov Cap-2 Maneuver	120	108	-
Stage 1	320	359	-
Stage 2	564	437	-

Approach	SB
HCM Control Delay, s	31.4
HCM LOS	D

Minor Lane/Major Mvmt

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	580	40	320	655	50	30
Number	2	12	1	6	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1900	1881	1863	1900	1652
Adj Flow Rate, veh/h	674	40	432	885	125	8
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.86	0.86	0.74	0.74	0.40	0.40
Percent Heavy Veh, %	5	5	1	2	0	15
Cap, veh/h	796	47	482	1475	165	128
Arrive On Green	0.47	0.47	0.27	0.79	0.09	0.09
Sat Flow, veh/h	1691	100	1792	1863	1810	1404
Grp Volume(v), veh/h	0	714	432	885	125	8
Grp Sat Flow(s),veh/h/ln	0	1792	1792	1863	1810	1404
Q Serve(g_s), s	0.0	27.0	17.9	14.5	5.2	0.4
Cycle Q Clear(g_c), s	0.0	27.0	17.9	14.5	5.2	0.4
Prop In Lane		0.06	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	843	482	1475	165	128
V/C Ratio(X)	0.00	0.85	0.90	0.60	0.76	0.06
Avail Cap(c_a), veh/h	0	1282	839	2302	494	384
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	17.9	27.1	3.2	34.1	31.9
Incr Delay (d2), s/veh	0.0	2.1	5.4	0.1	6.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	13.8	9.5	7.2	2.9	0.2
LnGrp Delay(d),s/veh	0.0	20.0	32.4	3.3	41.0	32.1
LnGrp LOS		C	C	A	D	C
Approach Vol, veh/h	714			1317	133	
Approach Delay, s/veh	20.0			12.9	40.4	
Approach LOS	C			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	24.7	41.2		11.0		65.8		
Change Period (Y+Rc), s	4.0	5.0		4.0		5.0		
Max Green Setting (Gmax), s	36.0	55.0		21.0		95.0		
Max Q Clear Time (g_c+I1), s	19.9	29.0		7.2		16.5		
Green Ext Time (p_c), s	0.8	7.2		0.3		7.9		

Intersection Summary			
HCM 2010 Ctrl Delay			16.9
HCM 2010 LOS			B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	740	115	20	835	140	30
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	860	133	27	1128	304	58
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.86	0.86	0.74	0.74	0.46	0.46
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1199	1017	33	1317	360	321
Arrive On Green	0.64	0.64	0.02	0.71	0.20	0.20
Sat Flow, veh/h	1863	1581	1774	1863	1774	1583
Grp Volume(v), veh/h	860	133	27	1128	304	58
Grp Sat Flow(s),veh/h/ln	1863	1581	1774	1863	1774	1583
Q Serve(g_s), s	30.6	3.3	1.5	44.9	16.5	3.0
Cycle Q Clear(g_c), s	30.6	3.3	1.5	44.9	16.5	3.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1199	1017	33	1317	360	321
V/C Ratio(X)	0.72	0.13	0.82	0.86	0.84	0.18
Avail Cap(c_a), veh/h	1407	1194	186	1687	453	404
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.8	6.9	48.9	10.9	38.3	33.0
Incr Delay (d2), s/veh	1.5	0.1	16.5	3.7	18.5	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.0	1.4	0.9	23.9	9.9	1.4
LnGrp Delay(d),s/veh	13.3	7.0	65.4	14.6	56.8	33.9
LnGrp LOS	B	A	E	B	E	C
Approach Vol, veh/h	993			1155	362	
Approach Delay, s/veh	12.4			15.8	53.2	
Approach LOS	B			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.4	68.8				75.2		24.8
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	10.5	75.5				90.5		25.5
Max Q Clear Time (g_c+I1), s	3.5	32.6				46.9		18.5
Green Ext Time (p_c), s	0.0	23.6				23.7		1.8

Intersection Summary		
HCM 2010 Ctrl Delay		19.8
HCM 2010 LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	640	125	230	700	5	155	5	175	5	5	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1863	1900	1863	1863	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	8	1049	192	315	959	7	242	8	153	8	8	8
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.61	0.61	0.61	0.73	0.73	0.73	0.64	0.64	0.64	0.63	0.63	0.63
Percent Heavy Veh, %	20	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	11	864	158	260	1298	9	270	9	247	10	10	10
Arrive On Green	0.01	0.56	0.56	0.15	0.70	0.70	0.15	0.15	0.15	0.02	0.02	0.02
Sat Flow, veh/h	1508	1532	280	1774	1847	13	1754	58	1605	581	581	581
Grp Volume(v), veh/h	8	0	1241	315	0	966	250	0	153	24	0	0
Grp Sat Flow(s),veh/h/ln	1508	0	1812	1774	0	1860	1812	0	1605	1743	0	0
Q Serve(g_s), s	0.8	0.0	81.0	21.0	0.0	46.1	19.4	0.0	12.8	2.0	0.0	0.0
Cycle Q Clear(g_c), s	0.8	0.0	81.0	21.0	0.0	46.1	19.4	0.0	12.8	2.0	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.01	0.97		1.00	0.33		0.33
Lane Grp Cap(c), veh/h	11	0	1022	260	0	1308	279	0	247	30	0	0
V/C Ratio(X)	0.70	0.00	1.21	1.21	0.00	0.74	0.90	0.00	0.62	0.80	0.00	0.00
Avail Cap(c_a), veh/h	63	0	1022	260	0	1308	316	0	279	73	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	71.1	0.0	31.3	61.3	0.0	13.2	59.6	0.0	56.8	70.3	0.0	0.0
Incr Delay (d2), s/veh	43.8	0.0	105.3	126.2	0.0	2.1	24.6	0.0	3.4	37.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	70.2	19.3	0.0	24.1	11.6	0.0	5.9	1.3	0.0	0.0
LnGrp Delay(d),s/veh	114.9	0.0	136.6	187.5	0.0	15.3	84.3	0.0	60.2	107.5	0.0	0.0
LnGrp LOS	F		F	F		B	F		E	F		
Approach Vol, veh/h		1249			1281			403			24	
Approach Delay, s/veh		136.4			57.7			75.1			107.5	
Approach LOS		F			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.0	86.0		6.5	5.1	105.9		26.1
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0
Max Green Setting (Gmax), s	21.0	81.0		6.0	6.0	96.0		25.0
Max Q Clear Time (g_c+I1), s	23.0	83.0		4.0	2.8	48.1		21.4
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	23.6		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	93.7
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	545	255	55	650	0	245	10	95	10	15	40
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1845	1900	1881	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	23	838	386	71	844	0	383	16	78	16	24	15
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.65	0.65	0.65	0.77	0.77	0.77	0.64	0.64	0.64	0.63	0.63	0.63
Percent Heavy Veh, %	0	1	1	0	3	3	1	0	0	0	0	0
Cap, veh/h	32	712	328	91	1137	0	328	51	250	24	36	22
Arrive On Green	0.02	0.58	0.58	0.05	0.62	0.00	0.18	0.18	0.18	0.05	0.05	0.05
Sat Flow, veh/h	1810	1219	562	1810	1845	0	1792	281	1369	517	775	484
Grp Volume(v), veh/h	23	0	1224	71	844	0	383	0	94	55	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1781	1810	1845	0	1792	0	1650	1776	0	0
Q Serve(g_s), s	1.6	0.0	74.0	4.9	41.0	0.0	23.2	0.0	6.3	3.9	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	74.0	4.9	41.0	0.0	23.2	0.0	6.3	3.9	0.0	0.0
Prop In Lane	1.00		0.32	1.00		0.00	1.00		0.83	0.29		0.27
Lane Grp Cap(c), veh/h	32	0	1039	91	1137	0	328	0	302	82	0	0
V/C Ratio(X)	0.73	0.00	1.18	0.78	0.74	0.00	1.17	0.00	0.31	0.67	0.00	0.00
Avail Cap(c_a), veh/h	91	0	1039	163	1149	0	328	0	302	336	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	62.0	0.0	26.4	59.5	17.2	0.0	51.8	0.0	44.9	59.5	0.0	0.0
Incr Delay (d2), s/veh	15.5	0.0	90.2	7.6	2.6	0.0	103.7	0.0	0.6	9.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	62.1	2.7	21.5	0.0	20.8	0.0	2.9	2.1	0.0	0.0
LnGrp Delay(d),s/veh	77.5	0.0	116.6	67.1	19.9	0.0	155.5	0.0	45.5	69.1	0.0	0.0
LnGrp LOS	E		F	E	B		F		D	E		
Approach Vol, veh/h		1247			915			477			55	
Approach Delay, s/veh		115.8			23.5			133.8			69.1	
Approach LOS		F			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	79.7		27.0	5.8	83.9		10.1
Change Period (Y+Rc), s	3.6	5.7		3.8	3.6	5.7		4.3
Max Green Setting (Gmax), s	11.4	74.0		23.2	6.4	79.0		24.0
Max Q Clear Time (g_c+I1), s	6.9	76.0		25.2	3.6	43.0		5.9
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	24.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	86.7
HCM 2010 LOS	F

Intersection	
Intersection Delay, s/veh	19.6
Intersection LOS	C

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBU	SBL	SBR
Vol, veh/h	0	140	265	0	470	10	0	10	165
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	152	288	0	511	11	0	11	179
Number of Lanes	0	1	1	0	1	1	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	12.7	28.2	11.7
HCM LOS	B	D	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	265	470	10	10	165
LT Vol	0	265	470	0	0	0
Through Vol	0	0	0	10	0	165
RT Vol	140	0	0	0	10	0
Lane Flow Rate	152	288	511	11	11	179
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.266	0.463	0.812	0.015	0.023	0.311
Departure Headway (Hd)	6.293	5.786	5.725	5.017	7.463	6.242
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	571	622	633	713	479	576
Service Time	4.03	3.523	3.459	2.751	5.211	3.989
HCM Lane V/C Ratio	0.266	0.463	0.807	0.015	0.023	0.311
HCM Control Delay	11.3	13.4	28.6	7.8	10.4	11.8
HCM Lane LOS	B	B	D	A	B	B
HCM 95th-tile Q	1.1	2.4	8.3	0	0.1	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	105	10	360	65	30	25	140	240	10	20	570	320
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	122	12	145	260	120	100	177	304	13	23	663	307
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	1
Peak Hour Factor	0.86	0.86	0.86	0.25	0.25	0.25	0.79	0.79	0.79	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	171	242	216	241	335	258	215	1475	659	71	1187	530
Arrive On Green	0.10	0.14	0.14	0.14	0.18	0.18	0.12	0.42	0.42	0.04	0.34	0.34
Sat Flow, veh/h	1757	1752	1561	1757	1887	1449	1757	3505	1566	1757	3505	1565
Grp Volume(v), veh/h	122	12	145	260	111	109	177	304	13	23	663	307
Grp Sat Flow(s),veh/h/ln	1757	1752	1561	1757	1752	1583	1757	1752	1566	1757	1752	1565
Q Serve(g_s), s	5.1	0.5	6.7	10.4	4.2	4.6	7.5	4.2	0.4	1.0	11.7	12.2
Cycle Q Clear(g_c), s	5.1	0.5	6.7	10.4	4.2	4.6	7.5	4.2	0.4	1.0	11.7	12.2
Prop In Lane	1.00		1.00	1.00		0.91	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	171	242	216	241	312	281	215	1475	659	71	1187	530
V/C Ratio(X)	0.71	0.05	0.67	1.08	0.36	0.39	0.82	0.21	0.02	0.32	0.56	0.58
Avail Cap(c_a), veh/h	403	1153	1027	241	1037	937	588	2509	1121	241	1816	811
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	28.4	31.1	32.7	27.4	27.5	32.5	13.9	12.8	35.4	20.5	20.6
Incr Delay (d2), s/veh	2.1	0.0	1.4	80.7	0.3	0.3	3.0	0.1	0.0	1.0	0.6	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.2	2.9	10.4	2.1	2.0	3.8	2.0	0.2	0.5	5.7	5.4
LnGrp Delay(d),s/veh	35.3	28.4	32.4	113.5	27.6	27.9	35.5	14.0	12.9	36.3	21.0	22.1
LnGrp LOS	D	C	C	F	C	C	D	B	B	D	C	C
Approach Vol, veh/h		279			480			494			993	
Approach Delay, s/veh		33.5			74.2			21.7			21.7	
Approach LOS		C			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	37.6	15.0	15.6	13.9	31.4	12.0	18.6
Change Period (Y+Rc), s	4.6	5.7	4.6	5.1	4.6	5.7	4.6	5.1
Max Green Setting (Gmax), s	10.4	54.3	10.4	49.9	25.4	39.3	17.4	44.9
Max Q Clear Time (g_c+I1), s	3.0	6.2	12.4	8.7	9.5	14.2	7.1	6.6
Green Ext Time (p_c), s	0.0	14.4	0.0	1.5	0.1	11.4	0.1	1.5

Intersection Summary			
HCM 2010 Ctrl Delay			34.4
HCM 2010 LOS			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	350	1016	245	175	610	140	265	305	85	142	215	175
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1881	1863	1881	1881	1900	1881	1863	1863
Adj Flow Rate, veh/h	368	1069	21	199	693	67	288	332	85	165	250	16
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.92	0.92	0.92	0.86	0.86	0.86
Percent Heavy Veh, %	0	1	1	0	1	2	1	1	1	1	2	2
Cap, veh/h	422	1405	627	221	1412	624	340	646	163	190	441	369
Arrive On Green	0.12	0.39	0.39	0.24	0.79	0.79	0.10	0.23	0.23	0.11	0.24	0.24
Sat Flow, veh/h	3510	3574	1595	1810	3574	1581	3476	2825	713	1792	1863	1559
Grp Volume(v), veh/h	368	1069	21	199	693	67	288	208	209	165	250	16
Grp Sat Flow(s),veh/h/ln	1755	1787	1595	1810	1787	1581	1738	1787	1751	1792	1863	1559
Q Serve(g_s), s	13.5	33.9	1.1	13.9	8.7	1.3	10.7	13.3	13.7	11.9	15.5	1.0
Cycle Q Clear(g_c), s	13.5	33.9	1.1	13.9	8.7	1.3	10.7	13.3	13.7	11.9	15.5	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	422	1405	627	221	1412	624	340	409	401	190	441	369
V/C Ratio(X)	0.87	0.76	0.03	0.90	0.49	0.11	0.85	0.51	0.52	0.87	0.57	0.04
Avail Cap(c_a), veh/h	564	1405	627	291	1412	624	452	409	401	260	441	369
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.6	34.4	24.4	48.6	9.2	8.4	58.0	44.0	44.2	57.6	44.0	38.5
Incr Delay (d2), s/veh	9.1	3.9	0.1	20.9	1.2	0.3	8.6	4.5	4.8	16.0	5.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	17.4	0.5	8.2	4.4	0.6	5.5	7.1	7.1	6.7	8.6	0.5
LnGrp Delay(d),s/veh	65.6	38.3	24.5	69.6	10.4	8.8	66.6	48.5	48.9	73.6	49.2	38.7
LnGrp LOS	E	D	C	E	B	A	E	D	D	E	D	D
Approach Vol, veh/h		1458			959			705			431	
Approach Delay, s/veh		45.0			22.6			56.0			58.1	
Approach LOS		D			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	66.3	16.8	36.9	19.7	66.6	17.9	35.8
Change Period (Y+Rc), s	4.0	5.7	4.0	* 5.9	4.0	5.7	4.0	* 5.9
Max Green Setting (Gmax), s	21.0	51.4	17.0	* 31	21.0	51.4	19.0	* 29
Max Q Clear Time (g_c+I1), s	15.9	35.9	12.7	17.5	15.5	10.7	13.9	15.7
Green Ext Time (p_c), s	0.1	8.7	0.2	2.7	0.2	13.4	0.1	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	42.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	1185	20	90	772	140	40	145	120	135	60	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1863	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	75	1274	22	102	877	154	45	163	122	145	65	-40
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.89	0.89	0.89	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	1	0	1	1	2	1	1	0	0	0
Cap, veh/h	95	1753	30	125	1527	268	58	183	137	172	499	424
Arrive On Green	0.11	0.98	0.98	0.14	1.00	1.00	0.03	0.18	0.18	0.09	0.26	0.00
Sat Flow, veh/h	1810	3594	62	1810	3028	532	1774	993	743	1810	1900	1615
Grp Volume(v), veh/h	75	633	663	102	518	513	45	0	285	145	65	-40
Grp Sat Flow(s),veh/h/ln	1810	1787	1869	1810	1787	1773	1774	0	1736	1810	1900	1615
Q Serve(g_s), s	5.1	3.7	3.8	6.9	0.0	0.0	3.1	0.0	20.0	9.9	3.3	0.0
Cycle Q Clear(g_c), s	5.1	3.7	3.8	6.9	0.0	0.0	3.1	0.0	20.0	9.9	3.3	0.0
Prop In Lane	1.00		0.03	1.00		0.30	1.00		0.43	1.00		1.00
Lane Grp Cap(c), veh/h	95	872	911	125	901	894	58	0	320	172	499	424
V/C Ratio(X)	0.79	0.73	0.73	0.82	0.57	0.57	0.78	0.00	0.89	0.84	0.13	-0.09
Avail Cap(c_a), veh/h	181	872	911	166	901	894	130	0	451	210	605	514
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.78	0.78	0.78	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.3	0.8	0.8	53.1	0.0	0.0	60.1	0.0	49.8	55.7	35.2	0.0
Incr Delay (d2), s/veh	10.2	5.3	5.1	14.9	2.1	2.1	8.1	0.0	11.9	19.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.1	2.2	3.9	0.5	0.5	1.7	0.0	10.6	5.8	1.7	0.0
LnGrp Delay(d),s/veh	65.5	6.1	5.9	68.0	2.1	2.1	68.1	0.0	61.6	74.9	35.2	0.0
LnGrp LOS	E	A	A	E	A	A	E		E	E	D	
Approach Vol, veh/h		1371			1133			330			170	
Approach Delay, s/veh		9.2			8.0			62.5			77.3	
Approach LOS		A			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	81.9	7.6	38.4	10.1	84.0	17.4	28.6
Change Period (Y+Rc), s	3.5	6.0	3.5	5.5	3.5	6.0	5.5	* 5.5
Max Green Setting (Gmax), s	11.5	61.0	9.2	39.8	12.5	60.0	14.5	* 33
Max Q Clear Time (g_c+I1), s	8.9	5.8	5.1	5.3	7.1	2.0	11.9	22.0
Green Ext Time (p_c), s	0.0	45.1	0.0	0.4	0.0	46.9	0.1	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	940	440	65	617	10	330	40	120	5	10	55
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1881	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	65	1011	356	81	771	12	384	47	82	10	20	104
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	0	1	0
Peak Hour Factor	0.93	0.93	0.93	0.80	0.80	0.80	0.86	0.86	0.86	0.50	0.50	0.50
Percent Heavy Veh, %	0	1	0	0	1	1	1	0	0	0	0	0
Cap, veh/h	84	1539	694	104	1590	25	426	146	256	13	26	136
Arrive On Green	0.05	0.43	0.43	0.06	0.44	0.44	0.24	0.24	0.24	0.11	0.11	0.11
Sat Flow, veh/h	1810	3574	1611	1810	3602	56	1792	616	1075	124	247	1287
Grp Volume(v), veh/h	65	1011	356	81	382	401	384	0	129	134	0	0
Grp Sat Flow(s),veh/h/ln	1810	1787	1611	1810	1787	1871	1792	0	1691	1658	0	0
Q Serve(g_s), s	3.7	23.6	17.0	4.6	16.0	16.0	21.9	0.0	6.6	8.3	0.0	0.0
Cycle Q Clear(g_c), s	3.7	23.6	17.0	4.6	16.0	16.0	21.9	0.0	6.6	8.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.64	0.07		0.78
Lane Grp Cap(c), veh/h	84	1539	694	104	789	826	426	0	402	176	0	0
V/C Ratio(X)	0.77	0.66	0.51	0.78	0.48	0.48	0.90	0.00	0.32	0.76	0.00	0.00
Avail Cap(c_a), veh/h	189	1539	694	189	789	826	613	0	578	473	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.60	0.60	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.6	23.8	21.9	48.9	20.9	20.9	38.9	0.0	33.1	45.8	0.0	0.0
Incr Delay (d2), s/veh	6.5	1.3	1.6	8.9	2.1	2.0	11.4	0.0	0.3	5.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	11.9	7.8	2.6	8.3	8.7	12.1	0.0	3.1	4.0	0.0	0.0
LnGrp Delay(d),s/veh	56.1	25.1	23.5	57.8	23.0	22.9	50.3	0.0	33.4	50.8	0.0	0.0
LnGrp LOS	E	C	C	E	C	C	D		C	D		
Approach Vol, veh/h		1432			864			513			134	
Approach Delay, s/veh		26.1			26.2			46.1			50.8	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	86.9		15.1	10.1	85.8		29.0
Change Period (Y+Rc), s	4.0	5.7		4.0	4.0	5.7		4.0
Max Green Setting (Gmax), s	11.0	45.3		30.0	11.0	45.3		36.0
Max Q Clear Time (g_c+I1), s	5.7	18.0		10.3	6.6	25.6		23.9
Green Ext Time (p_c), s	0.0	14.6		0.5	0.0	12.0		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	30.8
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	40.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	135	780	55	40	620	15	50	5	45
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	450	-	450	450	-	450	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	82	82	82	70	70	70
Heavy Vehicles, %	2	1	0	0	1	0	0	0	0
Mvmt Flow	147	848	60	49	756	18	71	7	64

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	758	0	0	850	0	0	1624	1999	428
Stage 1	-	-	-	-	-	-	1143	1143	-
Stage 2	-	-	-	-	-	-	481	856	-
Critical Hdwy	4.14	-	-	4.1	-	-	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.22	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	849	-	-	797	-	-	~ 69	61	581
Stage 1	-	-	-	-	-	-	216	277	-
Stage 2	-	-	-	-	-	-	540	377	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	848	-	-	796	-	-	~ 45	47	579
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 45	47	-
Stage 1	-	-	-	-	-	-	178	229	-
Stage 2	-	-	-	-	-	-	441	353	-

Approach	EB	WB	NB
HCM Control Delay, s	1.4	0.6	$ 520
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	77	848	-	-	796	-	-	126
HCM Lane V/C Ratio	1.855	0.173	-	-	0.061	-	-	0.815
HCM Control Delay (s)	$ 520	10.1	-	-	9.8	-	-	102.5
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	12.5	0.6	-	-	0.2	-	-	4.9

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	20	5	50
Conflicting Peds, #/hr	2	0	2
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	73	73	73
Heavy Vehicles, %	0	0	0
Mvmt Flow	27	7	68

Major/Minor	Minor2		
Conflicting Flow All	1579	1999	382
Stage 1	856	856	-
Stage 2	723	1143	-
Critical Hdwy	7.5	6.5	6.9
Critical Hdwy Stg 1	6.5	5.5	-
Critical Hdwy Stg 2	6.5	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	75	61	622
Stage 1	323	377	-
Stage 2	388	277	-
Platoon blocked, %			
Mov Cap-1 Maneuver	49	47	620
Mov Cap-2 Maneuver	49	47	-
Stage 1	267	353	-
Stage 2	276	229	-

Approach	SB
HCM Control Delay, s	102.5
HCM LOS	F

Minor Lane/Major Mvmt

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	835	10	245	665	10	20
Number	2	12	1	6	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1900	1759
Adj Flow Rate, veh/h	1160	14	306	831	31	0
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.72	0.72	0.80	0.80	0.32	0.32
Percent Heavy Veh, %	2	2	2	2	0	8
Cap, veh/h	1218	15	306	1638	43	35
Arrive On Green	0.66	0.66	0.17	0.88	0.02	0.00
Sat Flow, veh/h	1837	22	1774	1863	1810	1495
Grp Volume(v), veh/h	0	1174	306	831	31	0
Grp Sat Flow(s),veh/h/ln	0	1859	1774	1863	1810	1495
Q Serve(g_s), s	0.0	53.5	16.0	9.0	1.6	0.0
Cycle Q Clear(g_c), s	0.0	53.5	16.0	9.0	1.6	0.0
Prop In Lane		0.01	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1233	306	1638	43	35
V/C Ratio(X)	0.00	0.95	1.00	0.51	0.72	0.00
Avail Cap(c_a), veh/h	0	1304	306	1810	410	339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	14.3	38.3	1.2	44.9	0.0
Incr Delay (d2), s/veh	0.0	14.3	51.0	0.1	20.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	31.6	12.1	4.4	1.0	0.0
LnGrp Delay(d),s/veh	0.0	28.6	89.3	1.3	65.1	0.0
LnGrp LOS		C	F	A	E	
Approach Vol, veh/h	1174			1137	31	
Approach Delay, s/veh	28.6			25.0	65.1	
Approach LOS	C			C	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	20.0	66.4		6.2		86.4		
Change Period (Y+Rc), s	4.0	5.0		4.0		5.0		
Max Green Setting (Gmax), s	16.0	65.0		21.0		90.0		
Max Q Clear Time (g_c+I1), s	18.0	55.5		3.6		11.0		
Green Ext Time (p_c), s	0.0	5.9		0.0		12.8		

Intersection Summary			
HCM 2010 Ctrl Delay			27.3
HCM 2010 LOS			C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	725	145	30	775	150	25
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1007	200	38	969	326	47
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.72	0.72	0.80	0.80	0.46	0.46
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1173	996	48	1305	375	335
Arrive On Green	0.63	0.63	0.03	0.70	0.21	0.21
Sat Flow, veh/h	1863	1581	1774	1863	1774	1583
Grp Volume(v), veh/h	1007	200	38	969	326	47
Grp Sat Flow(s),veh/h/ln	1863	1581	1774	1863	1774	1583
Q Serve(g_s), s	44.7	5.5	2.2	33.3	18.2	2.5
Cycle Q Clear(g_c), s	44.7	5.5	2.2	33.3	18.2	2.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1173	996	48	1305	375	335
V/C Ratio(X)	0.86	0.20	0.79	0.74	0.87	0.14
Avail Cap(c_a), veh/h	1370	1163	95	1552	441	393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.3	8.0	49.7	9.6	39.1	32.9
Incr Delay (d2), s/veh	5.0	0.1	10.4	1.6	20.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.3	2.4	1.2	17.5	11.1	1.1
LnGrp Delay(d),s/veh	20.3	8.1	60.1	11.2	59.9	33.6
LnGrp LOS	C	A	E	B	E	C
Approach Vol, veh/h	1207			1007	373	
Approach Delay, s/veh	18.3			13.0	56.6	
Approach LOS	B			B	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.3	69.2				76.4		26.2
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	75.5				85.5		25.5
Max Q Clear Time (g_c+I1), s	4.2	46.7				35.3		20.2
Green Ext Time (p_c), s	0.0	18.0				24.2		1.5

Intersection Summary		
HCM 2010 Ctrl Delay		21.8
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	665	80	200	650	5	150	5	265	10	5	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1900	1900	1881	1900	1900	1900
Adj Flow Rate, veh/h	6	764	87	217	707	5	185	6	123	17	8	7
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.81	0.81	0.81	0.60	0.60	0.60
Percent Heavy Veh, %	0	1	1	0	1	1	0	0	1	0	0	0
Cap, veh/h	11	853	97	252	1208	9	237	8	214	23	11	9
Arrive On Green	0.01	0.51	0.51	0.14	0.65	0.65	0.14	0.14	0.14	0.02	0.02	0.02
Sat Flow, veh/h	1810	1658	189	1810	1866	13	1755	57	1587	942	443	388
Grp Volume(v), veh/h	6	0	851	217	0	712	191	0	123	32	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1847	1810	0	1879	1812	0	1587	1774	0	0
Q Serve(g_s), s	0.3	0.0	37.7	10.7	0.0	19.6	9.3	0.0	6.6	1.6	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	37.7	10.7	0.0	19.6	9.3	0.0	6.6	1.6	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.01	0.97		1.00	0.53		0.22
Lane Grp Cap(c), veh/h	11	0	950	252	0	1216	245	0	214	43	0	0
V/C Ratio(X)	0.54	0.00	0.90	0.86	0.00	0.59	0.78	0.00	0.57	0.74	0.00	0.00
Avail Cap(c_a), veh/h	119	0	1097	279	0	1281	379	0	332	117	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	45.0	0.0	19.9	38.3	0.0	9.1	38.0	0.0	36.9	44.1	0.0	0.0
Incr Delay (d2), s/veh	26.4	0.0	8.6	20.8	0.0	0.5	5.5	0.0	2.4	21.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	21.4	6.8	0.0	10.3	5.0	0.0	3.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	71.5	0.0	28.5	59.1	0.0	9.6	43.5	0.0	39.3	65.6	0.0	0.0
LnGrp LOS	E		C	E		A	D		D	E		
Approach Vol, veh/h		857			929			314			32	
Approach Delay, s/veh		28.8			21.2			41.9			65.6	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.7	51.8		6.2	4.6	63.9		16.3
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0
Max Green Setting (Gmax), s	14.0	54.0		6.0	6.0	62.0		19.0
Max Q Clear Time (g_c+I1), s	12.7	39.7		3.6	2.3	21.6		11.3
Green Ext Time (p_c), s	0.1	7.0		0.0	0.0	10.4		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		27.9
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	615	290	95	565	10	270	20	110	10	10	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1900	1900	1881	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	32	654	304	102	608	11	325	24	62	12	12	8
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.83	0.83	0.83	0.80	0.80	0.80
Percent Heavy Veh, %	0	1	1	0	0	0	1	0	0	0	0	0
Cap, veh/h	41	690	321	96	1122	20	353	91	235	22	22	15
Arrive On Green	0.02	0.57	0.57	0.05	0.60	0.60	0.20	0.20	0.20	0.03	0.03	0.03
Sat Flow, veh/h	1810	1205	560	1810	1860	34	1792	461	1190	666	666	444
Grp Volume(v), veh/h	32	0	958	102	0	619	325	0	86	32	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1765	1810	0	1894	1792	0	1651	1775	0	0
Q Serve(g_s), s	2.1	0.0	61.2	6.4	0.0	23.2	21.5	0.0	5.3	2.1	0.0	0.0
Cycle Q Clear(g_c), s	2.1	0.0	61.2	6.4	0.0	23.2	21.5	0.0	5.3	2.1	0.0	0.0
Prop In Lane	1.00		0.32	1.00		0.02	1.00		0.72	0.37		0.25
Lane Grp Cap(c), veh/h	41	0	1011	96	0	1142	353	0	325	59	0	0
V/C Ratio(X)	0.79	0.00	0.95	1.06	0.00	0.54	0.92	0.00	0.26	0.55	0.00	0.00
Avail Cap(c_a), veh/h	96	0	1054	96	0	1142	374	0	345	353	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	58.7	0.0	24.1	57.1	0.0	14.1	47.5	0.0	41.0	57.4	0.0	0.0
Incr Delay (d2), s/veh	16.1	0.0	16.4	109.7	0.0	0.6	26.9	0.0	0.4	8.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	34.1	6.1	0.0	12.2	13.3	0.0	2.5	1.2	0.0	0.0
LnGrp Delay(d),s/veh	74.8	0.0	40.5	167.4	0.0	14.7	74.4	0.0	41.5	65.4	0.0	0.0
LnGrp LOS	E		D	F		B	E		D	E		
Approach Vol, veh/h		990			721			411			32	
Approach Delay, s/veh		41.6			36.3			67.5			65.4	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	74.8		27.6	6.3	78.4		8.3
Change Period (Y+Rc), s	3.6	5.7		3.8	3.6	5.7		4.3
Max Green Setting (Gmax), s	6.4	72.0		25.2	6.4	72.0		24.0
Max Q Clear Time (g_c+I1), s	8.4	63.2		23.5	4.1	25.2		4.1
Green Ext Time (p_c), s	0.0	5.9		0.3	0.0	17.2		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		45.1
HCM 2010 LOS		D

Intersection	
Intersection Delay, s/veh	16.9
Intersection LOS	C

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBU	SBL	SBR
Vol, veh/h	0	175	445	0	290	10	0	10	155
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	190	484	0	315	11	0	11	168
Number of Lanes	0	1	1	0	1	1	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	19.4	14.8	11.4
HCM LOS	C	B	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	175	445	290	10	10	155
LT Vol	0	445	290	0	0	0
Through Vol	0	0	0	10	0	155
RT Vol	175	0	0	0	10	0
Lane Flow Rate	190	484	315	11	11	168
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.319	0.742	0.521	0.016	0.022	0.291
Departure Headway (Hd)	6.031	5.526	5.947	5.237	7.445	6.225
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	597	658	608	683	481	576
Service Time	3.756	3.25	3.679	2.97	5.188	3.968
HCM Lane V/C Ratio	0.318	0.736	0.518	0.016	0.023	0.292
HCM Control Delay	11.6	22.5	15	8.1	10.4	11.5
HCM Lane LOS	B	C	B	A	B	B
HCM 95th-tile Q	1.4	6.6	3	0	0.1	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	355	45	200	30	20	35	215	375	50	40	385	135
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1855	1900	1900	1900	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	386	49	116	120	80	140	224	391	52	43	410	106
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.25	0.25	0.25	0.96	0.96	0.96	0.94	0.94	0.94
Percent Heavy Veh, %	3	0	0	0	0	0	3	3	0	0	3	3
Cap, veh/h	426	500	446	168	242	215	261	1096	504	111	790	352
Arrive On Green	0.24	0.28	0.28	0.09	0.13	0.13	0.15	0.31	0.31	0.06	0.23	0.23
Sat Flow, veh/h	1757	1762	1573	1810	1805	1608	1757	3505	1612	1810	3505	1564
Grp Volume(v), veh/h	386	49	116	120	80	140	224	391	52	43	410	106
Grp Sat Flow(s),veh/h/ln	1757	1762	1573	1810	1805	1608	1757	1752	1612	1810	1752	1564
Q Serve(g_s), s	17.1	1.6	4.6	5.2	3.2	6.6	10.0	6.9	1.8	1.8	8.2	4.5
Cycle Q Clear(g_c), s	17.1	1.6	4.6	5.2	3.2	6.6	10.0	6.9	1.8	1.8	8.2	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	426	500	446	168	242	215	261	1096	504	111	790	352
V/C Ratio(X)	0.91	0.10	0.26	0.71	0.33	0.65	0.86	0.36	0.10	0.39	0.52	0.30
Avail Cap(c_a), veh/h	557	1316	1175	235	1011	900	337	1718	790	235	1281	571
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.5	21.2	22.2	35.3	31.5	32.9	33.3	21.3	19.6	36.2	27.2	25.8
Incr Delay (d2), s/veh	13.5	0.0	0.1	2.6	0.3	1.2	13.1	0.3	0.1	0.8	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.9	0.8	2.0	2.7	1.6	3.0	5.8	3.4	0.8	0.9	4.1	2.0
LnGrp Delay(d),s/veh	43.0	21.2	22.3	38.0	31.8	34.2	46.4	21.6	19.7	37.0	28.0	26.5
LnGrp LOS	D	C	C	D	C	C	D	C	B	D	C	C
Approach Vol, veh/h		551			340			667			559	
Approach Delay, s/veh		36.7			34.9			29.8			28.4	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	30.8	12.0	27.8	16.5	23.8	24.0	15.8
Change Period (Y+Rc), s	4.6	5.7	4.6	5.1	4.6	5.7	4.6	5.1
Max Green Setting (Gmax), s	10.4	39.3	10.4	59.9	15.4	29.3	25.4	44.9
Max Q Clear Time (g_c+I1), s	3.8	8.9	7.2	6.6	12.0	10.2	19.1	8.6
Green Ext Time (p_c), s	0.0	9.0	0.0	1.5	0.0	7.4	0.3	1.5

Intersection Summary			
HCM 2010 Ctrl Delay			32.0
HCM 2010 LOS			C

Appendix A

Mitigation

Technical Calculations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	550	60	45	650	10	45	0	40	25	5	45
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1900	1727	1863	1900	1900	1841	1900	1900	1866	1900
Adj Flow Rate, veh/h	23	640	70	51	739	11	60	0	53	32	6	57
Adj No. of Lanes	1	2	1	1	2	1	0	1	0	0	1	0
Peak Hour Factor	0.86	0.86	0.86	0.88	0.88	0.88	0.75	0.75	0.75	0.79	0.79	0.79
Percent Heavy Veh, %	0	3	0	10	2	0	0	0	0	0	0	0
Cap, veh/h	145	1384	636	67	1257	572	87	0	77	47	9	83
Arrive On Green	0.08	0.39	0.39	0.04	0.36	0.36	0.10	0.00	0.10	0.08	0.08	0.08
Sat Flow, veh/h	1810	3505	1611	1645	3539	1610	879	0	776	557	105	993
Grp Volume(v), veh/h	23	640	70	51	739	11	113	0	0	95	0	0
Grp Sat Flow(s),veh/h/ln	1810	1752	1611	1645	1770	1610	1655	0	0	1655	0	0
Q Serve(g_s), s	0.6	6.7	1.4	1.5	8.5	0.2	3.3	0.0	0.0	2.8	0.0	0.0
Cycle Q Clear(g_c), s	0.6	6.7	1.4	1.5	8.5	0.2	3.3	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.53		0.47	0.34		0.60
Lane Grp Cap(c), veh/h	145	1384	636	67	1257	572	164	0	0	138	0	0
V/C Ratio(X)	0.16	0.46	0.11	0.76	0.59	0.02	0.69	0.00	0.00	0.69	0.00	0.00
Avail Cap(c_a), veh/h	145	1619	744	165	1706	776	964	0	0	964	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.3	11.2	9.5	23.6	13.1	10.4	21.7	0.0	0.0	22.2	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.2	0.1	16.2	0.4	0.0	5.0	0.0	0.0	5.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.2	0.6	1.0	4.2	0.1	1.7	0.0	0.0	1.5	0.0	0.0
LnGrp Delay(d),s/veh	21.8	11.4	9.6	39.9	13.5	10.4	26.7	0.0	0.0	28.1	0.0	0.0
LnGrp LOS	C	B	A	D	B	B	C			C		
Approach Vol, veh/h		733			801			113			95	
Approach Delay, s/veh		11.6			15.2			26.7			28.1	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.0	22.7		9.9	6.0	24.7		9.2
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0
Max Green Setting (Gmax), s	4.0	24.0		29.0	5.0	23.0		29.0
Max Q Clear Time (g_c+I1), s	2.6	10.5		5.3	3.5	8.7		4.8
Green Ext Time (p_c), s	0.0	7.1		0.5	0.0	7.3		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	135	780	55	40	620	15	50	5	45	20	5	50
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1881	1900	1900	1881	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	147	848	60	49	756	18	71	7	64	27	7	68
Adj No. of Lanes	1	2	1	1	2	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.82	0.82	0.82	0.70	0.70	0.70	0.73	0.73	0.73
Percent Heavy Veh, %	2	1	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	164	1429	644	70	1236	557	103	10	93	39	10	99
Arrive On Green	0.09	0.40	0.40	0.04	0.35	0.35	0.12	0.12	0.12	0.09	0.09	0.09
Sat Flow, veh/h	1774	3574	1611	1810	3574	1610	858	85	773	438	114	1104
Grp Volume(v), veh/h	147	848	60	49	756	18	142	0	0	102	0	0
Grp Sat Flow(s),veh/h/ln	1774	1787	1611	1810	1787	1610	1716	0	0	1655	0	0
Q Serve(g_s), s	4.4	10.1	1.3	1.4	9.5	0.4	4.3	0.0	0.0	3.2	0.0	0.0
Cycle Q Clear(g_c), s	4.4	10.1	1.3	1.4	9.5	0.4	4.3	0.0	0.0	3.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.50		0.45	0.26		0.67
Lane Grp Cap(c), veh/h	164	1429	644	70	1236	557	206	0	0	149	0	0
V/C Ratio(X)	0.90	0.59	0.09	0.70	0.61	0.03	0.69	0.00	0.00	0.69	0.00	0.00
Avail Cap(c_a), veh/h	164	1554	700	151	1521	685	921	0	0	888	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.3	12.8	10.1	25.7	14.7	11.7	22.8	0.0	0.0	23.9	0.0	0.0
Incr Delay (d2), s/veh	41.7	0.5	0.1	12.1	0.5	0.0	4.0	0.0	0.0	5.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	5.1	0.6	1.0	4.7	0.2	2.2	0.0	0.0	1.7	0.0	0.0
LnGrp Delay(d),s/veh	66.0	13.3	10.2	37.8	15.2	11.7	26.8	0.0	0.0	29.4	0.0	0.0
LnGrp LOS	E	B	B	D	B	B	C			C		
Approach Vol, veh/h		1055			823			142			102	
Approach Delay, s/veh		20.5			16.4			26.8			29.4	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.0	23.7		11.5	6.1	26.6		9.8
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0
Max Green Setting (Gmax), s	5.0	23.0		29.0	4.5	23.5		29.0
Max Q Clear Time (g_c+I1), s	6.4	11.5		6.3	3.4	12.1		5.2
Green Ext Time (p_c), s	0.0	7.1		0.7	0.0	7.1		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	19.7
HCM 2010 LOS	B

FEHR PEERS

Major Street	Green Valley Road	Sheet No	1 of 1
Minor Street	Deer Valley Road	Project	Silver Springs Parkway Extension
		Scenario	Cumulative Plus Project
		Peak Hour	PM

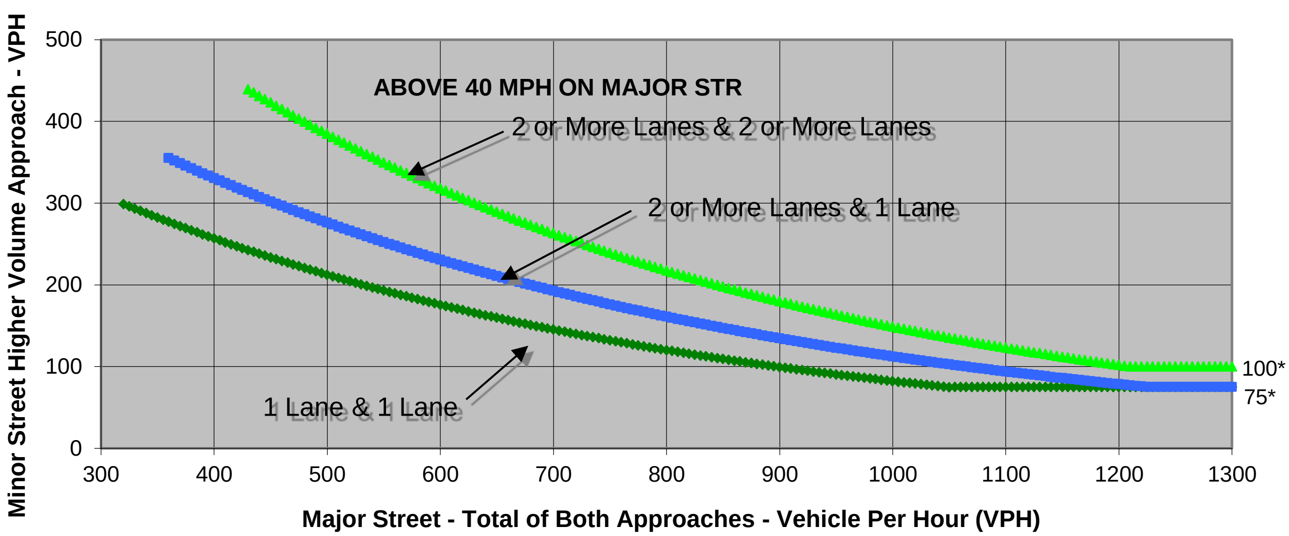
Turn Movement Volumes

	NB	SB	EB	WB
Left	55	20	135	35
Through	5	5	745	595
Right	40	50	55	10
Total	100	75	935	640

Major Street Direction

	North/South
x	East/West

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street Green Valley Road	Minor Street Deer Valley Road	Warrant Met
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,575**	**100**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Appendix B

Daily Traffic Volume Forecasts (Two-Way Total)

VMT by Speed Bin

Appendix B

Daily Roadway Segment Traffic Volume Forecasts (Two-Way Total)

Roadway Segment	Existing	Existing Plus Project	Cumulative	Cumulative Plus Project
Green Valley Road				
County Line to Just West of Sophia Parkway	17,970	17,900	19,000	19,000
Just West of Sophia Parkway to Just East of Francisco Drive	21,140	21,000	21,500	21,600
Just East of Francisco Drive to El Dorado Hills Boulevard	11,210	11,100	15,300	15,400
El Dorado Hills Boulevard to Silva Valley Parkway	10,880	10,800	19,200	19,300
Silva Valley Parkway to Malcolm Dixon Road	9,870	9,800	16,000	16,400
Malcolm Dixon Road to Deer Valley Road	8,720	8,600	14,200	14,700
Deer Valley Road to Silver Springs Parkway	8,620	9,300	12,700	13,500
Silver Springs Parkway to Bass Lake Road	8,620	8,100	12,300	11,300
Bass Lake Road to Cameron Park Road	9,650	9,600	14,800	14,600
Bass Lake Road				
Green Valley Road to Silver Springs Parkway	5,380	4,600	8,300	7,000
Silver Springs Parkway to Serrano Parkway	7,720	7,800	12,000	12,600
Serrano Parkway to US 50	8,590	8,700	12,200	12,600
Silver Springs Parkway				
South of Green Valley	-	1,400	1,000	3,200
Extension to Bass Lake Road	-	1,400	-	3,300
Source: Fehr & Peers, 2014				

TABLE 1 – BASE YEAR (2010) NO PROJECT VEHICLE MILES TRAVELED SUMMARY - CIP SILVER SPRINGS					
VMT Speed Bins (MPH)	**AM Peak Period**	**Midday Period**	**PM Peak Period**	**Evening Period**	**Daily**
0 - 5	231	0	2,754	0	2,985
5 - 10	12,345	2,372	12,766	0	27,483
10 - 15	17,649	1,743	38,651	443	58,485
15 - 20	287,538	391,341	354,734	331,209	1,364,821
20 - 25	98,293	78,980	125,922	56,068	359,262
25 - 30	84,059	71,175	97,598	33,066	285,897
30 - 35	200,612	187,784	239,434	173,426	801,256
35 - 40	406,559	362,300	430,607	324,855	1,524,322
40 - 45	340,987	492,322	434,580	487,352	1,755,241
45 - 50	237,883	446,214	307,220	375,123	1,366,440
50 - 55	184,949	68,936	229,601	25,408	508,893
55 - 60	268,768	845,401	168,081	625,363	1,907,612
60 - 65	13,700	8,593	14,057	140,613	176,963
65 - 70	0	0	0	0	0
70 - 75	0	0	0	0	0
>75	0	0	0	0	0
Total	**2,153,572**	**2,957,160**	**2,456,004**	**2,572,926**	**10,139,661**

Source: Fehr & Peers

TABLE 2 – BASE YEAR (2010) PLUS PROJECT

VEHICLE MILES TRAVELED SUMMARY - CIP SILVER SPRINGS

VMT Speed Bins (MPH)	AM Peak Period	Midday Period	PM Peak Period	Evening Period	Daily
0 - 5	121	0	2,760	0	2,882
5 - 10	11,864	2,372	12,822	0	27,058
10 - 15	9,747	1,743	43,104	443	55,037
15 - 20	299,247	391,868	351,280	331,191	1,373,585
20 - 25	80,130	78,449	117,215	56,057	331,851
25 - 30	83,377	71,081	105,993	33,062	293,513
30 - 35	218,552	187,954	238,387	177,969	822,862
35 - 40	387,872	362,540	424,871	320,317	1,495,600
40 - 45	348,720	491,827	438,236	487,331	1,766,114
45 - 50	236,555	446,111	309,359	374,799	1,366,824
50 - 55	202,693	68,980	226,355	25,666	523,694
55 - 60	253,810	845,535	170,106	625,288	1,894,738
60 - 65	14,847	8,582	14,064	140,615	178,107
65 - 70	0	0	0	0	0
70 - 75	0	0	0	0	0
>75	0	0	0	0	0
Total	**2,147,534**	**2,957,041**	**2,454,552**	**2,572,738**	**10,131,866**

Source: Fehr & Peers

TABLE 3 – CUMULATIVE (2035) NO PROJECT VEHICLE MILES TRAVELED SUMMARY - CIP SILVER SPRINGS					
VMT Speed Bins (MPH)	**AM Peak Period**	**Midday Period**	**PM Peak Period**	**Evening Period**	**Daily**
0 - 5	7,126	57	8,315	0	15,498
5 - 10	19,843	6,683	49,177	64	75,767
10 - 15	39,564	11,542	81,426	2,550	135,081
15 - 20	470,476	593,174	608,677	504,909	2,177,236
20 - 25	150,961	119,503	241,107	76,494	588,065
25 - 30	185,171	123,481	227,742	45,593	581,987
30 - 35	429,149	311,258	448,771	263,563	1,452,741
35 - 40	647,033	666,494	777,688	555,447	2,646,661
40 - 45	372,887	694,510	455,324	688,944	2,211,665
45 - 50	382,888	623,051	332,720	529,683	1,868,342
50 - 55	248,216	626,764	223,674	158,744	1,257,398
55 - 60	154,821	513,112	150,378	820,043	1,638,354
60 - 65	18,027	6,739	4,031	101,030	129,826
65 - 70	0	0	0	0	0
70 - 75	0	0	0	0	0
>75	0	0	0	0	0
Total	**3,126,163**	**4,296,365**	**3,609,029**	**3,747,064**	**14,778,620**
Source: Fehr & Peers					

TABLE 4 – CUMULATIVE (2035) PLUS PROJECT VEHICLE MILES TRAVELED SUMMARY - CIP SILVER SPRINGS					
VMT Speed Bins (MPH)	**AM Peak Period**	**Midday Period**	**PM Peak Period**	**Evening Period**	**Daily**
0 - 5	5,753	57	8,291	0	14,101
5 - 10	17,477	6,681	51,078	64	75,299
10 - 15	40,456	11,522	79,621	2,551	134,150
15 - 20	471,174	592,156	614,432	504,945	2,182,706
20 - 25	154,050	121,404	229,222	75,588	580,264
25 - 30	187,337	122,898	236,839	46,441	593,515
30 - 35	389,882	312,940	439,198	259,727	1,401,748
35 - 40	673,103	663,297	787,589	559,394	2,683,383
40 - 45	372,120	690,105	451,839	688,832	2,202,896
45 - 50	384,375	632,092	331,290	529,279	1,877,036
50 - 55	233,756	613,677	220,259	159,141	1,226,833
55 - 60	171,380	521,576	154,859	819,519	1,667,334
60 - 65	17,187	6,714	4,040	101,009	128,950
65 - 70	0	0	0	0	0
70 - 75	0	0	0	0	0
>75	0	0	0	0	0
Total	**3,118,049**	**4,295,118**	**3,608,556**	**3,746,490**	**14,768,213**

Source: Fehr & Peers