DRAFT ENVIRONMENTAL IMPACT REPORT

CITY OF TULARE

CARTMILL CROSSINGS



JUNE 2019

NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL IMPACT REPORT

PROJECT TITLE: Cartmill Crossings Draft Environmental Impact Report

LEAD AGENCY: City of Tulare

OVERVIEW: Notice is hereby given that City of Tulare is seeking written comments on the Draft Environmental Impact Report (DEIR) (SCH# 2018111038) in accordance with the California Environmental Quality Act (CEQA). This notice has been prepared in accordance with CEQA Guidelines Section 15085 and 15087(c), which requires public notification of availability of a Draft EIR.

PROJECT LOCATION: Cartmill Crossings is a 127-acre land development project proposed to be constructed in an area immediately north and adjacent to the City of Tulare, California. Tulare is in the heart of California's Central Valley, eight miles south of Visalia and 60 miles north of Bakersfield. The Project site is in the northeast corner of the State Route (SR) 99/Cartmill Avenue interchange and bounded by SR 99 to the west and Cartmill Avenue to the south. The Project site is within the United States Geological Survey (USGS), Visalia quadrangle in Section 26, Township 19S, Range 19E, Mount Diablo Base and Meridian (MDBM).

PROJECT DESCRIPTION: The proposed Project is the construction of a multi-use commercial and residential development. Approximately 68.6 acres of commercial businesses on both sides of Akers Street will be developed in accordance with the permitted uses of the C-3 zone district. Examples of permitted uses include restaurants, fast food restaurants, retail stores, hotels, and fuel stations. The northeastern portion of the Project site will consist of approximately 30 acres of low-density, single-family residential homes with lots no smaller than 6,000 square feet. West of the low-density residential development will be approximately 4.4 acres of medium-density residential development, which will likely consist of fourplex residences. Southeast of the medium-density area will be approximately 7.7 acres of high-density, multi-family development, which will likely consist of an apartment complex. Northeast of the multi-family development will be a seven-acre park.

A detailed and complete description of Cartmill Crossings, analyzed in this Draft EIR, is presented in Chapter 2, Project Description. The proposed development has the following characteristics:

- 120-acre site;
- 68.6 acres of commercial development;
- 30 acres of low-density residential development;
- 4.4 acres of medium-density residential development;
- 7.7 acres of high-density residential development;
- Seven acres of parkland; and
- Additions of new sewer and water lines.

SIGNIFICANT ENVIRONMENTAL EFFECTS: CEQA Guidelines Section 15087 (c)(4) requires that the Notice of Availability list the significant environmental effects anticipated as a result of the Project. The Draft EIR identified significant and unavoidable impacts in the following areas: Agricultural and Forestry Resources – involve other changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of

forest land to non-forest use. This is a significant and unavoidable impact. Public Services and Utilities – require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

PUBLIC REVIEW PERIOD: June 17, 2019 through August 1, 2019

ADDRESS WHERE COPY OF DRAFT EIR IS AVAILABLE FOR REVIEW: City of Tulare Community and Economic Development Department, 411 East Kern Ave., Tulare, CA and Tulare Public Library, 475 North M Street, Tulare, CA.

WEBSITE WHERE DRAFT EIR CAN BE FOUND FOR REVIEW:
https://www.tulare.ca.gov/departments/community-development/development-services

Written comments concerning the Draft EIR are due by 5:00 p.m., August 1, 2019 and should be submitted to:
Mario Anaya, Principal Planner
411 East Kern Street
Tulare, CA 93274

PUBLIC REVIEW PROCESS: CEQA Guidelines Section 15087 describes the public review procedures for a Draft EIR. The Draft EIR will be subject to public review and comment for a period of at least 45 days. The City of Tulare requests that reviewers submit comments on the Draft EIR consistent with the provisions of CEQA Guidelines Section 15087.

According to Section 15202 of the CEQA Guidelines, CEQA does not require formal hearings at any stage of the environmental review process; however, it is typical to consider the EIR and its findings during public hearings required for the associated project. For additional information, please contact Mario Anaya at (559) 684-4223 or manaya@ tulare.ca.gov.

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #2018111038

Project Title: Cartmill Crossings

Lead Agency: City of Tulare — Contact Person: Mario Anaya, Principal Planner
Mailing Address: 411 East Kern Street — Phone: (559) 684-4223
City: Tulare — Zip: 93274 — County: Tulare

Project Location: County: Tulare — City/Nearest Community: Tulare
Cross Streets: SR 99/Cartmill Avenue — Zip Code: 93274
Longitude/Latitude (degrees, minutes and seconds): 36 ° 14 ′ 38 ″ N / 119 ° 20 ′ 37 ″ W Total Acres: 120
Assessor's Parcel No.: 149-220-003-000 — Section: 26 — Twp.: 19S — Range: 19E — Base: MDBM
Within 2 Miles: State Hwy #: SR 99 — Waterways: N/A
Airports: N/A — Railways: Union Pacific Railroad — Schools: Los Tules, Liberty, Missic

Document Type:

CEQA: ☐ NOP ☒ Draft EIR — NEPA: ☐ NOI — Other: ☐ Joint Document
☐ Early Cons ☐ Supplement/Subsequent EIR ☐ EA ☐ Final Document
☐ Neg Dec (Prior SCH No.) ☐ Draft EIS ☐ Other:
☐ Mit Neg Dec Other: ☐ FONSI

Local Action Type:

☐ General Plan Update ☐ Specific Plan ☐ Rezone ☒ Annexation
☒ General Plan Amendment ☐ Master Plan ☒ Prezone ☐ Redevelopment
☐ General Plan Element ☐ Planned Unit Development ☐ Use Permit ☐ Coastal Permit
☐ Community Plan ☐ Site Plan ☐ Land Division (Subdivision, etc.) ☐ Other:

Development Type:

☒ Residential: Units ____ Acres 42
☐ Office: Sq.ft. ____ Acres ____ Employees ____ ☐ Transportation: Type ____
☒ Commercial: Sq.ft. ____ Acres 69 Employees ____ ☐ Mining: Mineral ____
☐ Industrial: Sq.ft. ____ Acres ____ Employees ____ ☐ Power: Type ____ MW ____
☐ Educational: ____ ☐ Waste Treatment: Type ____ MGD ____
☒ Recreational: 7-acre park ☐ Hazardous Waste: Type ____
☐ Water Facilities: Type ____ MGD ____ ☐ Other: ____

Project Issues Discussed in Document:

☒ Aesthetic/Visual ☐ Fiscal ☒ Recreation/Parks ☒ Vegetation
☒ Agricultural Land ☐ Flood Plain/Flooding ☒ Schools/Universities ☒ Water Quality
☒ Air Quality ☐ Forest Land/Fire Hazard ☐ Septic Systems ☒ Water Supply/Groundwater
☒ Archeological/Historical ☒ Geologic/Seismic ☒ Sewer Capacity ☐ Wetland/Riparian
☒ Biological Resources ☐ Minerals ☒ Soil Erosion/Compaction/Grading ☒ Growth Inducement
☐ Coastal Zone ☒ Noise ☒ Solid Waste ☒ Land Use
☐ Drainage/Absorption ☒ Population/Housing Balance ☒ Toxic/Hazardous ☒ Cumulative Effects
☐ Economic/Jobs ☒ Public Services/Facilities ☒ Traffic/Circulation ☐ Other:

Present Land Use/Zoning/General Plan Designation:

Agriculture within the Exclusive Agricultural (AE-20) zone district

Project Description: *(please use a separate page if necessary)* The proposed Project is the construction of a multi-use commercial and residential development. Approximately 68.6 acres of commercial businesses on both sides of Akers Street will be developed in accordance with the permitted uses of the C-3 zone district. The northeaster portion of the Project site will consist of approximately 30 acres of low-density, single-family residential homes with lots no smaller than 6,000 sq. ft. West of the low-density residential development will be approximately 4.4 acres of medium-density residential development, which will likely consists of fourplex residences. Southeast of the medium-density area will be approximately 7.7 acres of high-density, multi-family development, which will likely consist of an apartment complex. Northeast of the multi-family development will be a seven-acre park.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

X	Air Resources Board		Office of Historic Preservation
	Boating & Waterways, Department of		Office of Public School Construction
	California Emergency Management Agency		Parks & Recreation, Department of
	California Highway Patrol		Pesticide Regulation, Department of
X	Caltrans District #6		Public Utilities Commission
	Caltrans Division of Aeronautics	X	Regional WQCB #5
	Caltrans Planning		Resources Agency
	Central Valley Flood Protection Board		Resources Recycling and Recovery, Department of
	Coachella Valley Mtns. Conservancy		S.F. Bay Conservation & Development Comm.
	Coastal Commission		San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
	Colorado River Board		San Joaquin River Conservancy
X	Conservation, Department of		Santa Monica Mtns. Conservancy
	Corrections, Department of		State Lands Commission
	Delta Protection Commission		SWRCB: Clean Water Grants
	Education, Department of	X	SWRCB: Water Quality
	Energy Commission		SWRCB: Water Rights
X	Fish & Game Region # 4		Tahoe Regional Planning Agency
	Food & Agriculture, Department of	X	Toxic Substances Control, Department of
	Forestry and Fire Protection, Department of	X	Water Resources, Department of
	General Services, Department of		
	Health Services, Department of		Other: Other:
	Housing & Community Development		
X	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date June 17, 2019 Ending Date August 1, 2019

Lead Agency (Complete if applicable):

Consulting Firm: QK
Address: 901 East Main Street
City/State/Zip: Visalia/CA/93292
Contact: Steve Brandt, AICP
Phone: 559-733-0440

Applicant: West Coast Construction
Address: 4930 W. Kaweah Ct. 103
City/State/Zip: Visalia/CA/93277
Phone:

Signature of Lead Agency Representative: _____ **Date:** 6/11/2019

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

DISTRIBUTION LIST

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1990 E. Gettysburg Avenue
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SCH DISTRIBUTION

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California Department of Water Resources
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Tulare, CA 93274

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CARTMILL CROSSINGS

Prepared for:

City of Tulare
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Tulare, CA 93274
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June 2019

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Project #170151.01

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List of Acronyms and Abbreviations

µm	particles less than 10 micrometers
AAQS	Ambient Air Quality Standards
AC	asphaltic concrete
AIA	Air Impact Assessment
ALUCP	Airport Land Use Compatibility Plan
AQAP	Air Quality Attainment Plans
AQP	Air Quality Plan
AR4	Fourth Assessment Report
ASTM	American Society for Testing and Materials
ATCM	Air Toxics Control Measure
BACMs	Best Available Control Measures
BAU	business as usual
BEES	Building Efficiency Standards
BMPs	Best Management Practices
C-3	Retail Commercial
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CAL FIRE	California Deparmtent of Forestry and Fire Protection
Cal/EPA	California Enviornmental Protection Agency
Cal/OSHA	California Occupational Safety and Health Administration
CalARP	California Accidental Release Prevention Program
CalEEMod	California Emissions Estimator Model
CAPs	Clean Air Plans
CARB	California Air Resources Control Board
CAT	Climate Action Team
CBC	California Building Code
CCR	California Code of Regulations
CDC	Centers for Disease Control
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFCs	Chlorofluorocarbons
CFR	Code of Federal Regulations
CGBSC	California Green Building Standards Code
CGC	California Government Code
CHL	California Historical Landmarks
CHP	California Highway Patrol
CIP	Capital Improvement Program
CNDDB	Calfiornia Natural Diversity Database

CNEL	Community Noise Equivalent Level
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
CNRA	California Natural Resources
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COGs	Council of Governments
CPHI	California Points of Historical Interest
CPRC	Conflict Prevention and Resolution Center
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CSHP	California Scenic Highway Program
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted decibel
DBH	diameter at breast height
DHS	Department of Health Services
DOC	Department of Conservation
DOF	Department of Finance
DOH	Department of Health
DOT	Department of Transportation
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
DU/ac	dwelling units per acre
EES	energy effiency standards
EHRA	Earthquake Hazards Reduction Act
EISA	Energy Independence and Security Act
ELGs	Effluent Limitation Guidelines
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency
EPAct	Energy Policy Act
ERIP	Emission Reduction Incentive Program
ERP	Emergency Response Plan
ESRL	Earthy System Research Laboratory
FAA	Federal Aviation Administration
FAR	floor area ratio
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHSZ	Fire Hazard Severity Zone
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FMCSA	Federal Motor Carrier Safety Administration

FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
FRA	Federal Railroad Administration
FSZ	Farmland Security Zone
FTA	Federal Transit Administration
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
GHG	greenhouse gas
GIS	geographic information system
GPA	General Plan Amendments
Gpd	gallons per day
GWP	Global Warming Potential
HAPs	Hazardous Air Pollutants
HASPs	Health and Safety Plans
HCD	Housing and Community Development
HFCs	Hydrofluorocarbons
HMBP	Hazardous Materials Business Plans
HMMP	Hazardous Materials Management Plans
HRA	Health Risk Assessment
HSC	Health and Safety Code
HUD	United States Department of Housing and Urban Development
HWCL	Hazardous Waste Control Law
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
ISR	Indirect Source Review
KDWCD	Kaweah Delta Water Conservation District
LAFCo	Local Agency Formation Commission
LCA	Land Conservation Act
LCFS	low-carbon fuel standard
Ldn	day-night sound level
LID	Low Impact Development
LOS	level of service
LUE	Land Use Element
MBTA	Migratory Bird Treaty Act
MCLs	maximum contaminant levels
MDB&M	Mount Diablo Base and Meridian
MRMHMP	Mineral Resources and Mineral Hazards Mapping Program
MS4s	municipal separate storm drain system
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEHRP	National Hazards Reduction Program
NEHRPA	National Earthquake Hazards Reduction Program Act
NF_3	Nitrogen trifluoride

NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NHD	National Hydrological Dataset
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOAA	National Oceanographic Administration Agency
NOC	Notice of Completion
NOP	Notice of Preparation
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performace Standards
NSR	New Source Review
NTP	National Toxicology Program
NWI	National Wetlands Inventory
O_3	Ozone
OES	Office of Emergency Services
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
Pb	Lead
PFCs	Perfluorocarbons
P-L	Public Lands
PM	particulate matter
PM_{10}	particulate matter 10 micrometers or less in diameter
$PM_{2.5}$	particulate matter 2.5 micrometers or less in diameter
POTW	publicly owned treatment works
Ppb	parts per billion
PPC	Portland cement concrete
Ppm	parts per million
Ppt	parts per trillion
PPV	peak particle velocity
PRC	Public Resources Code
PSD	Prevention of Significant Deteroriation
PUC	Public Utilities Code
R-1-6	Single-family Residential
RACMs	Reasonably Available Control Measures
RCRA	Resource Conservation and Recovery Act
RECs	recognized environmental conditions
RFS	renewable fuel standard
RHNA	Regional Housing Needs Allocation
R-M-2	Multiple-family Residential 3,000 square feet per unit

R-M-4	Multiple-family Residential 1,500 square feet per unit
RMP	Risk Management Plan
ROGs	reactive organic gases
RPS	renewable portfolio standard
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SDWA	Safe Drinking Water Act
SEMS	Standardized Emergency Management System
SF_6	sulfur hexafluoride
SHRC	State Historical Resources Commission
SIPs	State Implementation Plans
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SJVGB	San Joaquin Valley Ground Basin
SLF	Sacred Lands File
SMARA	Surface Mining and Reclamation Act
SO_2	sulfur dioxide
SOI	Sphere of Influence
Sox	sulfur oxide
SR	State Route
STC	Sound Transmission Class
SWMP	Storm Water Management Program
SWPPP	Storm Water Pollution Prevention Program
SWQMP	Storm Water Quality Management Program
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TCAG	Tulare County Association of Governments
TCMs	Transporation Control Measures
tCO_2e	tons of carbon dioxide equivalent
TCP	1,2,3-Trichloropropane
TDS	total dissolved solids
TID	Tulare Irrigation District
TMDL	total maximum daily load
TPZ	Timberland Production Zone
TWPCF	Tulare Water Pollution Control Facility
UBC	Uniform Building Code
UDB	Urban Development Boundary
UFC	Uniform Fire Code
UNFCCC	United Nations Framework Convention on Climate Change
UP	Unified Program
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

UST	underground storage tank
UWMP	Urban Water Management Plan
VEM	Vegetation Management Program
VERA	Voluntary Emissions Reduction Agreement
VMT	vehicle miles traveled
VOCs	volatile organic compounds
WDP	Waste Discharge Permit
WOTUS	Waters of the United States
WQC	Water Quality Certification
WRCC	Western Regional Climate Change
WRI	World Resources Institute

CHAPTER 1 - INTRODUCTION AND EXECUTIVE SUMMARY

This chapter of the Draft Environmental Impact Report (EIR) briefly describes the proposed actions, delineates the procedure and methodology for environmental evaluation of the actions, and outlines the contents of this Project EIR.

1.1 - Summary of Proposed Project

The proposed Project is the construction of a multi-use commercial and residential development. Figure 2-4 illustrates the various proposed land uses of the Project. Approximately 68.6 acres of commercial businesses on both sides of Akers Street will be developed in accordance with the permitted uses of the C-3 zone district. Examples of permitted uses include restaurants, fast food restaurants, retail stores, hotels, and fuel stations. The northeastern portion of the Project site will consist of approximately 30 acres of low-density, single-family residential homes with lots no smaller than 6,000 square feet. West of the low-density residential development will be approximately 4.4 acres of medium-density residential development, which will likely consist of fourplex residences. Southeast of the medium-density area will be approximately 7.7 acres of high-density, multi-family development, which will likely consist of an apartment complex. Northeast of the multi-family development will be a seven-acre park.

A detailed and complete description of Cartmill Crossings, hereafter referred to as the proposed Project, analyzed in this Draft EIR is presented in **Chapter 2, Project Description**. The proposed development has the following characteristics:

- 120-acre site;
- 68.6 acres of commercial development;
- 30 acres of low-density residential development;
- 4.4 acres of medium-density residential development;
- 7.7 acres of high-density residential development;
- Seven acres of parkland; and
- Additions of new sewer and water lines.

As discussed more fully in **Chapter 2, Project Description**, the approvals required of the City of Tulare (City) to authorize these land uses include a Tentative Subdivision/Parcel Map, Statement of Overriding Considerations, Mitigation Measures Monitoring Program, a General Plan Amendment, pre-zoning of the site to maintain consistency with the General Plan, and annexation of the Project site into the City.

1.2 - Project Objective

The objective of the Project is to build and operate an economically viable and competitive development with a mix of commercial and residential uses in compliance with applicable laws and regulations, optimally utilizing the available land resource, and while minimizing any environmental impacts to the extent feasible.

1.3 - Purpose and Use of the Draft EIR

This Draft EIR has been prepared under the direction of the City in accordance with the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code (PRC), Sections 21000-21177) and the *CEQA Guidelines* (*California Code of Regulations (CCR), Title 14, Division 6, Chapter 3, Sections 15000-15387*). The City of Tulare is the Lead Agency for consideration of this EIR and potential Project approval.

CEQA requires that public agencies consider the potentially significant adverse environmental effects of projects over which they have discretionary approval authority before taking action on those projects (PRC, Section 21000 et seq.). As defined by *Section 15378* of the *CEQA Guidelines*, a project is any action that "…has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment…"

CEQA also requires that each public agency avoid or mitigate to less-than-significant levels, wherever feasible, the significant adverse environmental effects of projects it approves or implements. If a project would result in significant and unavoidable environmental impacts (i.e., significant effects that cannot be feasibly mitigated to less-than-significant levels), the project can still be approved, but the Lead Agency's decision-maker must prepare findings and issue a "statement of overriding considerations" explaining in writing the specific economic, social, or other considerations that they believe, based on substantial evidence, make those significant effects acceptable (PRC, Section 21002 and *CEQA Guidelines*, *Section 15093*).

According to *CEQA Guidelines*, *Section 15064*, *subdivision (f)(1)*, preparation of an EIR is required whenever a project may result in a significant adverse environmental impact. An EIR is an informational document used to inform public agency decision-makers and the general public of the significant environmental effects of a project, identify possible ways to mitigate or avoid the significant effects, and describe a range of reasonable alternatives to the project that could feasibly attain most of the basic objectives of the project while substantially lessening or avoiding any of the significant environmental impacts. Public agencies are required to consider the information presented in the EIR when determining whether to approve a project.

As Lead Agency, the City has determined that a project EIR should be prepared for the proposed Project, and related actions outlined in **Chapter 2, Project Description,** in accordance with the requirements of CEQA. *Section 15121(a)* of the *CEQA Guidelines* defines an EIR as an informational document that "…will inform public agency decision-makers and the public generally of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project."

This Draft EIR is a "project EIR," as opposed to a "program EIR." As described in *CEQA Guidelines*, *Section 15161*, a "project EIR" is "[t]he most common type of EIR," which "examines the environmental impacts of a specific development project. This type of EIR should focus primarily on the changes in the environment that would result from the

development project. The EIR shall examine all phases of the project including planning, construction, and operation." Generally, when a project-level analysis is prepared under CEQA, no subsequent environmental review is required to carry out the proposed development (PRC, Section 21166 and *CEQA Guidelines*, *Sections 15162 and 15163*). Thus, this EIR is intended to provide project-specific analysis such that a subsequent or supplemental EIR would not be required unless certain circumstances arise as outlined in the PRC, Section 21166 and *CEQA Guidelines*, *Sections 15162* and *15163*.

Under CEQA, the Lead Agency is the public agency with principal responsibility for carrying out or approving a project. In this case, as noted earlier, the City of Tulare will act as Lead Agency. Under *Section 15381* of the *CEQA Guidelines*, a Responsible Agency is a public agency other than the Lead Agency that has discretionary approval authority over the project or a portion of the project and will rely on the EIR prepared for the Lead Agency . The responsible agencies for this Project are listed in **Chapter 2, Project Description,** of this EIR.

CEQA process requires that the Lead Agency consider input from other interested agencies, citizen groups, and individuals. CEQA provides for a public process requiring full public disclosure of the expected environmental consequences of the proposed action. The public must be given a meaningful opportunity to comment. After a project is approved, CEQA also requires monitoring to ensure that mitigation measures are implemented.

CEQA requires a minimum 45-day public review period for commenting on the Draft EIR. During the review period, any agency, group or individual may comment in writing on the Draft EIR, and the Lead Agency must respond in writing to each comment on environmental issues in the Final EIR. According to *Section 15202* of the *CEQA Guidelines*, CEQA does not require formal hearings at any stage of the environmental review process; however, it is typical to consider the EIR and its findings during public hearings required for the associated project.

1.4 - Scope of the Draft EIR

The proposed Project is evaluated at a project level of detail in this EIR. The following describes each of the environmental topics that are analyzed in the Draft EIR.

Aesthetics. This section addresses visual and aesthetic impacts including impacts on scenic vistas, scenic highways, and light and glare, along with community design issues. Potential impacts are identified, and appropriate mitigation measures are proposed.

Agricultural and Forestry Resources. This section describes the existing agricultural resources and potential environmental effects from Project implementation on the Project site and its surrounding area and includes measures intended to reduce or avoid potential impacts to the resource. There are no forestry resources on or near the Project site.

Air Quality. This section addresses potential short- and long-term air quality impacts and the overall magnitude of emissions resulting from implementation of the Project, as well as

measures that could be implemented to reduce Project emissions. An assessment of potential toxic air contaminants has also been conducted through a Health Risk Assessment (HRA).

Biological Resources. This section evaluates the available data and Project-specific biological field survey(s) of the area to determine whether the Project has any potential to disturb special-status species, adversely affect habitat or wetlands, or conflict with plans and policies protecting biological resources, and recommends measures that are necessary to mitigate potential impacts.

Cultural Resources. Existing and potential cultural resources (archaeological, paleontological, and historical) are described in this section, and impacts and mitigation measures are identified.

Geology, Soils, and Seismicity. This section addresses the potential impacts the Project may have on soils and assesses the effects of Project development in relation to geologic and seismic conditions.

Greenhouse Gases. This section analyzes the Project's potential contribution to greenhouse gas emissions.

Hazards and Hazardous Materials. Hazardous materials, fire hazards, airport safety issues, and emergency response issues are addressed in this section.

Hydrology and Water Quality. This section addresses issues associated with hydrology and water quality, for both surface and groundwater, stormwater runoff, and flooding.

Land Use and Planning. This section addresses potential impacts related to land use conflicts and Project compliance with City of Tulare land use planning documents, regulations and zoning.

Noise. The noise section evaluates impacts on sensitive receptors from noise-generating activities during both construction and long-term operations, including new stationary noise sources and traffic noise associated with roadways.

Population and Housing. This section provides an analysis of potential impacts to housing supply and identifies the proposed Project's consistency with applicable plans and policies that regulate population and housing.

Public Services and Utilities. This section provides an analysis of potential Project impacts on police and fire protection, and schools, water supply, sewage disposal, stormwater drainage, and solid waste management.

Recreation. This section describes potential impacts to parks and recreation as a result of the proposed Project.

Transportation and Traffic. This section evaluates and summarizes existing and cumulative conditions in the relevant study area, including an analysis of roadway capacities and future

cumulative traffic conditions. Circulation improvements are identified to reduce potential impacts, and public transit needs are discussed.

Tribal Cultural Resources. This section discusses impacts to cultural resources directly related to Native American tribal cultures that populated the area where the proposed Project is located.

1.5 - Organization of the EIR

Sections 15122 through *15132* of the *CEQA Guidelines* identify the content requirements for Draft and Final EIRs. A Draft EIR must include a description of the environmental setting, environmental impact analysis, mitigation measures, alternatives, significant irreversible environmental changes, growth-inducing impacts, and cumulative impacts.

This Draft EIR is organized in the following manner:

CHAPTER 1 – INTRODUCTION AND EXECUTIVE SUMMARY

Chapter 1 briefly summarizes the proposed actions under review, delineates the procedures and methodology for environmental evaluation of the Project, and outlines the contents of the EIR. The Executive Summary defines the general characteristics of the proposed Project and provides an overview of the Draft EIR. The Executive Summary also summarizes the alternatives to the Project and areas of known controversy.

CHAPTER 2 – PROJECT DESCRIPTION

Chapter 2 describes the proposed Project in detail and summarizes the general characteristics of the Project location. The Project objectives are also presented (these are addressed again in **Chapter 4, Evaluation of Alternatives**). The Project's environmental setting is briefly described, and the regulatory context within which the Project is evaluated or must be approved is outlined.

CHAPTER 3 – ENVIRONMENTAL IMPACT ANALYSIS

Chapter 3 is comprised of a series of sections, one for each of the environmental topics listed above. Each section includes a description of the environmental and regulatory settings, thresholds of significance and methodology, and potential impacts and mitigation measures.

Introduction

Each environmental topic is introduced by either a brief description of the topic or a brief statement of the rationale for addressing the topic.

Regulatory and Physical Setting

The existing regulatory and physical setting and conditions with respect to the environmental topic being discussed are briefly described.

Impact Evaluation Criteria

The standards or thresholds by which impacts are measured are identified, with the objective of determining if an impact is significant. Where no locally adopted or other specific standards exist, the thresholds set forth in *Appendix G* (*Environmental Checklist*) of the *CEQA Guidelines* are used, unless additional relevant impact considerations beyond the *Appendix G* items are deemed appropriate. Where the unique aspects of the Project or the existing physical conditions create the potential for impacts not listed in *Appendix G*, additional thresholds (beyond those set forth in *Appendix G*) are created and applied therein.

Impact Analysis

Impact #: Each identified environmental impact is numbered for reference in accordance with the chapter section (e.g., #3.1-a). Information leading to the significance determination is discussed.

Conclusion: This is a statement identifying whether the impact is potentially significant or less than significant. If found to be potentially significant, the conclusion states whether the impact can be avoided or reduced to a less-than-significant level through implementation of mitigation measures, or whether the impact is significant and/or unavoidable, based on the impact evaluation criteria.

Mitigation Measure #: Each proposed or recommended mitigation measure is described and listed by abbreviated section name and number (e.g., MM AES-1).

Effectiveness of Mitigation: For potentially significant impacts, a statement is made regarding whether the impact can be mitigated to a less-than-significant level or, alternatively, whether the impact is only partially mitigated, unavoidable, and/or irreversible, based on the significance thresholds.

CHAPTER 4 – EVALUATION OF ALTERNATIVES

Chapter 4 describes and evaluates alternatives to the proposed Project. *Section 15126.6* of the *CEQA Guidelines* requires that an EIR describe a range of reasonable alternatives to the project, which could feasibly attain most of the basic objectives of the project and avoid and/or substantially lessen the environmental effects of the project. The "No Project" Alternative must be considered to compare the environmental consequences of the proposed Project to the consequences of taking no action. The potential environmental impacts of these alternatives are compared to the environmental impacts of the Project as proposed. The analysis of alternatives includes an assessment of the degree to which each of the alternatives attains the identified Project objectives.

CHAPTER 5 – CUMULATIVE IMPACTS

Chapter 5 includes an analysis of cumulative impacts, based on potential impacts of the proposed Project when combined with the related impacts associated with past, present and reasonably foreseeable projects.

CHAPTER 6 – MANDATORY CEQA SECTIONS

Chapter 6 contains required discussions and analyses of various issues mandated by CEQA. The following topics are addressed in this chapter:

- Significant Unavoidable Environmental Effects;
- Significant Irreversible Environmental Changes;
- Irreversible Changes to the Environment;
- Growth Inducing Impacts;
- Effects Found Not to be Significant; and
- Energy Conservation.

CHAPTER 7 –REFERENCES/BIBLIOGRAPHY

Chapter 7 includes a list of references used during preparation of the Draft EIR.

CHAPTER 8 – LIST OF PREPARERS

Chapter 8 presents a list of all authors and other persons who contributed to preparation of the Draft EIR.

APPENDICES

Following the text of the Draft EIR, several documents and technical studies have been included to facilitate full environmental review of the proposed Project.

1.6 - Distinction between Review of Environmental Issues and Project Merits

Often during review of an EIR, the public raises issues that relate to the proposed project itself or the project's community benefits or consequences (referred to herein as "project merits"), rather than the environmental analyses or impacts raised in the EIR. Lead Agency review of environmental issues and project merits are both important in the decision of what action to take on a project, and both are considered in the approval process for a project. However, a Lead Agency is required only to respond in its CEQA review to substantive environmental issues that are raised. Certifying an EIR (i.e., finding that it was completed in compliance with CEQA) and taking action on the proposed project rely on procedurally distinct processes and may result in separate decisions made by the Lead Agency.

An example of a project-merits issue that is important, but is not a substantive environmental issue, is economic effects that do not result in any physical change to the environment. At any time that the project comes before the planning commission or the city council, the merits of the project will be discussed. The planning commission and the city council may hold public meetings or hearings to review project merits that are separate from those intended for reviewing the EIR and environmental issues.

In contrast, an EIR is "…a detailed statement prepared under CEQA describing and analyzing the significant environmental effects of a project and discussing ways to mitigate or avoid the effects" (*CEQA Guidelines*, *Section 15362*). An EIR is intended to identify significant effects on the environment defined in *Section 15382* of the *CEQA Guidelines* as "…substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project…" An EIR is intended to be used by the public, decision-makers, interested individuals, and other agencies and organizations that may have responsibility for a project or project components. *Section 15091* of the *CEQA Guidelines* points out that "no public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding." Further, when significant environmental effects cannot be reduced to a less-than-significant level, the Lead Agency must prepare a statement of overriding considerations, in addition to findings, that documents how project benefits outweigh the unavoidable impacts. Finally, *Section 15092* of the *CEQA Guidelines* states that "after considering the Final EIR and in conjunction with making findings…the Lead Agency may decide whether or how to approve or carry out the project," which is a separate action from EIR certification.

1.7 - Environmental Scoping

This Draft EIR addresses the potential environmental impacts of the proposed Project. The City of Tulare issued a Notice of Preparation (NOP) for the proposed Project on November 19, 2018, which circulated for the statutory 30-day public review period until December 19, 2018. A Public Scoping Meeting was advertised and was conducted by the City of Tulare on December 6, 2018.

The scope of this Draft EIR includes the potential environmental impacts identified in the NOP and issues raised in comment letters provided in response to the NOP. Four comment letters were received. Copies of the written comments received during the public review period are contained in Appendix A, and Table 1-1 summarizes the issues identified by the commenting agencies, along with a reference to the section of this Draft EIR where the issues are addressed.

Table 1-1
NOP Comment Letters

Commenting Agency/Person	Comment Type/Summary	Issue Addressed in
San Joaquin Valley Air Pollution Control District	Reminder of attainment status and significance thresholds of basin	Air Quality and Greenhouse Gases
Caltrans District 6	Recommendation of traffic impact analysis methodology	Transportation and Traffic
Tachi-Yokut Tribe	Recommends a Native American monitor be present during all groundbreaking activities	Cultural Resources
California Division of Oil, Gas, and Geothermal Resources – Inland District	Notifying that no known oil, gas, or geothermal wells within Project limits and reminder of protocol should any unrecorded well be encountered	Hazards and Hazardous Materials

This Draft EIR has taken into consideration the comments received from the various agencies in response to the NOP.

EXECUTIVE SUMMARY

1.8 - Environmental Issues Determined Not to be Significant

Based on the environmental scoping process, including responses to the NOP, the City determined that the proposed Project would not result in potential impacts to the following environmental topics. As such, these were scoped out, or dismissed, from analysis in the EIR for the reasons cited below:

- Mineral Resources - There are no significant deposits of mineral resources located on the Project site, as delineated by the Mineral Resources and Mineral Hazards Mapping Program (MRMHMP).

1.9 - Environmental Issues Determined to be Significant and Unavoidable

The Draft EIR addresses all potentially significant impacts that the City identified during preparation of the NOP/Initial Study (IS) and scoping process. After further study and environmental review, as presented in the Draft EIR, the project and cumulative impacts listed in Table 1-2 were determined to be significant and unavoidable impacts.

Table 1-2
Summary of Significant Impacts of the Proposed Project

Resources	Project Impacts	Cumulative Impacts
Agricultural and Forestry Resources	The conversion of 120 acres of farmland to non-farmland use is considered ***significant and unavoidable***.	The continued regional trend of converting farmland to residential and/or commercial uses is considered a ***significant and unavoidable impact***.
Public Services and Utilities	The impacts to public services, utilities, and service systems would be considered ***less than significant.***	The Tulare Lake Basin is currently designated as "critically overdrafted" so any regional increases in water demand will result in a ***significant and unavoidable impact.***

1.10 - Growth Inducement

The proposed Project includes the development of approximately 300 residential units. While new development alone is not considered growth-inducing, the proposed Project would result in substantial land use, environmental, economic, and infrastructure changes. This conversion of agricultural land into urban infrastructure will serve the 34 percent increase in population projected by the Tulare County Association of Governments (TCAG) Regional Housing Needs Allocation (RHNA). The proposed Project would involve improvements to the local transportation, sewer, and water infrastructure that have been accounted for in the City of Tulare General Plan.

1.11 - Review of the Draft EIR

Upon completion of the Draft EIR, the City of Tulare will file a Notice of Completion (NOC) with the Governor's Office of Planning and Research (OPR) to begin the public review period (PRC, Section 21161). Concurrent with the NOC, this Draft EIR will be distributed to Responsible and Trustee Agencies, other affected agencies, and interested parties, as well as all parties requesting a copy of the Draft EIR in accordance with PRC, Section 21092.2(a). A Notice of Availability (NOA) will be provided to public agencies and interested parties pursuant to *CEQA Guidelines*, *Sections 15085 and 15087(c)*.

During the public review period, the Draft EIR, including the technical appendices, is available for review at the City of Tulare Community and Economic Development Department and the Tulare Public Library.

City of Tulare Community and Economic Development Department
411 East Kern Avenue
Tulare, CA 93274

Tulare Public Library
475 North M Street
Tulare, CA 93274

The document will also be available on the City of Tulare website at the following address:

www.cityoftulare.org

This Draft EIR will be circulated for public review for a period of 45 days. Interested agencies and members of the public are invited to provide written comments on the Draft EIR to the City of Tulare Planning Division. Submittal of electronic comments in Microsoft Word or Adobe PDF format is encouraged.

Written comments on this Draft EIR should be addressed to:

City of Tulare Planning Division
411 East Kern Avenue
Tulare, CA 93274
Phone: 559.684.4223
E-mail: manaya@tulare.ca.gov

1.12 - Final EIR Certification

Upon completion of the 45-day review period, the City of Tulare will review all written comments received and prepare written responses for each comment. A Final EIR will then be prepared incorporating all of the comments received, responses to significant environmental issues raised in the comments, and any changes to the Draft EIR that result from the comments received. The Final EIR will be made available to commenting agencies at least 10 days prior to the public hearing at which the Planning Commission will consider certification of the Final EIR. Comments received and the responses to comments will be included as part of the record for consideration by the Planning Commission. After the Planning Commission takes its action with respect to the proposed Project (either approving or denying it), any party unhappy with the outcome (including the applicant) may file an administrative appeal to the City Council. Upon the filing of any such appeal, the Tulare City Council would then have to consider for itself whether to certify the Final EIR and whether to approve the proposed Project. All persons who commented on the Draft EIR will be notified of the availability of the Final EIR and the date of the public hearing before the City.

1.13 - Previous Environmental Documentation

Review of CEQA and State Clearinghouse databases identified no previous environmental documentation related to or near the Project site.

1.14 - Responsible and Trustee Agencies

Projects or actions undertaken by the Lead Agency, in this case, the City of Tulare Planning Division and Community and Economic Development Department, may require subsequent oversight, approvals, or permits from other public agencies to be implemented. Other such agencies are referred to as Responsible Agencies and Trustee Agencies. Pursuant to *Sections 15381* and *15386* of the *CEQA Guidelines*, as amended, Responsible and Trustee Agencies are defined as follows:

A Responsible Agency is a public agency that proposes to carry out or approve a project for which a Lead Agency is preparing or has prepared an EIR or Negative Declaration (ND). For the purposes of CEQA, Responsible Agencies include all public agencies other than the Lead Agency that have discretionary approval power over the project (*Section 15381*).

A Trustee Agency is a State agency that has jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California (*Section 15386*).

The various public agencies and jurisdictions with a particular interest in the proposed Project are outlined below.

FEDERAL AGENCIES

- U.S. Fish and Wildlife Service
- U.S. Department of Agriculture
- U.S. Environmental Protection Agency

STATE AGENCIES

- California Department of Fish and Wildlife
- California Department of Conservation
- Governor's Office of Planning and Research
- California Air Resources Board
- California Native American Heritage Commission
- California Department of Transportation, District 6
- State Water Resources Control Board, Central District
- Regional Water Quality Control Board, Central Valley Region

REGIONAL AGENCIES

- Tulare Water Storage District – Tulare Lake Basin Water Storage District
- Mid-Kaweah Groundwater Sustainability Agency
- San Joaquin Valley Air Pollution Control District

TULARE COUNTY

- Tulare County Association of Governments
- Tulare County Local Agency Formation Commissions
- Tulare County Resource Management Agency
- Tulare County Agricultural Commissioner
- Tulare County Environmental Health Division
- Tulare County Fire Department
- Tulare County Sheriff's Office
- Tulare County Solid Waste Department
- Tulare County Parks and Recreation Department

1.15 - Incorporation by Reference

In accordance with *Section 15150* of the *CEQA Guidelines*, to reduce the size of the report, the following documents are hereby incorporated by reference into this Draft EIR and available for public review at the City of Tulare Community and Economic Development Department. A brief synopsis of the scope and content of these documents is provided below.

CITY OF TULARE GENERAL PLAN 2035

The City of Tulare General Plan is a policy document with land use maps and related information. It is designed to give long-range guidance to City officials who make decisions that affect growth and resources in Tulare. This document, adopted on October 7, 2014, helps to ensure that day-to-day decisions conform to the long-range program, which was designed to protect and further the public interest as it relates to the City of Tulare's growth and development, and mitigate environmental impacts. The General Plan also serves as a guide to the private sector regarding the economy so that development initiatives conform to the City's public plans, objectives, and policies.

CITY OF TULARE GENERAL PLAN 2035 DRAFT ENVIRONMENTAL IMPACT REPORT

This document provides an assessment of the potential environmental consequences of adoption and implementation of the City of Tulare General Plan. This document informs decision-makers, the City of Tulare, other agencies, and the general public of the nature of the General Plan Update. This document also contains mitigation measures where appropriate that would reduce or avoid potentially significant impacts.

CITY OF TULARE MUNICIPAL CODE

This document contains the body of laws adopted by the Tulare City Council and/or voters of the City of Tulare.

CITY OF TULARE WATER SYSTEM MASTER PLAN 2009

This Water System Master Plan, prepared by Carollo Engineers, evaluates the water distribution system, recommends facility improvements to address existing deficiencies and to serve future growth, and a Capital Improvement Program (CIP). This plan also includes the cost of implementing the CIP through the planning year 2030.

CITY OF TULARE DRAFT 2015 URBAN WATER MANAGEMENT PLAN

The purpose of Urban Water Management Plans (UWMP) is to maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for beneficial use, and provide a mechanism for response during water drought conditions.

1.16 - Summary of Environmental Impacts and Mitigation Measures

The following is a summary of the environmental impacts of the proposed Project, mitigation measures, and level of significance analyzed in **Chapter 3, Environmental Impact Analysis,** of this EIR. Refer to the appropriate EIR section for additional information.

Table 1-3
Summary of Impacts, Mitigation Measures, and Levels of Impacts after Mitigation

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
AESTHETICS		
Impact #3.1-a: Would the Project have a substantial adverse effect on a scenic vista?	No mitigation measures are required.	Less than Significant
Impact #3.1-b: Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	No mitigation measures are required.	Less than Significant
Impact #3.1-c: Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?	No mitigation measures are required.	Less than Significant
Impact #3.1-d: Would the Project create a new source of substantial light or glare which would adversely affect	**MM AES-1:** A lighting plan shall be prepared and submitted to the City of Tulare Community Development Department for approval prior to the issuance of building permits. The lighting plan shall adhere to the City of Tulare Design and Development Guidelines and design review requirements, as applicable, regarding the appropriate use of building	Less than Significant

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
day or nighttime views in the area?	materials, lighting, and signage to prevent light and glare from adversely affecting motorists and adjacent land uses. **MM AES-2:** Decorative up-lighting used to illuminate trees, walls, waterfalls, fountains, and other objects shall be ground-mounted and directed upwards, away from the viewer to prevent glare. **MM AES-3:** Night lighting shall be limited to that necessary for security, safety, and identification and shall also be screened from adjacent residential areas and not be directed beyond the boundaries of the parcel on which the buildings are located. Outdoor security lighting at businesses shall be controlled by timers. **MM AES-4:** All lighting in the proposed Project area shall be shielded, directed downward and away from adjoining properties and rights-of-way. Light shields shall be installed and maintained consistent with manufacturer's specifications and shall reduce the spillage of light onto adjacent properties to less than a one-foot standard, as measured at the adjacent property line. **MM AES-5:** Lighting fixtures shall be designed to produce the minimum amount of light necessary for safety purposes. All parking lot pole lights and street lights shall be fully hooded and shielded to prevent light spillage and glare.	
AGRICULTURAL AND FORESTRY RESOURCES		
Impact #3.2-a: Would the Project convert Prime Farmland, Unique Farmland, or Farmland of	**MM AFR-1:** Prior to issuance of a grading or building permit, whichever occurs first, the Project proponent shall provide written evidence of completion of one or more of the following measures, consistent with Tulare General Plan Policy COS-P3.12 to mitigate the loss of agricultural	**Significant and Unavoidable**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	land at a ratio of 1:1 for net acreage before conversion. (The net acreage calculation shall exclude existing roads and areas already developed with structures, and a site plan shall be submitted to substantiate the net acreage calculation, along with written evidence of compliance.) • Funding and/or purchasing agricultural conservation easements (to be managed and maintained by an appropriate entity). • Purchasing credits from an established agricultural farmland mitigation bank. • Contributing agricultural land or equivalent funding to an organization that provides for the preservation of farmland in California. • Participating in any agricultural land mitigation program adopted by Tulare County that provides equal or more effective mitigation than the measures listed above. Mitigation land shall meet the definition of Prime Farmland and be of similar agricultural quality or higher, as established by the DOC. Completion of the selected measure or, with the City of Tulare Community Development Department Director's approval, a combination of selected mitigation measures can occur on qualifying land within the southern San Joaquin Valley (Kings, Tulare, or Kern County) that is located outside of a city's UDB.	
Impact #3.2-b: Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?	No mitigation measures are required.	Less than Significant

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
Impact #3.2-e: Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use?	Implementation of Mitigation Measure MM AFR-1.	**Significant and Unavoidable**
AIR QUALITY		
Impact #3.3-a: Would the Project conflict with or obstruct implementation of the applicable air quality plan?	**MM AQ-1:** To reduce operational emissions of O_3 precursors and PM_{10}, the following Project design will be implemented: • Onsite shops and services for employees (restaurants, bank/ATM, dry cleaners, convenience market, etc.) will be encouraged to establish direct access between employment and retail areas, reducing vehicle trips to and from the Project site throughout the day. • All required landscaping along major and arterial roadways will be designed with native drought-resistant species (plants, trees, and bushes) to reduce demand for gas-powered landscape maintenance equipment. **MM AQ-2:** During construction related activities, the applicant will implement the following dust control practices: • All disturbed areas, including storage piles that are not being actively utilized for construction purposes, will be effectively	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover; • All onsite unpaved roads and offsite unpaved access roads will be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant; • All land clearing, grubbing, scraping, excavation, leveling, grading, cut and-fill, and demolition activities will be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking; • When materials are transported offsite, all material will be covered, effectively wetted to limit visible dust emissions, or maintained with six inches of freeboard space from the top of the container; • All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.); • Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles will be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant; • Traffic speeds on unpaved roads will be limited to 15 mph; • Sandbags or other erosion control measures will be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent; • All soil stockpiles will be covered with tarps except when actively in use;	

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	• Equipment will be shut down when not in use for extended periods of time; and • Construction equipment will operate no longer than eight cumulative hours per day. **MM AQ-3:** During construction related activities, the owners, developers, and/or successors-in-interest will comply with SJVAPCD Regulation VIII (Fugitive Dust Rules).	
Impact #3.3-b: Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?	No mitigation measures are required.	**Less than Significant**
Impact #3.3-c: Would the Project result in cumulatively considerable net increase of any criteria pollutant for which the Project region is in non-attainment under an applicable federal or State Ambient Air Quality Standard?	No mitigation measures are required.	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
Impact #3.3-d: Would the Project expose sensitive receptors to substantial pollutant concentrations?	No mitigation measures are required.	**Less than Significant**
Impact #3.3-e: Would the Project create objectionable odors affecting a substantial number of people?	No mitigation measures are required.	**Less than Significant**
BIOLOGICAL RESOURCES		
Impact #3.4-a: Would the Project 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	**MM BIO-1:** Nesting surveys for the Swainson's hawks shall be conducted in accordance with the protocol outlined in the "Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley" (Swainson's Hawk Technical Advisory Committee, 2000). If potential Swainson's hawk nests or nesting substrates are located within 0.5 miles of the Project site, then those nests or substrates must be monitored for activity on a routine and repeating basis throughout the breeding season, or until Swainson's hawks or other raptor species are verified to be using them. The protocol recommends that 10 visits be made to each nest or nesting site: one during January 1-March 20 to identify potential nest sites, three during March 20-April 5, three during April 5-April 20, and three during June 10-July 30. To meet the minimum level of protection for the species, surveys shall be completed for at least the two survey periods immediately prior to Project-related ground disturbance activities. If Swainson's hawks are not found to nest within the survey area, then no further action is warranted.	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	If Swainson's hawks are found to nest within the survey area, during the nesting period, active Swainson's hawk nests shall be avoided by 0.5 miles unless this avoidance buffer is reduced through consultation with the CDFW and/or USFWS. If a construction area falls within this nesting site, construction must be delayed until the young have fledged (left the nest). The 2,500-foot radius no construction zone may be reduced in size. A qualified biologist must conduct construction monitoring on a daily basis, inspect the nest on a daily basis, and ensure that construction activities do not disrupt breeding behaviors. In no case shall the no construction zone be reduced to less than 500 feet. **MM BIO-2:** A pre-construction survey shall be performed on the Project site, and within 500 feet of its perimeter, in areas where there is a potential for nesting raptors and other migratory birds to occur if construction occurs during the breeding season (February 1 to August 31). These areas include power poles or trees that are suitable for the establishment of nests. Areas also include non-native annual grassland habitat and agriculturally developed land, which provide potential breeding habitat for ground-nesting birds such as the western meadowlark and northern harrier. The pre-construction survey shall be performed within 14 days of construction to identify active nests and mark those nests for avoidance. If nesting raptors are identified during the surveys, during the nesting period, active raptor nests shall be avoided with a buffer of 500 feet and all other migratory bird nests shall be avoided with a buffer of 250 feet. Avoidance buffers may be reduced through consultation with the CDFW and/or USFWS.	

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	No construction or earth-moving activity shall occur within a non-disturbance buffer until it is determined by a qualified biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid Project construction zones. This typically occurs by early July, but September 1 is considered the end of the nesting period unless otherwise determined by a qualified biologist. Once raptors have completed nesting and young have fledged, disturbance buffers will no longer be needed and can be removed, and monitoring can be terminated. **MM BIO-3:** The following measures shall be implemented to reduce potential impacts to San Joaquin kit fox and American badger: Because there is the potential for the San Joaquin kit fox to occur on the Project site, the USFWS "Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance" (USFWS, 2011) shall be followed. The measures that are listed below have been excerpted from those guidelines and would protect San Joaquin kit foxes and American badgers from direct mortality and from destruction of active dens and natal or pupping dens. The Lead Agency or designee shall determine the applicability of the following measures depending on specific construction activities and shall implement such measures when required. • Pre-construction surveys shall be conducted no fewer than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities, or any project activity likely to impact the San Joaquin kit fox or American badger. • Exclusion zones shall be placed in accordance with USFWS Recommendations using the following:	

Potential Den	50-foot radius
Known Den	100-foot radius
Natal/Pupping Den (Occupied and Unoccupied)	Contact U.S. Fish and Wildlife Service for guidance
Atypical Den	50-foot radius

If any den is found within the construction area and must be removed, it must be appropriately monitored and excavated by a trained wildlife biologist. Destruction of natal dens and other "known" kit fox dens must not occur until authorized by USFWS. Replacement dens will be required if such dens are removed. Potential dens that are removed do not need to be replaced if they are determined to be inactive after monitoring.

- Project-related vehicles shall observe a daytime speed limit of 20 mph throughout the site in all project areas, except on county roads and State and federal highways; this is particularly important at night when kit foxes and American badgers are most active. Night-time construction shall be minimized to the extent possible. However, if it does occur, then the speed limit shall be reduced to 10 mph. Off-road traffic outside of designated project areas shall be prohibited.
- To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than two-feet deep shall be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted at the addresses provided below.

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	• Kit foxes and American badgers are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped. • All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from a construction or project site. • Use of firearms on the site shall adhere to USFWS protocols. • No pets, such as dogs or cats, shall be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens. • Use of rodenticides and herbicides in project areas shall be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds shall observe label and other restrictions mandated by the EPA, California Department of Food and Agriculture, and other State and federal legislation, as well as additional project-related restrictions deemed necessary by the USFWS. If rodent control must be conducted, zinc phosphide shall be used because of a proven lower risk to kit fox.	

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	• A representative shall be appointed by the project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the USFWS. • An employee education program shall be conducted. The program shall consist of a brief presentation by persons knowledgeable in San Joaquin kit fox biology and legislative protection to explain endangered species concerns to contractors, their employees, and military and/or agency personnel involved in the project. The program shall include the following: A description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information shall be prepared for distribution to the previously referenced people and anyone else who may enter the project site. • Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. shall be re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas shall be	

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	determined on a site-specific basis in consultation with the USFWS, CDFW, and revegetation experts. • In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the USFWS shall be contacted for guidance. • Any contractor, employee, or military or agency personnel who are responsible for inadvertently killing or injuring a San Joaquin kit fox shall immediately report the incident to their representative. This representative shall contact the CDFW immediately in the case of a dead, injured or entrapped kit fox. The CDFW contact for immediate assistance is State Dispatch at (916) 445-0045. They will contact the local warden or Mr. Paul Hofmann, the wildlife biologist, at (530) 934-9309. The USFWS shall be contacted at the numbers below. • The Sacramento Fish and Wildlife Office of USFWS and CDFW shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project-related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The USFWS contact is the Chief of the Division of Endangered Species, at the addresses and telephone numbers below. The CDFW contact is Mr. Paul Hofmann at 1701 Nimbus Road, Suite A, Rancho Cordova, California 95670, (530) 934-9309. • All sightings of the San Joaquin kit fox shall be reported to the CNDDB. A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed shall also be provided to the service at the address below.	

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	Any project-related information required by the USFWS or questions concerning the above conditions or their implementation may be directed in writing to the U.S. Fish and Wildlife Service at: Endangered Species Division 2800 Cottage Way, Suite W2605 Sacramento, California 95825-1846 (916) 414-6620 or (916) 414-6600 **MM BIO-4:** An environmental awareness training program shall be presented to all construction personnel before they access the Project site and begin work. The presentation shall include the life history information for all special-status species that could potentially occur on the Project site. The presentation shall discuss the legal protection status of each species, the definition of "take" under existing environmental laws, specific measures that workers would employ to avoid take of wildlife species, and the penalties for violations. An attendance sheet shall be circulated at all training sessions to document worker attendance.	
Impact #3.4-b: Would the Project 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 California Department of Fish and	No mitigation measures are required.	**No Impact**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
Wildlife or U.S. Fish and Wildlife Service?		
Impact #3.4-c: Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	No mitigation measures are required.	No Impact
Impact #3.4-d: Would the Project 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?	No mitigation measures are required.	No Impact

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
Impact #3.4-e: Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	**MM BIO-5:** Any person desiring to destroy or remove a heritage tree on private or public property must first obtain a removal permit by applying in writing to the Director of Community Services for such a permit. Within seven days of receipt of the application, the Director shall inspect the premises whereon the heritage trees are located and shall issue an intended decision in writing as to whether or not the application will be approved, with or without conditions; provided, however, that failure to render an intended decision within such period shall not be deemed approval. The intended decision of the Director shall be based upon reasonable standards, including, but not limited to, the following: • The condition of the heritage tree with respect to its general health, status as a public nuisance, danger of falling, proximity to existing or proposed structures, interference with utility services and its status as host for plant, pest or disease endangering other species of trees or plants with infection or infestations; • The necessity of the requested action to allow construction of improvements or otherwise allow economic or other reasonable enjoyment of property; • The topography of the land and the effect of the requested action on soil retention, water retention and diversion or increased flow of surface waters; • The number, species, size and location of existing trees in the area and the effect of the requested action on shade areas, air pollution, historic values, scenic beauty and the general welfare of the city as a whole; and/or • Good forestry practices such as, but not limited to, the number of healthy trees the subject parcel of land will support. In the intended decision on an application for a permit, the Director may attach reasonable conditions to insure compliance with the stated	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	purposes of this section, such as, but not limited to, a condition requiring up to two replacement trees from 15-gallon containers or larger, in a suitable location as substitutes for the removed tree or trees, at the sole expense of the applicant. Any such intended decision shall include a statement for the reasons for the decision.	
Impact #3.4-f: Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan?	No mitigation measures are required.	**Less than Significant**
CULTURAL RESOURCES		
Impact #3.5-a: Would the Project cause a substantial adverse change in the significance of a historical resource, as defined in *CEQA Guidelines*, *Section 15064.5*?	**MM CUL-1:** In the event that resources potentially qualifying as historical resources or unique archaeological resources per *CEQA Guidelines*, *Section 15064.5* and PRC, Section 21083.2 are inadvertently discovered during ground-disturbing activities, all work within 50 feet of the find shall halt until a qualified archaeologist who meets the Secretary of the Interior's professional qualifications standards in prehistoric or historical archaeology, as appropriate, shall evaluate the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified archaeologist determines that the discovery represents either an historical resource or a unique archaeological resource, the archaeologist shall recommend to	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	the City potential means of addressing impacts to such resources. Such additional measures may include avoidance, testing, and evaluation or data recovery excavation. The City shall then determine whether any such recommended measures are feasible in light of Project design, economics, logistics, and other factors. If avoidance is infeasible based on these factors, then testing or data recovery shall be the preferred method of dealing with the affected resources. Once the measure(s) chosen by the City have been identified and implemented, construction work in the area within 50 feet of the find shall be resumed.	
Impact #3.5-b: Would the Project cause a substantial adverse change in the significance of an archaeological resource, as defined in *CEQA Guidelines*, *Section 15064.5*?	Implement Mitigation Measure MM CUL-1.	**Less than Significant**
Impact #3.5-c: Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	**MM CUL-2:** Should any fossils be discovered during grading or development, all work will be halted, and a qualified paleontologist will be contacted to assess the finds and recommend procedures, if necessary, prior to resumption of construction. A copy of the report shall be provided to the City and to the Natural History Museum of Los Angeles County.	**Less than Significant**
Impact #3.5-d: Would the Project disturb human remains, including those interred	**MM CUL-3:** If human remains are uncovered during Project construction, the Project proponent shall immediately halt work, contact the Tulare County Coroner to evaluate the remains, and follow the procedures and protocols set forth in *Section 15064.5(e)(1)* of the *CEQA Guidelines*. The	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
outside of dedicated cemeteries?	City of Tulare Community and Economic Development Director shall also be notified of the discovery. If the County Coroner determines that the remains are Native American, the City shall contact the NAHC, in accordance with HSC, Section 7050.5, subdivision(c), and PRC, Section 5097.98 (as amended by AB 2641). The NAHC shall identify the person or persons believed to be most likely descended from the deceased Native American. The most likely descendant shall be afforded the opportunity to provide recommendations concerning the future disposition of the remains and any associated grave goods as provided in PRC 5097.98. Per PRC, Section 5097.98, the Project operator shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this section (PRC 5097.98), with the most likely descendent regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.	
GEOLOGY, SOILS, AND SEISMICITY		
Impact #3.6-a: Would the Project cause exposure of people or structures to potential substantial adverse effects from fault rupture and seismic-related ground failure?	No mitigation measures are required.	Less than Significant
Impact #3.6-b: Would the Project result in	MM GEO-1: Projects that disturb one or more acres of land are required to obtain NPDES coverage under the NPDES General Permit for Storm	Less than Significant

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
substantial soil erosion or the loss of topsoil?	Water Discharges Associated with Construction Activity (General Permit), Order No. 99-08-DWQ. The General Permit requires the development and implementation of a SWPPP, which includes BMPs to protect stormwater runoff, including measures to prevent soil erosion. Prior to issuance of grading permits, an erosion control plan shall be submitted and approved by the City of Tulare that reduces erosion and water quality degradation. The erosion control plan shall indicate the proper control of erosion, sedimentation, siltation and other pollutants will be implemented to meet NPDES permit requirements and City standards (see **Section 3.9** of this EIR). The plan shall address storm drainage during construction and set forth BMPs that shall be carried out during construction to minimize erosion, sedimentation and water quality degradation. BMPs selected shall be in accordance with the California Stormwater Quality Association Stormwater Best Management Practices Handbook and will include vegetated swales; bioretention areas; and a flow-based, storm water treatment device. The plan shall require that all drainage facilities shall be constructed to the City of Tulare specifications. The plan shall indicate whether grading will occur in the winter months. The plan shall also require that: • Drainage facilities shall be protected as necessary to prevent erosion of onsite soils immediately following grading activities; • Cut slopes and drainage ways within native material shall be protected from direct exposure to water runoff immediately following grading activities; • The design for collected run-off shall dissipate immediately following grading activities;	

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	• Cut and fill embankment slopes shall be protected from sheet, rill, and gully erosion; and • Where soil stockpiling or borrow areas are to remain for more than one construction season, proper erosion control measures shall be applied as specified in the improvement plans/grading plans.	
Impact #3.6-c: Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?	No mitigation measures are required.	**No Impact**
Impact #3.6-d: Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	No mitigation measures are required.	**No Impact**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
GREENHOUSE GASES		
Impact #3.7-a: Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Compliance will all mitigation measures included in **Section 3.3, Air Quality**, would reduce GHG emissions from the proposed Project to less-than-significant levels.	**Less than Significant**
Impact #3.7-b: Would the Project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	No mitigation measures are required.	**Less than Significant**
HAZARDS AND HAZARDOUS MATERIALS		
Impact #3.8-a: Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	**MM HAZ-1:** The Project proponent shall prepare a HMMP and submit it to the Tulare County Environmental Health Department (CUPA) for review and approval. The HMMP shall include, at a minimum, floor plans of the facility and business conducted at the site; an inventory of hazardous materials that are handled or stored onsite; an ERP; and a safety and emergency response training program for new employees with annual refresher courses. A copy of the approved HMMP shall be provided to the City of Tulare Planning Department prior to the issuance of grading permits.	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	MM HAZ-2: If the Project includes one or more fuel stations, The Project proponent shall obtain the appropriate underground storage tank permit from the Tulare County Environmental Health Department for the installation of such tanks. A copy of the approved underground storage tank permit shall be provided to the City of Tulare Planning Division prior to the issuance of grading permits.	
Impact #3.8-b: Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	**MM HAZ-3:** The Project proponent shall comply with CalARP in the City of Tulare and prepare an Accidental Release Prevention Program for review and approval by the Tulare County Environmental Health Division. A copy of the approved program shall be provided to the City of Tulare Planning Division Prior to the issuance of grading permits.	**Less than Significant**
Impact #3.8-c: Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	No mitigation measures are required.	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
Impact #3.8-g: Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	No mitigation measures are required.	**Less than Significant**
Impact #3.8-h: Would the Project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	No mitigation measures are required.	**Less than Significant**
HYDROLOGY AND WATER QUALITY		
Impact #3.9-a: Would the Project violate any water quality standards or waste discharge requirements?	**MM HYD-1:** Prior to issuance of grading permits, the Project proponent shall submit a NOI and SWPPP to the RWQCB to obtain coverage under the General Permit for Discharges of Stormwater Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ amended by 2010-0014-DWQ and 2012-0006-DWQ). The SWPPP shall specify and require the implementation BMPs, with the intent of keeping all products of erosion from moving offsite and into receiving	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	waters during construction. The requirements of the SWPPP shall be incorporated into design specifications and construction contracts. Recommended BMPs for the construction phase shall include, but are not limited to, the following: • Stockpiling and disposing of demolition debris, concrete, and soil properly; • Protecting existing storm drain inlets and stabilizing disturbed areas; • Implementing erosion controls; • Properly managing construction materials; and • Managing waste, aggressively controlling litter, and implementing sediment controls. The developer shall provide the City of Tulare Planning Division with evidence of an approved SWPPP prior to issuance of grading permits. **MM HYD-2:** Prior to issuance of grading permits, the Project proponent shall prepare a drainage plan for the Project for approval by the City Engineer that identifies post-construction treatment, control, and design measures that minimize surface water runoff, erosion, siltation, and pollution. The drainage plan shall be prepared in accordance with the City's SWMP and California Stormwater Quality Association's Storm Water Best Management Practices Handbook as well as the City Engineer's Technical Specifications and Public Improvement Standards. During final design of the Project, the Project proponent shall implement a suite of post-construction stormwater treatment and control BMPs designed to address the most likely sources of stormwater pollutants resulting from operation and maintenance of the Project. These measures shall account for the proposed 68.6 acres of commercial development and	

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	37.7 acres of residential development at the Project site. Stormwater infrastructure will be designed adhering to methods and standards described in Section E.12.e.ii.c of the SWRCB Phase II Small MS4, General Permit (Order No. 2013-0001-DWQ). The City Engineer may also require other necessary BMPs and design features. Incorporation of City Engineer-approved BMPs and design features into the Project design and construction documents shall ensure that operational water quality exceeds applicable water quality standards. The Project proponent shall also prepare and submit an Operations and Maintenance Agreement to the City of Tulare for its approval identifying appropriate procedures to ensure that stormwater quality control measures work properly during operations.	
Impact #3.9-b: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or	No mitigation measures are required.	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
planned uses for which permits have been granted)?		
Impact #3.9-c: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?	Implement Mitigation Measures MM HYD-1 and MM HYD-2.	Less than Significant
Impact #3.9-d: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?	Implement Mitigation Measures MM HYD-1 and MM HYD-2.	Less than Significant

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
Impact #3.9-e: Would the Project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	Implement Mitigation Measures MM HYD-1 and MM HYD-2.	**Less than Significant**
Impact #3.9-f: Would the Project otherwise substantially degrade water quality?	Implement Mitigation Measures MM HYD-1 and MM HYD-2.	**Less than Significant**
Impact #3.9-i: Would the Project expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	No mitigation measures are required.	**No Impact**
LAND USE AND PLANNING		
Impact #3.10-b: Would the Project conflict with any applicable land use plan, policy, or regulation	No mitigation measures are required.	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigation an environmental effect?		
NOISE		
Impact #3.11-a: Would the Project cause 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?	MM NSE-1: The following shall be implemented by the Project proponent for the duration of Project construction: • The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors; • The construction contractor shall locate the pile driver such that the rear of the vibratory pile driver faces toward the noise sensitive receptors when the machine is being utilized; • The construction contractor shall locate equipment staging in areas that will create the greatest possible distance between construction-related noise sources and noise sensitive receptors during all Project construction; • The construction contractor shall ensure that all construction equipment is equipped with manufacturer-approved mufflers and baffles; and • Project construction hours shall comply with all City of Tulare standards.	Less than Significant

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	MM NSE-2: Prior to issuance of building permits for the Project's proposed hotels, the Project proponent shall demonstrate to the satisfaction of the City of Tulare that the Project complies with the following: • Hotel windows of sleeping areas of the proposed hotel that face to the west shall have a STC rating of 40.	
Impact #3.11-b: Would the Project cause exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	No mitigation measures are required.	**Less than Significant**
Impact #3.11-c: Would the Project cause a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	No mitigation measures are required.	**Less than Significant**
Impact #3.11-d: Would the Project cause a substantial temporary or periodic increase in	No mitigation measures are required.	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
ambient noise levels in the Project vicinity above levels existing without the Project?		
Impact #3.11-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, would the Project expose people residing or working in the area to excessive noise levels?	No mitigation measures are required.	Less than Significant
Impact #3.11-f: For a project within the vicinity of a private airstrip, would the Project expose people residing or working in the plan area to excessive noise levels?	No mitigation measures are required.	No Impact
POPULATION AND HOUSING		
Impact #3.12-a: Would the Project induce substantial population	No mitigation measures are required.	Less than Significant

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure?		
PUBLIC SERVICES, UTILITIES AND SERVICE SYSTEMS		
Impact #3.13-a: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services including fire	No mitigation measures are required.	Less than Significant

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
protection, police protection, schools, parks, and other public facilities?		
Impact #3.13-b: Would the Project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	No mitigation measures are required.	Less than Significant
Impact #3.13-c: Would the Project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	No mitigation measures are required.	Less than Significant
Impact #3.13-d: Would the Project require or result in the construction of new stormwater drainage facilities or expansion of existing	No mitigation measures are required.	Less than Significant

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
facilities, the construction of which could cause significant environmental effects?		
Impact #3.13-e: Would the Project have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?	No mitigation measures are required.	Less than Significant
Impact #3.13-f: Would the Project result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	No mitigation measures are required.	Less than Significant
Impact #3.13-g: Would the Project be served by a	No mitigation measures are required.	Less than Significant

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?		
Impact #3.13-h: Would the Project comply with federal, State, and local statutes and regulations related to solid waste?	No mitigation measures are required.	Less than Significant
RECREATION		
Impact #3.14-a: Would the Project result in increased use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	No mitigation measures are required.	Less than Significant
Impact #3.14-b: Would the Project result in the construction or expansion of recreational facilities which might have an adverse physical	No mitigation measures are required.	Less than Significant

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
effect on the environment?		
TRANSPORTATION/TRAFFIC		
Impact #3.13-a: Would the Project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	**MM TRA-1:** Prior to issuance of any building permit, the applicant will provide to the City of Tulare a written statement of intent, which will detail the approach used to satisfy obligations for supplemental road improvements, as listed in Table 3.15-11 and 3.15-12. This written statement of intent and method proposed will be approved by the City. The applicant will have three approaches to fulfill the road improvement responsibilities: • Lump Sum Payment: Any lump-sum payment will be made prior to issuance of building permits. All monies will be paid to the City of Tulare. At the time the applicant elects to pay, the City will conduct a review of the distributed share amount and make adjustments, if required, based on increases to the construction cost index, other changes in standards or technology for required signalization or improvements, or updated development projects or proposals. If the applicant pays a Transportation Impact Fee that includes the facilities covered by the fair-share payment, the applicant will be eligible for reimbursement of any monies paid. The City may request, at a cost to be borne by the applicant, a supplemental traffic analysis to determine the correct lump sum payment. • Construction of Road Improvements: If, in an approved summary of intent, the applicant seeks to construct road improvements in lieu of a lump sum payment, the improvements will be constructed and accepted by the City prior to issuance of the Certificate of Occupancy for the related building permits. Deviations from this sequence of events must be approved by the City.	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	• Combination of Approach A and Approach B: The applicant may choose to provide construction for certain roadway improvements and payment for others. This approach must be used in communication with the City. All monies designated for roadway improvements will be paid prior to issuance of building permits. **MM TRA-2:** Prior to issuance of building permits, the applicant will pay the adopted Transportation Impact Fee in effect at the time building permits are issued.	
Impact #3.15-b: Would the Project Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the County congestion management agency for designated roads or highways?	**MM TRA-3:** Prior to the issuance of grading permits, the Project applicant shall: Prepare and submit a Construction Traffic Control Plan to City of Tulare and the California Department of Transportation offices for District 6, as appropriate, for review and approval. The Construction Traffic Control Plan shall be prepared in accordance with both the California Department of Transportation Manual on Uniform Traffic Control Devices and Work Area Traffic Control Handbook and shall include, but not be limited to, the following issues: • Timing of deliveries of heavy equipment and building materials; • Directing construction traffic with a flag person; • Placing temporary signing, lighting, and traffic control devices if required, including, but not limited to, appropriate signage along access routes to indicate the presence of heavy vehicles and construction traffic; • Ensuring access for emergency vehicles to the Project site;	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
	• Temporarily closing travel lanes or delaying traffic during materials delivery, transmission line stringing activities, or any other utility connections; • Maintaining access to adjacent property; and • Specifying both construction-related vehicle travel and oversize load haul routes, minimizing construction traffic during the a.m. and p.m. peak hour, distributing construction traffic flow across alternative routes to access the Project site, and avoiding residential neighborhoods to the maximum extent feasible. Obtain all necessary permits for the work within the road right-of-way or use of oversized/overweight vehicles that will utilize City-maintained roads, which may require California Highway Patrol or a pilot car escort. Copies of the issued permits shall be submitted to the City of Tulare.	
Impact #3.15-c: Would the Project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	No mitigation measures are required.	**No Impact**
Impact #3.15-d: Would the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or	Implement Mitigation Measure MM TRA-3, and in addition, Mitigation Measure MM TRA-4 as listed below. **MM TRA-4:** Prior to the issuance of grading permits, the Project proponent shall coordinate with the City of Tulare on the necessary improvements for the future alignment of N. Oaks Street (future Akers	**Less than Significant**

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
incompatible uses (e.g., farm equipment)?	Street) so that it meets the City's design standards for a major arterial roadway. The design of the realignment of this street, including necessary sight distances, and curve radii, shall be reviewed and approved by the City Engineer.	
Impact #3.15-e: Would the Project result in inadequate emergency access?	No additional mitigation measures are required.	Less than Significant
Impact #3.13-f: Would the Project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	No mitigation measures are required.	Less than Significant
TRIBAL CULTURAL RESOURCES		
Impact #3.16-a(i): Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, Section 21074, as either a site, feature, place, cultural landscape that is geographically defined in	No mitigation measures are required.	No Impact

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code, Section 5020.1(k)?		
Impact #3.16-a(ii): Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, Section 21074, as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a	No mitigation measures are required.	No Impact

Impact #	Mitigation Measure(s)	Level of Significance after Mitigation
California Native American tribe, and that is a resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code, Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code, Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American tribe?		

CHAPTER 2 - PROJECT DESCRIPTION

Cartmill Crossings is a 127-acre land development project proposed to be constructed in an area immediately north and adjacent to the City of Tulare, California. Tulare is in the heart of California's Central Valley, eight miles south of Visalia and 60 miles north of Bakersfield. The Project site is in the northeast corner of the State Route (SR) 99/Cartmill Avenue interchange and bounded by SR 99 to the west and Cartmill Avenue to the south (Figure 2-1). The Project site is within the United States Geological Survey (USGS), Visalia quadrangle in Section 26, Township 19S, Range 19E, Mount Diablo Base and Meridian (MDBM).

2.1 - Site Characteristics

The proposed Project site is 127 acres of undeveloped land immediately north of Tulare (Figure 2-2). The site is bounded by SR 99 to the west, Cartmill Avenue to the south, and undeveloped land to the north and the east. The Project site is approximately 0.3 miles northeast of fully urbanized residential development, with scattered development of varying uses in between, and within the Sphere of Influence (SOI) of the City of Tulare. The 2035 Tulare General Plan Land Designation Map designates the Project site as Regional Commercial (Figure 2-3). The site would be pre-zoned to the Tulare Zoning Ordinance Retail Commercial (C-3) zone district, as part of the annexation process. Akers Street is an arterial that runs through the site. Currently, the Project site is within the jurisdiction of the County of Tulare. It is designated as Urban Development by the Tulare County General Plan, and within the Exclusive Agricultural (AE-20) zone district.

2.2 - Surrounding Land Uses

Uses immediately adjacent to the Project site include undeveloped agricultural land to the north and east, Cartmill Avenue and the SR 99 interchange to the south, and SR 99 to the west. Figure 2-2 shows the Project site and surrounding vicinity.

2.3 - Proposed Project Components

2.3.1 - LAND USE SUMMARY

As proposed, the Project would consist of five different land use designations: Regional Commercial, Low-density Residential, Medium-density Residential, High-density Residential, and Parks and Recreation by the City of Tulare General Plan. The pre-zoning for the site will be consistent with the General Plan land use designations: Retail Commercial (C-3), Single-family Residential (R-1-6), Multiple-family Residential 3,000 square feet per unit (R-M-2), Multiple-family Residential 1,500 square feet per unit (R-M-4), and Public Lands (P-L).

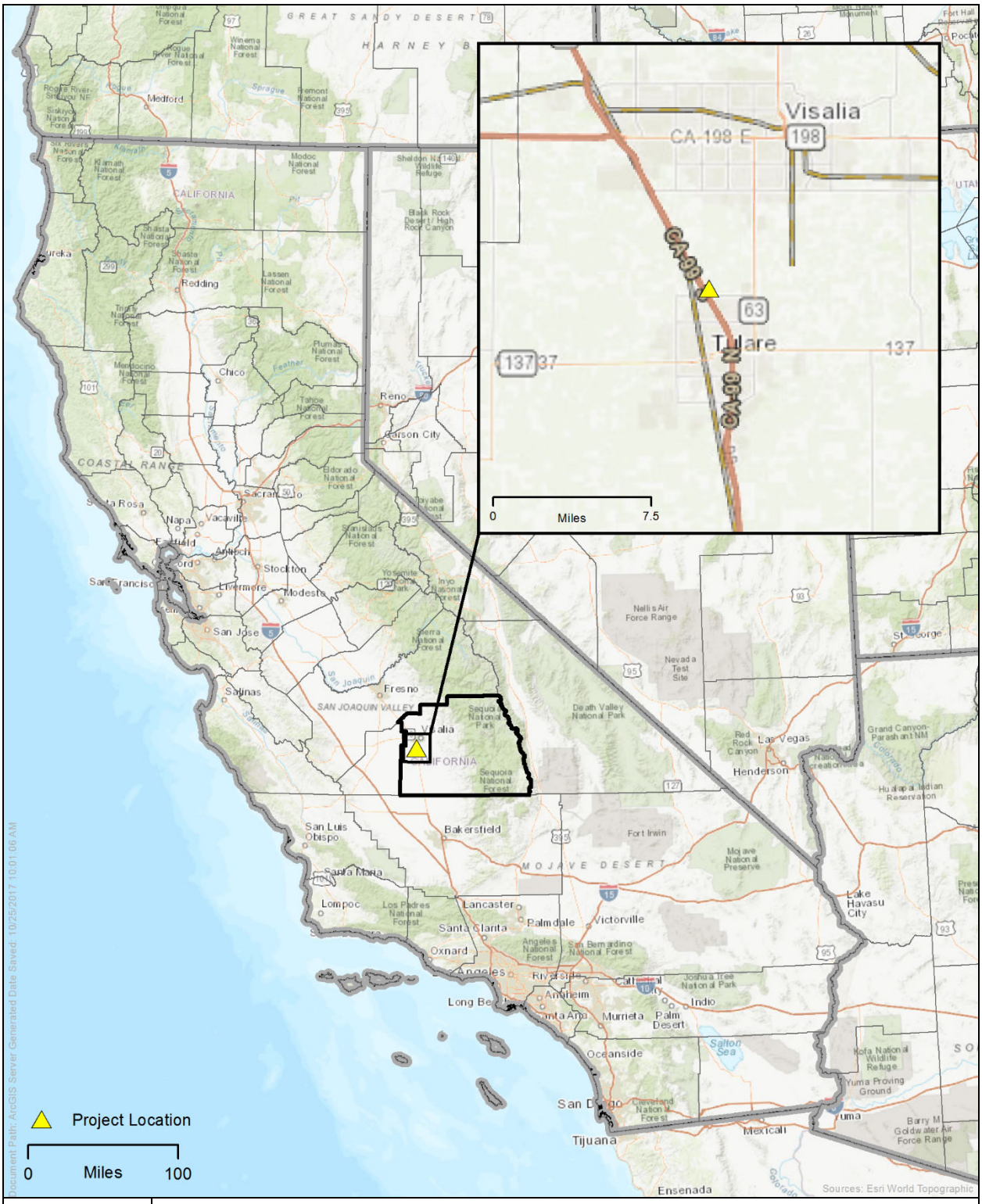


Figure 2-1
Regional Map



Figure 2-2
Vicinity Map

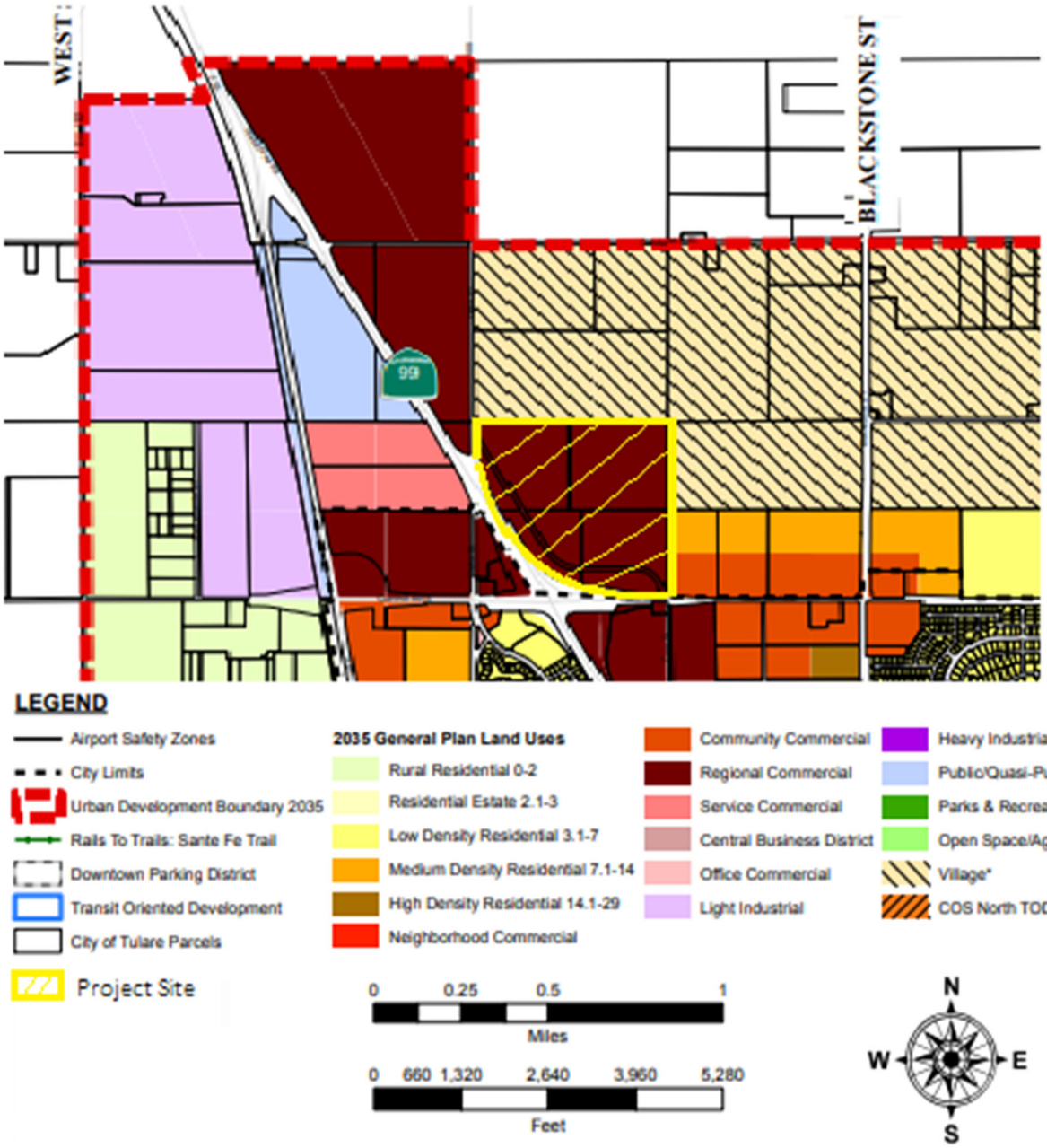


Figure 2-3
Tulare 2035 General Plan Map

The proposed Project is the construction of a multiuse commercial and residential development. Figure 2-4 illustrates the various proposed land uses of the Project. Approximately 68.6 acres of commercial businesses on both sides of Akers Street will be developed in accordance with the permitted uses of the C-3 zone district. Examples of permitted uses include restaurants, fast food restaurants, retail stores, hotels, and fuel stations. The northeastern portion of the Project site will consist of approximately 30 acres of low-density, single-family residential homes with lots no smaller than 6,000 square feet. West of the low-density residential development will be approximately 4.4 acres of medium-density residential development, which will likely consist of fourplex residences. Southeast of the medium-density area will be approximately 7.7 acres of high-density, multi-family development, which will likely consist of an apartment complex. Northeast of the multi-family development will be a seven-acre park.

Table 2-1 illustrates the density, size, and estimated number of units of the proposed Project area. The maximum gross leasable area for the commercial uses is based on the maximum floor area ratio (FAR) allowed by the City of Tulare General Plan. The estimated numbers of residential units for low-density and medium-density land use designations are based on the Conceptual Plan Map (Figure 2-4) plus 10 percent to allow for flexibility of design. The estimated number of residential units for the high-density residential land use designation is based on an estimated apartment complex at a density of 22 units per acre.

Table 2-1
Land Use Summary

Land Use Designation	Allowed Units per Gross Acre	Maximum Allowed FAR/Lot Coverage*	Acreage	Maximum Gross Leasable Area	Estimated Number of Units
Regional Commercial (Phase 1)	N/A	.27 FAR	15.0	176,000 SF	N/A
Regional Commercial (Phase 4)	N/A	.27 FAR	53.6	630,400 SF	N/A
Low-density Residential (Phase 2)	3.1-7.0	50% Lot Coverage	30.3	N/A	132
Medium-density Residential (Phase 3)	7.1-14	50% Lot Coverage	4.4	N/A	40
High-density Residential (Phase 3)	14.1-29	50% Lot Coverage	7.7	N/A	70**
Parks & Recreation (pond-Phase 1, park-Phase 2)	N/A	N/A	7.0	N/A	N/A
Arterial and Collector Right of Way	N/A	N/A	8.8	N/A	N/A

FAR = floor area ratio SF = square feet N/A = not applicable
*Maximum Allowed FAR and Lot Coverage per City of Tulare General Plan
**Estimated units based on 22 units per acre

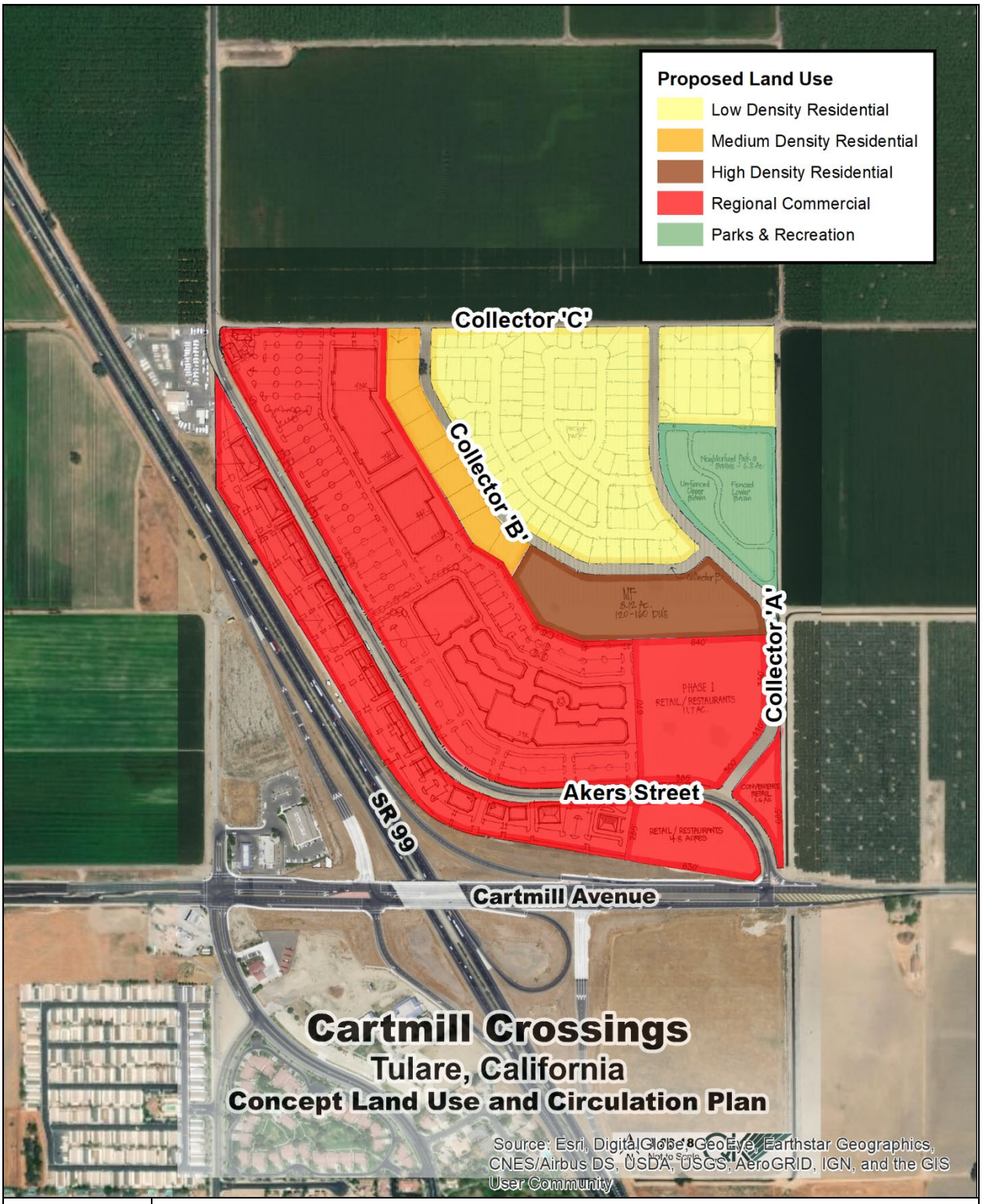


Figure 2-4
Conceptual Land Use and Circulation Plan

2.3.2 - Recreation Area and Retention Basin

The park will be located on the eastern border of the property line and will be designed with a retention basin/pond to hold storm drain runoff off the site. It will also be designed to allow for expansion by Tulare to accommodate planned future development to the east of the site. The park will be acquired and maintained by the City.

2.3.3 - Water and Wastewater

The City may acquire a well site for a new City-maintained water well on the site. If approved, the proposed Project would be designed to connect to Tulare's sewer and water systems with the addition of new sewer and water lines.

2.3.4 - Timeline and Phasing

While the general layout of land uses of the Project has been determined, a specific site plan has yet to be prepared. It is anticipated that full buildout of the site will take roughly 20 years, during which time preferences for commercial building layout may change. Therefore, this Project description is based upon the anticipated densities of development.

The Project will be developed in phases. The largest area will be for regional commercial development. Phase 1 will include 15 acres of regional commercial uses in the southeastern most corner of the Project site, as well as a retention basin to the north and is scheduled to be constructed from 2019 to 2022. Phase 2, expected to be developed between 2022 and 2028, will include the single-family residential homes and a park that will be integrated into the basin site. The multi-family component (R-M-2 and R-M-4 areas) is anticipated for development from 2028 to 2030 and will encompass Phase 3. Finally, the rest of the regional commercial development, Phase 4, is projected to be completed by 2040.

2.3.5 - Street Construction and Improvements

The arterial street of Akers Street runs through the site and will provide access to the proposed retail commercial businesses. This street will be widened to four lanes per the Circulation Element of the City General Plan. Three more streets will be built north of Akers Street. The first collector street (Collector A) will be constructed to cut through Phase 1 of the commercial development and continue north through the low-density residential development. The second collector street (Collector B) will be constructed north of the medium-density and high-density residential development and south of the low-density residential development. A third collector street (Collector C) will run along the north boundary of the site and connect to Akers Street at the Project site's northwest corner.

2.4 - Project Objective

The objective of the Project is to build and operate an economically viable and competitive development with a mix of commercial and residential uses in compliance with applicable

laws and regulations, optimally utilizing the available land resource, and while minimizing any environmental impacts to the extent feasible.

2.5 - Uses of the EIR and Required Agency Actions and Permits

The City of Tulare, as Lead Agency for the Project, has discretionary authority over the primary Project proposal. To implement this Project, the Project proponents would need to obtain, at a minimum, the following discretionary permits/approvals:

- Consideration and Certification of a Final EIR with Appropriate Findings (15091), a Statement of Overriding Considerations (15093), and a Mitigation Measures Monitoring Program from the Tulare City Council;
- A General Plan Amendment from Regional Commercial to Regional Commercial, Low-density Residential, Medium-density Residential, High-density Residential, and Parks and Recreation;
- Pre-zoning of the site with zoning districts consistent with the new General Plan land use designations;
- Annexation of the Project area into Tulare, along with detachment from the Tulare Irrigation District. The area to be annexed would include adjacent portions of SR 99 that are not already within the City limits; and
- Subdivision or parcel maps.

2.6 - Environmental Setting

As set forth in *Section 15125(a)* of the *CEQA Guidelines*: "An EIR must include a description of the physical environmental conditions in the vicinity of the project as they exist at the time the Notice of Preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a Lead Agency determines whether an impact is significant. The description of the environmental setting shall be no longer than is necessary to an understanding of the significant effects of the proposed project and its alternatives."

The climate of the Project area is characteristic of that of the Southern San Joaquin Valley (Valley). The summer climate is hot and dry, while the winters are cool and periodically humid. Mean daily maximum temperatures range from a low of approximately 57°F in December and January to a high of about 99°F in July.

Rainfall is concentrated during the six months from November to April. December and January typically experience heavy fog in the Valley, mostly nocturnal, caused when moist cool air is trapped in the Valley by high-pressure systems. In extreme cases, this fog may last continuously for two or three weeks. Its depth is usually less than 3,000 feet.

The Project area is subject to characteristic seasonal airflows. During the summer, air currents from the Pacific Ocean enter the Valley through the San Francisco Bay and Delta region and are forced down the Valley. Airflows move primarily to the southeast at velocities

of six to 10 miles per hour. During the winter, cold air flowing off the surrounding mountains results in currents toward the northwest and velocities ranging from zero to five miles per hour. These airflows result in extensive horizontal mixing of air masses in the Valley. However, vertical dispersion is constrained by temperature inversions, an increase in air temperature in a stable atmospheric layer, which may occur throughout the year.

The Project lies within the Tulare County portion of the San Joaquin Valley Air Basin (SJVAB). The air quality of the Valley is directly related to the ability of the atmosphere to dilute and transport pollutants. The climate and meteorology within the Valley are conducive to the creation and entrapment of air pollution. Air pollution within the Valley is, in part, a result of the enclosed air basins, which experience long periods of inversion, a relatively light wind flow, and a generous amount of sunlight. The SJVAB is comprised of eight counties: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and central and western Kern. The SJVAB periodically exceeds State and/or federal standards for levels of ozone and fine particulate matter.

The San Joaquin Valley, approximately 25,000 square miles, is a broad structural trough bordered by the Sierra Nevada on the east, the Coast Ranges on the west and the Transverse Range on the south. Groundwater occurrence is directly related to the regional geology and soils. Fresh groundwater is principally contained in the unconsolidated continental deposits of the Pliocene to the Holocene age, which extend to depths ranging from less than 100 to more than 3,000 feet.

The ultimate source of groundwater in the San Joaquin Valley is precipitation on the Valley floor and its tributary drainage basins. Replenishment of the unconfined and semiconfined groundwater bodies can be by seepage from streams and by underflow in permeable materials flooring the river and stream canyons that border the Valley.

The groundwater basin in the southern San Joaquin Valley is the Tulare Lake hydrologic region which covers the area south of the San Joaquin River and includes Kings County and the western (Valley) portions of Fresno, Tulare, and Kern Counties.

The SR 99/Cartmill Avenue interchange was recently expanded with the purpose of accommodating future planned uses in the surrounding area, including this Project site. Tulare is currently designing a project that would expand Cartmill Avenue to four lanes between Akers Street (named Road 100 in Tulare County) and Hillman Street (named Road 108) in Tulare County. This project would also extend municipal water and sewer lines westward in Cartmill Avenue to Akers Street.

2.7 - Cumulative Projects

CEQA requires an EIR to evaluate a project's contribution to cumulative impacts. Cumulative impacts are the project's impacts combined with the impacts of other related past, present, and reasonably foreseeable future projects. As set forth in the *CEQA Guidelines*, the discussion of cumulative impacts must reflect the severity of the impacts as well as the likelihood of their occurrence; however, the discussion need not be as detailed as the

discussion of environmental impacts attributable to the project alone. As stated in CEQA, Section 21083(b), "a project may have a significant effect on the environment if the possible effects of a project are individually limited but cumulatively considerable."

According to the *CEQA Guidelines*:

Cumulative impacts refer to two or more individual effects that, when considered together, are considerable and compound or increase other environmental impacts.

a) The individual effects may be changes resulting from a single project or a number of separate projects.

b) The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (*California Code of Regulations (CCR), Title 14, Division 6, Chapter 3, Section 15355*).

In addition, as stated in *CEQA Guidelines*, it should be noted that "The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable" (*CCR, Title 14, Division 6, Chapter 3, Section 15064(I)(5)*).

Cumulative impact discussions for each environmental topic area are provided at the end of each technical analysis contained within **Chapter 5, Cumulative Impacts**. As previously stated, and as set forth in the *CEQA Guidelines*, related projects consist of "closely related past, present, and reasonably foreseeable probable future projects that would be likely to result in similar impacts and be located in the same geographic area" (*CCR, Title 14, Division 6, Chapter 3, Section 15355*). Table 5-1 provides a list of past, present, and reasonably foreseeable future projects that are considered as part of the cumulative impact analysis within this EIR.

CHAPTER 3 - ENVIRONMENTAL IMPACT ANALYSIS

The environmental resource analysis below (by chapter) describes the potential environmental impacts associated with the construction and operation of the project. This analysis considers the comments submitted during the scoping process (see Appendix A: Notice of Preparation and Comment Letters). References to data and/or technical studies are listed at the end of each chapter.

3.1 - Aesthetics

This section provides an analysis of the potential aesthetic and visual resource impacts that may be caused by implementation of the proposed Project. Potential impacts may include disturbance of scenic resources such as trees or rock outcroppings, alteration of agricultural uses or lands (from an aesthetic point of view), or a light or glare impact.

3.1.1 - Environmental Setting

Project Site and Surrounding Areas

The proposed Project is a 127-acre land development project to be constructed in an area immediately north and adjacent to the City of Tulare, California. Tulare is in the heart of California's Central Valley, eight miles south of Visalia. The Project site is in the northeast corner of the State Route (SR) 99/Cartmill Avenue interchange. It is bounded by SR 99 to the west, Cartmill Avenue to the south, and undeveloped agricultural land to the north and the east. The Project site is approximately 0.3 miles northeast of fully urbanized residential development, with scattered development of varying uses in between, and within the Sphere of Influence (SOI) of the City of Tulare.

Elevation on the proposed Project site is approximately 295 feet above sea level. Topography of the site is relatively flat. No major natural waterways, streams, or rivers are located near the Project site. The Project site is located on, has been historically, and is currently used for agriculture. It has been recently disked or is currently cultivated with pistachio or almond orchards. Active agricultural cultivation is adjacent to the Project site to the north and east. A paved frontage road to SR 99 is located to the west and Cartmill Avenue and Tulare are located to the south. The Project site is within a highly disturbed area, that has been historically and routinely used for agricultural crops or nut orchards.

Surrounding Areas

The Project site is bordered by SR 99 to the west, Cartmill Avenue to the south, and undeveloped agricultural land to the north and the east. The general character of the surrounding areas of the Project site is described below, as well as future development surrounding the Project site.

North: Land to the north is undeveloped and being used for agricultural row crops and orchards and is designated in the City of Tulare General Plan as eventual Village development.

East: Land immediately to the east is undeveloped and being used for agricultural row crops and orchards and is designated in the City of Tulare General Plan as eventual Medium-density Residential and Neighborhood Commercial use.

South: The southern border of the site is Cartmill Avenue. Land to the southeast is undeveloped and land to the southwest is low-density residential. This land is designated in

the City of Tulare General Plan as eventual Regional Commercial and Low-density Residential use.

West: The western border of the Project site is SR 99. The land to the west of the site is undeveloped and is designated in the City of Tulare General Plan as eventual Regional Commercial and Service Commercial use.

Passing vehicles in the northbound and southbound lanes of SR 99 have visibility of the Project site from the west. In addition, vehicles driving along Cartmill Avenue have view of the Project site to the north. The residential development southwest of the site does not have visibility of the Project site, as SR 99 is between the Project site and said residential development. Views of the proposed Project site and vicinity as a whole are expansive due to the lack of development in the area.

3.1.2 - REGULATORY SETTING

Federal

There are no specific federal regulations applicable to aesthetics.

State

CALIFORNIA SCENIC HIGHWAY PROGRAM

The California Department of Transportation (DOT) manages the California Scenic Highway Program (CSHP). The goal of the CSHP is to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to highways. No State-designated scenic highways are located in the vicinity of the Project site.

NIGHTTIME SKY – TITLE 24 OUTDOOR LIGHTING STANDARDS

The California Legislature passed a bill in 2001 requiring the California Energy Commission (CEC) to adopt Energy Efficiency Standards (EES) for outdoor lighting for both the public and private sector. In November 2003, CEC adopted changes to the Title 24, Parts 1 and 6, Building Energy Efficiency Standards (BEES). The BEES became effective on October 1, 2005 and included changes to the requirements for outdoor lighting for residential and non-residential development. The BEES regulate lighting characteristics such as maximum power and brightness, shielding, and sensor controls to turn lighting on and off. Different lighting standards are set by classifying areas by lighting zone. The classification is based on population figures of the 2000 Census. Areas can be designated as LZ1 (dark), LZ2 (rural), or LZ3 (urban). Lighting requirements for dark and rural areas are stricter in order to protect the areas from new sources of light pollution and light trespass.

Local

CITY OF TULARE GENERAL PLAN

Aesthetic resources are protected through policies that are mandated in the City of Tulare General Plan Land Use, Transportation, and Conservation and Open Space Elements. The City of Tulare General Plan sets forth the following goals and policies relevant to aesthetics and to the proposed development Project:

Land Use Element

POLICIES

LU-P2.2 Compact Development. The City shall promote development patterns that are compact and use space in an efficient but aesthetic manner to promote more walking, biking, and use of public transit.

LU-P2.9 Maintain Urban Edge. The City shall maintain a distinct urban edge, while creating a gradual transition between urban uses, rural uses, and open space. The City shall maintain rural residential and residential estate designations or utilize project design to incorporate a distinct urban edge, along the City's edge to provide this transition.

LU-P4.12 Commercial Signage. The City shall require that signage in commercial development complement, rather than detract, from the visual quality of the commercial development and surrounding neighborhoods.

LU-P4.14 Minimize Visual Impact. The City shall require new commercial development to be designed to minimize the visual impact of parking areas on public roadways.

LU-P13.1 City Character and Identity. The City shall reinforce the City's unique character, scale, and identity through urban design programs, including principals and guidelines.

LU-P13.2 City Image. The City shall encourage a high level of design quality (architectural and landscape) for all new development in order to create a pleasant living environment, a source of community pride, and an improved overall City image.

LU-P13.4 Public Art. The City shall promote a stimulating and engaging environment through an increase in the incorporation of artwork in public places as part of new commercial centers and associated with new Village centers.

LU-P13.10 Subdivision Design. The City shall discourage residential design approaches within subdivisions which create monotonous or non-aesthetically pleasing

neighborhoods (e.g., excessive repetition in house form, setback, and building height; repetitive driveway configurations; prominence of garage doors; etc.).

LU-P13.11 Quality Multi-Family Housing. The City shall promote quality design and appearance of all new multi-family units so that they complement the existing fabric of the community, add value to the community's-built environment, and reduce potential of community objection.

LU-P13.14 Scenic Features and Views. The City shall preserve its scenic features and view corridors to the mountains.

LU-P13.25 Outdoor Lighting. The City shall ensure that future development includes provisions for the design of outdoor light fixtures to be directed/shielded downward and screened to avoid nighttime lighting spillover effects on adjacent land uses and nighttime sky conditions.

Transportation and Circulation Element

POLICIES

TR-P5.8 Visual Integration. The City shall require parking lots along street frontages to be well designed to reduce their visual impact and maximize pedestrian and bicycle compatibility and safety.

Conservation and Open Space Element

POLICIES

COS-P8.7 Minimize Adverse Impacts. Minimize the adverse effects on environmental features such as water quality and quantity, air quality, flood plains, geophysical characteristics, biotic, archaeological and aesthetic factors.

3.1.3 - IMPACT EVALUATION CRITERIA

Thresholds of Significance

Consistent with *Appendix G* of the *CEQA Guidelines*, the proposed Project is considered to have a significant impact on the environment if it will:

a) Have a substantial adverse effect on a scenic vista;

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway;

c) Substantially degrade the existing visual character or quality of the site and its surroundings; or

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

3.1.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.1-a: Would the Project have a substantial adverse effect on a scenic vista?

There are no State or county designated scenic vistas in the vicinity of the proposed Project site. The General Plan does not designate the proposed Project site as scenic or an area having highly-valued scenic resources.

CONCLUSION

Although there are no designated scenic vistas in the vicinity of the proposed Project site, the proposed Project's design goal is to reduce the impacts of a new development on the surrounding environment. Therefore, impacts will be less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.1-b: Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

Scenic Views and Resources

Visual resources are classified into two categories: scenic views and scenic resources. Scenic views are elements of the broader viewshed such as mountain ranges, valleys, and ridgelines. They are usually middle ground or background elements of a viewshed that can be seen from a range of viewpoints, often along a roadway or other corridor. Scenic resources are specific features of a viewing area (or viewshed) such as trees, rock outcroppings, and historic buildings. These features act as the focal point of a viewshed and are usually foreground elements.

State and county governments can designate scenic vistas; however, there are no State or county designated scenic vistas in the vicinity of the proposed Project site. The General Plan does not designate the proposed Project site as scenic or an area having highly-valued scenic resources. The viewshed in the proposed Project area is that of an agricultural environment, bordered by a highway. The proposed Project vicinity does not contain notable features that would typically fall under the heading of visual resources, such as unique geological features, natural areas, etc. The features of the proposed Project's visual setting that might shape an appreciation of its visual character are limited to typical urban elements and are subject to personal interpretation.

Aesthetic effects are influenced by such factors as the location of the viewer, duration of exposure, and the status of the viewer in relation to the proposed Project. "Status of the viewer" is a reference to the fact that a resident of a property that has a direct view of the

proposed Project site from an adjacent property is likely to feel differently about the new development than a non-resident who catches a brief glimpse of the proposed Project site driving along SR 99 and Cartmill Avenue.

According to Caltrans California Scenic Highway Mapping System, the closest eligible scenic highways are SR 198 and SR 190, which are approximately six miles north and 13.5 miles south of the Project, respectively (California DOT, 2011).

Because of this distance, the Project would not be visible from either roadway. Therefore, Project impacts to scenic resources within a State scenic highway would not occur.

CONCLUSION

The proposed Project is not located within view of a designated scenic highway, nor would it affect designated scenic views, vistas, or scenic resources; therefore, the proposed Project will have a less-than-significant impact.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.1-c: Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?

There is potential that the proposed Project may degrade the visual character of the area. An impact would occur if the proposed Project changes the view to the middle ground or background elements of the broad viewshed, or removes the visually important trees, rocks, or historic buildings in the foreground. Since aesthetic considerations are often subjective and difficult to judge, two generally objective criteria are used in this EIR to establish the level of significance of the change. The first addresses the visibility of the landscape being altered and whether it will appear in the foreground, middle ground or background of most viewers. Changes in the foreground are most significant, with distance and topography or vegetative screening reducing impact. The second criterion concerns visual contrast, which is a measure of the degree of perceptible change. This is often characterized as being a strong, moderate or weak change. Using this approach, a "strong" change would be immediately apparent and would dominate the landscape; whereas, a "weak" change would be barely noticeable.

The areas surrounding the proposed Project are mostly undeveloped sites used primarily for agriculture. SR 99 borders the proposed Project site on the west and Cartmill Avenue forms the southern boundary. Views from those directions looking on the proposed Project site will be altered as the nature of the proposed Project will be substantially different than what currently exists, but the proposed Project will not substantially degrade the existing visual character of the site and its surroundings. In this case, the proposed Project currently is and previously was used for agriculture.

The proposed Project will consist of a mix of commercial and residential development. All development will be subject to a site plan review by the City and application of relevant sections of the Zoning Code. The City of Tulare Municipal Code contains requirements for residential and commercial development including landscaping, setbacks, visual screening, trash and storage areas, design guidelines, and height limitations that will help reduce impacts from the Project on surrounding areas. The specifics of the signage that will be used in the Project site are unknown at this time. All signage will be in accordance with Chapter 10.188 of the City of Tulare Municipal Code and will be subject to a sign permit (City of Tulare, 2018).

During construction of the proposed Project, mechanical equipment, outdoor storage, and earth moving activities will have a temporary effect on scenic views for those driving along SR 99 or Cartmill Avenue. Although impacts can be considered significant, the sight of construction equipment in the area is common and will be temporary. Therefore, such temporary visual construction impacts would be less than significant.

CONCLUSION

The proposed Project's design goal is to reduce the adverse impacts on surrounding viewsheds. Landscaping and beautification techniques will be integrated in the design as proposed by the applicant and as a result of the City's site plan review process in order to minimize visual impacts. Therefore, impacts will be less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.1-d: Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Light and Glare

Light and glare effects also are somewhat subjective; they are more likely to disturb permanent residents than transient highway travelers. Light and glare effects must be evaluated from two viewpoints: 1) the viewpoint from the Project site toward surrounding uses and 2) the viewpoint from surrounding uses toward the Project site. The degree of impact is proportional to the perceived negative effect on surrounding land uses. If there is a continuous light or glare that is visible from nearby residences, and if it creates a nuisance to residents, the impact is potentially significant. The sensitivity of viewers to changes in the viewshed can be measured by the extent and nature of General Plan provisions that address visual resources regarding development proposals.

Light that falls beyond the intended area of illumination is referred to as "light trespass." Types of light trespass include spillover light and glare. Spillover light is light that illuminates surfaces beyond the intended area and is typically caused by artificial lighting sources from building security lighting, illuminated signs, parking lot lights, street lights, and the campus

stadium field lights. Light trespass can unfavorably affect light-sensitive land uses, such as residential neighborhoods at nighttime.

The second type of light trespass is glare, which results when a person's eyes have difficulty adjusting to bright lights while in a darker setting. Glare can occur from a direct light source, such as vehicle headlights in the night, or indirectly from reflection such as light shining off of a building. Glare can result from sunlight or from artificial light reflecting off reflective building materials or glass windows, depending on the angle of the sun. Glare resulting from sunlight reflecting off building exteriors can be reduced with design features that incorporate low-reflective glass and exterior materials and colors that absorb, rather than reflect, light. Glare can also be reduced by incorporating light sources that are designed to direct light downward rather than upward toward the sky.

Since the Project site is currently undeveloped, no sources of light, glare, or light trespass into the night sky or surrounding areas is currently being generated. Existing light and glare sources in the Project area are from vehicles traveling along SR 99 and development beyond SR 99 to the west, and Cartmill Avenue to the south. Passing vehicles traveling along SR 99 and Cartmill Avenue represent the main source of glare to the Project vicinity.

Most of the Project's construction activities would occur during daylight hours. Increased truck traffic and the transport of construction materials and equipment to the Project site would temporarily increase glare conditions during construction. However, this increase in glare would be minimal. Construction activity would focus on specific areas on the sites, and any sources of glare would not be stationary for a prolonged period of time. Additionally, the surface area of construction equipment is minimal compared with the scale of the Project site. Therefore, construction of the proposed Project would not create a new source of substantial glare that would affect daytime views in the area. Impacts would be less than significant.

New Project lighting has the potential to create light pollution in the vicinity of the proposed Project site. Light pollution is a potential impact from the operation of any light source at night. Proper light shields, design, and landscaping are commonly used to reduce light pollution generated by blocking the conveyance of lights upwards. The result is that lights are not visible from above and do not add ambient light to the nighttime sky.

The proposed uses of the Project will require that portions be accessible 24 hours a day. Therefore, nighttime lighting is necessary to provide and maintain a safe, secure, and attractive environment. Ideally, visual harmony can be achieved by the types of lighting that can provide the features of safety, security, and attractiveness, without serving as a nuisance to the surrounding areas. The type of light fixture chosen to be incorporated into the design will ultimately determine the extent to which the light will spill over onto surrounding areas. Light fixtures that are down casting and low mounted to reduce light trespass onto adjacent land uses are a common design feature to mitigate light trespass.

Impacts resulting from lighting would be minimized through compliance with all Design and Development Guidelines, the City of Tulare Zoning Ordinance, and the goals, policies, and

implementation measures of the General Plan. In this case, the Project site will be illuminated during nighttime hours by a combination of pole- and building-mounted fixtures. Pole-mounted lighting fixtures will be located throughout the site in order to achieve an acceptable level of illumination for safety and movement of pedestrians and vehicles. All proposed fixtures will be energy efficient LED non-glare, directional cutoff fixtures, intended to allow for dark-sky conditions and zero foot-candle light spillage across the property lines.

CONCLUSION

Light production will occur from outside of buildings and on signage which will be visible from the highway. This impact is considered potentially significant**.** The following mitigation measures are required to address Project impacts.

MITIGATION MEASURE(S)

MM AES-1: A lighting plan shall be prepared and submitted to the City of Tulare Community Development Department for approval prior to the issuance of building permits. The lighting plan shall adhere to the City of Tulare Design and Development Guidelines and design review requirements, as applicable, regarding the appropriate use of building materials, lighting, and signage to prevent light and glare from adversely affecting motorists and adjacent land uses.

MM AES-2: Decorative up-lighting used to illuminate trees, walls, waterfalls, fountains, and other objects shall be ground-mounted and directed upwards, away from the viewer to prevent glare.

MM AES-3: Night lighting shall be limited to that necessary for security, safety, and identification and shall also be screened from adjacent residential areas and not be directed beyond the boundaries of the parcel on which the buildings are located. Outdoor security lighting at businesses shall be controlled by timers.

MM AES-4: All lighting in the proposed Project area shall be shielded, directed downward and away from adjoining properties and rights-of-way. Light shields shall be installed and maintained consistent with manufacturer's specifications and shall reduce the spillage of light onto adjacent properties to less than a one-foot standard, as measured at the adjacent property line.

MM AES-5: Lighting fixtures shall be designed to produce the minimum amount of light necessary for safety purposes. All parking lot pole lights and street lights shall be fully hooded and shielded to prevent light spillage and glare.

EFFECTIVENESS OF MITIGATION

With the implementation of the above mitigation measures, the potentially significant impact will be reduced to *a less-than-significant level*.

3.2 - Agricultural and Forestry Resources

This section provides an analysis of the potential agricultural and forestry resources impacts that may be caused by implementation of the proposed Project. Potential impacts may include converting prime farm or forestry lands into another type of land use or causing a conflict with an existing Williamson Act contract. Analysis of the Project site is based on available data, as well as the City of Tulare General Plan EIR (City of Tulare, 2013).

3.2.1 - ENVIRONMENTAL SETTING

Regional Agricultural

Agriculture plays a significant role in the economy of Tulare County and the City of Tulare. According to the County's 2017 Crop Report, Tulare County saw a peak of $8.08 billion in crop sales in 2014, and a decrease to $6.37 billion in 2016 largely due to drought and decrease in milk prices. In 2017, Tulare County's total gross production value was $7.04 billion, representing an increase of approximately $670 million or 10.5 percent above 2016's value. Tulare County has 53 crops worth more than $1 million each in farm gate gross value. Table 3.2-1 displays the 10 leading crops in Tulare County in 2017.

Table 3.2-1
10 Leading Crops - Tulare County 2017

Commodity	2017 Rank	2017 Dollar Value	2016 Rank
Milk	1	$1,776,855,000	1
Grapes	2	$904,758,000	4
Oranges- Navels & Valencias	3	$770,955,000	2
Cattle & Calves	4	$637,056,000	3
Tangerines Fresh	5	$462,840,000	5
Pistachio Nuts	6	$342,846,000	6
Almond Meats & Hulls	7	$328,632,000	7
Peach Cling & Freestone	8	$269,158,000	12
Lemons - Fresh	9	$171,360,000	10
Corn – Grain & Silage	10	$164,545,000	8

Source: Tulare County Agricultural Commissioner, 2017.

Important Farmlands

The Farmland Mapping and Monitoring Program (FMMP) is a farmland classification system that is administered by the California Department of Conservation (DOC). The FMMP classifies agricultural land according to its soil quality and irrigation status. Categories of "Important Farmland" for purposes of analysis under CEQA include Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. Each of these three categories of Important Farmland is defined more specifically below.

- **Prime Farmland:** The best quality agricultural land is called "Prime Farmland." Prime Farmland is land that has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high-crop yields when treated and managed according to current farming methods. To be classified as Prime Farmland, the land must have been used for production of irrigated crops sometime during the two cycles prior to the mapping date.

- **Farmland of Statewide Importance:** This farmland is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

- **Unique Farmland:** Unique Farmland is farmland of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

Other categories of land under the FMMP that are not considered "Important Farmland" for purposes of CEQA include Farmland of Local Importance, Grazing Land, Urban and Built-up Land, and Vacant Disturbed Land. The proposed Project property has been designated FMMP as "Prime Farmland."

According to the City of Tulare EIR, there are approximately 6,636 acres of agricultural land within the Urban Development Boundary (UDB) but outside the City limits. By contrast, within the City limits there are approximately 3,260 acres of agricultural lands.

3.2.2 - REGULATORY SETTING

Federal

FARMLAND PROTECTION ACT

The Farmland Protection Policy Act (FPPA) was passed into federal law as part of the Agriculture and Food Act of 1981 (Public Law 97-98). The FPPA was passed in response to the National Agricultural Land Study of 1980-1981 which found that millions of acres of farmland were being converted in the United States each year and a related report which found that much of this conversion was the result of programs funded by the federal government. The intent of the FPPA is to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to non-agricultural uses. It assures that, to the extent possible, federal programs are administered to be compatible with State and local units of government and private programs and policies to protect farmland.

State

LAND CONSERVATION ACT

Williamson Act Contracts/Farmland Security Zone Act

The Land Conservation Act (LCA) (also known as the Williamson Act) is a California State statute administered by local governments. Local governments are not mandated to participate, and those that do have some latitude to tailor the program to suit local goals and objectives. Of California's 58 counties, 52 have executed contracts under the LCA Program. Under the Williamson Act private landowners voluntarily restrict their land to agricultural and compatible open-space uses under minimum 10-year rolling term contracts with local governments. In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use, rather than potential market value.

A Farmland Security Zone (FSZ) contract is a contract between a private landowner and a county that enforceably restricts land to agricultural or open space uses. The minimum initial term is 20 years. Like a Williamson Act contract, FSZ contracts renew annually unless either party files a "notice of non-renewal."

Neither the proposed Project site nor lands within the Project vicinity are under Williamson Act or FSZ contracts.

PUBLIC RESOURCES CODE SECTION 21060.1

Public Resource Code (PRC), Section 21060.1, defines agricultural land for the purposes of assessing environmental impacts using the FMMP. The FMMP was established in 1982 to assess the location, quality, and quantity of agricultural lands and the conversion of these lands. The FMMP provides analysis of agricultural land use and land use changes throughout California.

PUBLIC RESOURCES CODE/GOVERNMENT CODE

The California PRC and Government Code defines Forestland, Timberland and Timberland Production zones as follows:

Forestland (PRC, Section 12220, subdivision (g)): Land that can support 10-percent native tree cover of any species, including: hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.

Timberland (PRC, Section 4526): Land, other than land owned by the federal government and land designated by the Board as experimental forestland, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the Board on a District basis after consultation with the District committees and others.

Timberland Production Zone (CGS 51104, subdivision (g)): Timberland Production Zone (TPZ) are areas that have been zoned and are devoted to uses for growing and harvesting timber, or for growing and harvesting timber and compatible uses.

Local

CITY OF TULARE GENERAL PLAN

Agricultural resources are protected through policies that are mandated in the City of Tulare General Plan Conservation and Open Space Element. The City of Tulare General Plan sets forth the following goals and policies relevant to agricultural resources and to the proposed development Project:

Conservation and Open Space Element – Agricultural Resources

GOAL

COS-3 To promote the productivity of agricultural lands surrounding Tulare and the continued viability of Tulare County agriculture.

POLICIES

COS-P3.1 Protect Interim Agricultural Activity. The City shall protect the viability of existing interim agricultural activity in the UDB to the extent possible.

COS-P3.2 Agricultural Buffers. The City shall require that agricultural land uses designated for long-term protection (in a Williamson Act contract or under a conservation easement located outside the City's UDB) shall be buffered from urban land uses through the use of techniques including, but not limited to, spatial separations (e.g. greenbelts, open space setbacks, etc.), transitions in density, soundwalls, fencing, and/or berming.

COS-P3.3 Agricultural Disclosures. The City shall require that developers of residential projects, which are within general proximity of agricultural operations in the City, to provide notification to new homeowners within their deeds of the City's Right to Farm Ordinance.

COS-P3.4 Discourage Leapfrog Development. The City shall discourage leapfrog development (defined as urban development more than 0.5 mile from existing urban development) and development of peninsulas extending into agricultural lands to avoid adverse effects on agricultural operations and contribute to premature conversion.

COS-P3.6 Agricultural Business. The City shall continue to maintain and encourage agricultural-related businesses and industries in the City, especially those engaged in either low-emitting agricultural practices or agricultural energy production.

COS-P3.7 Supportive Agricultural Services. The City shall continue to encourage the development of business and services necessary to support agriculture.

COS-P3.9 Williamson Act contracts. The City shall encourage the use of Williamson Act contracts on parcels located outside the UDB.

COS-P3.10 Williamson Act contracts near City Limits. The City shall protest the formation of new Williamson Act or Super Williamson Act contracts within the UDB.

COS-P3.11 Williamson Act Non-renewal in UDB. The City shall support non-renewal or cancellation processes for Williamson Act designated lands within the City of Tulare UDB.

COS-P3.12 Mitigation for Agricultural Land Conversion. The City shall create and adopt a mitigation program to address the conversion of Prime Farmland and Farmland of Statewide Importance within the UDB and outside the City limits to non-agricultural uses. This mitigation program shall:

- Require a 1:1 ratio of agricultural land preserved for every acre of land converted.
- Require land to be preserved be equivalent to the land converted, e.g. Prime Farmland, and further require that the land to be preserved has adequate existing water supply to support agricultural use, is designated and zoned for agriculture, is located outside of a city UDB, and is within the southern San Joaquin Valley.
- Require mitigation prior to or at time of impact.
- Allow mitigation to be provided either by purchase of agricultural easements or by payment of agricultural mitigation fees, but state that purchase of conservation easements is the preferred form of mitigation. Both purchase of easements and payment of mitigation fees should cover not only the cost of an agricultural easement, but additional costs of transactional fees and administering, monitoring, and enforcing the easement.
- Require easements to be held by and/or mitigation fees to be transferred to a qualifying entity, such as a local land trust with demonstrated experience administering, monitoring and enforcing agricultural easements.
- Require the qualifying entity to submit annual status and monitoring reports to the City and to Tulare County.
- Allow stacking of conservation and agricultural easements if habitat needs of species on conservation easement are compatible with agricultural activities/use on agricultural easement.
- Allow exemptions for conversion of land to agricultural tourism uses, agricultural processing uses, agricultural buffers, public facilities, and roadways.

COS-P3.13 Farmland Trust and Funding Sources. The City shall encourage the trust or other qualifying entity to pursue a variety of funding sources (grants, donations, taxes, or other funds) to fund further implementation of mitigation for agricultural land conversion.

Zoning Ordinance

Chapter 10.160: Farming, also known as Tulare's "Right to Farm" Title, is an ordinance intended to reduce conflicts between urbanization in the City of Tulare and adjacent agricultural operations. The objectives of the "Right to Farm" Title is to protect the economic viability of agricultural operations that surround and are located in the City of Tulare; reduce conflicts between urban and agricultural uses; and notify persons about the inherent nature and potential problems associated with living near or owning land adjacent to farming operations.

Upon the division of any land by parcel map or subdivision map, where the subject land is adjacent to agricultural operations, a disclosure statement, as prescribed by the Department, shall be recorded at the time of recording the map and shall become a permanent disclosure statement on the deed to the owner or prospective owner stating that the subject property is adjacent to farming operations and, if operated consistent with this Title, the farming operations have the right to continue.

The disclosure statement shall read as follows: "If the property in which you are taking an interest is located adjacent to agricultural lands or operations, or is included within an area zoned for agricultural purposes, you may be subject to inconveniences or discomfort arising from such operations including, but not limited to: noise, odors, fumes, dust, smoke, insects, operations of machinery (including aircraft) during any 24-hour period, storage and disposal of manure, and the application (by spraying or otherwise) of chemical fertilizers, soil amendments, herbicides and pesticides. One or more of the inconveniences described herein may occur as a result of any such agricultural operation which is in conformance with existing laws and regulations and accepted customs and standards. If you live adjacent to an agricultural operation, you should be prepared to accept such inconveniences and discomfort as a normal and necessary aspect of living in a city with a strong rural character and an active agricultural sector in the region."

3.2.3 - IMPACT EVALUATION CRITERIA

Consistent with *Appendix G* of the *CEQA Guidelines*, the proposed Project is considered to have a significant impact on the environment if it will:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract;

c) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code, Section 12220(g)), timberland (as defined by Public Resources Code, Section 4526, or timberland zoned Timberland Protection (as defined by Government Code, Section 51104(g));

d) Result in the loss of forestland or conversion of forestland to non-forest use; or

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forestland to non-forest use.

The Lead Agency determined in the Notice of Preparation (NOP)/Initial Study (IS) (see Appendix A) that the following environmental issue areas would result in no impact or a less-than-significant impact and therefore were scoped out of requiring further review in this Draft EIR. Please refer to Appendix A of this Draft EIR for a copy of the NOP/IS and additional information regarding these issue areas.

c) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code, Section 12220(g)), timberland (as defined by Public Resources Code, Section 4526), or timberland zoned Timberland Production (as defined by Government Code, Section 51104(g)); and

d) Result in the loss of forestland or conversion of forestland to non-forest use.

3.2.4 - Impacts and Mitigation Measures

Impact #3.2-a: Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The proposed Project site is designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the FMMP. Prime Farmland is described as having "the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping."

To qualify as "Prime Farmland" according to Section 657.5 of Title 7 of the Code of Federal Regulations (CFR), the farmland must have a developed irrigation water supply that is dependable (a dependable water supply is one in which enough water is available for irrigation in eight out of 10 years for the crops commonly grown) and of adequate quality.

The loss of 120 acres of farmland is considered significant, even with the implementation of Mitigation Measure MM AFR-1, below. Implementation of the proposed Project would result in the loss of land that has been designated for agricultural use. Mitigation Measure MM AFR-1 would require the Project proponent to mitigate the loss of agricultural land at a ratio of

1:1. Even with implementation of this mitigation measure, it has been determined that the loss of 120 acres of farmland is a significant and unavoidable impact because the land to be put into a farmland easement would be existing farmland and not new farmland. Although the mitigation preserves farmland that may otherwise be converted to non-agricultural use in the future, it does not provide additional farmland to replace the original 120 acres lost as a result of the Project. Therefore, after mitigation, it is concluded that the Project would convert Prime Farmland to a non-agricultural use, which is considered a significant and unavoidable impact.

CONCLUSION

The proposed Project would convert 120 acres of Prime Farmland to non-agricultural use, and therefore impacts are potentially significant and unavoidable.

MITIGATION MEASURE(S)

MM AFR-1: Prior to issuance of a grading or building permit, whichever occurs first, the Project proponent shall provide written evidence of completion of one or more of the following measures, consistent with Tulare General Plan Policy COS-P3.12 to mitigate the loss of agricultural land at a ratio of 1:1 for net acreage before conversion. (The net acreage calculation shall exclude existing roads and areas already developed with structures, and a site plan shall be submitted to substantiate the net acreage calculation, along with written evidence of compliance.)

- Funding and/or purchasing agricultural conservation easements (to be managed and maintained by an appropriate entity).
- Purchasing credits from an established agricultural farmland mitigation bank.
- Contributing agricultural land or equivalent funding to an organization that provides for the preservation of farmland in California.
- Participating in any agricultural land mitigation program adopted by Tulare County that provides equal or more effective mitigation than the measures listed above.

Mitigation land shall meet the definition of Prime Farmland and be of similar agricultural quality or higher, as established by the DOC. Completion of the selected measure or, with the City of Tulare Community Development Department Director's approval, a combination of selected mitigation measures can occur on qualifying land within the southern San Joaquin Valley (Kings, Tulare, or Kern County) that is located outside of a city's UDB.

EFFECTIVENESS OF MITIGATION

Implementation of the above mitigation measure would not replace the original 120 acres lost as a result of the Project, therefore despite the above mitigation, the Project would still result in a ***significant and unavoidable*** impact.

Impact #3.2-b: Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The Project site is not subject to a Williamson Act land use contract, and it is designated by the City of Tulare General Plan as Regional Commercial within the City's UDB, and by the County of Tulare Zoning Ordinance as Exclusive Agriculture (AE-20). The site will be pre-zoned to be consistent with the City General Plan designation. With approval of the proposed zoning uses under the proposed Project, therefore, will be consistent with the zoning and no conflict between will occur.

CONCLUSION

Implementation of the proposed Project will not conflict with either a Williamson Act contract or agricultural zoning; therefore, a less-than-significant impact has been identified.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.2-e: Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use?

The proposed Project site is close to existing non-agricultural uses and has already been designated by the City of Tulare as Regional Commercial. Additionally, the Project is within the City of Tulare's UDB, which is an area that is considered to be the next logical area in which urban development may occur and expand.

The loss of 120 acres of farmland is considered significant, even with the implementation of Mitigation Measure MM AFR-1, as addressed above by Impact #3.2-a.

CONCLUSION

The proposed Project would convert 120 acres of Prime Farmland to non-agricultural use, and therefore impacts would be considered significant and unavoidable.

MITIGATION MEASURE(S)

Implementation of Mitigation Measure MM AFR-1.

EFFECTIVENESS OF MITIGATION

Implementation of the above mitigation measure would not replace the original 120 acres lost as a result of the Project, therefore despite the above mitigation, the Project would still result in a ***significant and unavoidable*** impact.

3.3 - Air Quality

This section provides an analysis of the potential air quality impacts that may be caused by implementation of the proposed Project. Potential impacts may include exceeding local air district thresholds for criteria air pollutants and/or affecting sensitive receptors with substantial amounts of pollutants or odors. This section is based on an Air Quality Impact Analysis prepared for this Project by Insight Environmental/Trinity Consultants in November 2018 (Appendix B).

3.3.1 - ENVIRONMENTAL SETTING

The City of Tulare is located in the southeastern portion of the San Joaquin Valley Air Basin (SJVAB). The SJVAB consists of eight counties: Fresno, Kern (western and central), Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare. Air pollution from significant activities in the SJVAB includes a variety of industrial-based sources as well as on- and off-road mobile sources. These sources, coupled with geographical and meteorological conditions unique to the area, stimulate the formation of unhealthy air. California's air basins are illustrated in Figure 3.3-1.

Topography and Climate

The SJVAB is approximately 250 miles long and an average of 35 miles wide. The SJVAB is bordered by the Sierra Nevada in the east, the Coast Ranges in the west, and the Tehachapi Mountains in the south. There is a slight downward elevation gradient from Bakersfield in the southeast end (elevation 408 feet) to sea level at the northwest end where the Valley opens to the San Francisco Bay at the Carquinez Straits. At its northern end is the Sacramento Valley, which comprises the northern half of California's Central Valley. The bowl-shaped topography inhibits movement of pollutants out of the Valley (Appendix B).

The SJVAB is in a Mediterranean climate zone and is influenced by a subtropical high-pressure cell most of the year. Mediterranean climates are characterized by sparse rainfall, which occurs mainly in winter. Summers are hot and dry. Summertime maximum temperatures often exceed 100°F in the Valley. The subtropical high-pressure cell is strongest during spring, summer and fall and produces subsiding air, which can result in temperature inversions in the Valley. A temperature inversion can act like a lid, inhibiting vertical mixing of the air mass at the surface. Any emissions of pollutants can be trapped below the inversion. Most of the surrounding mountains are above the normal height of summer inversions (1,500 to 3,000 feet). Wintertime high-pressure events can often last many weeks with surface temperatures often lowering into the 30°F. During these events, fog can be present, and inversions are extremely strong. These wintertime inversions can inhibit vertical mixing of pollutants to a few hundred feet (Appendix B).

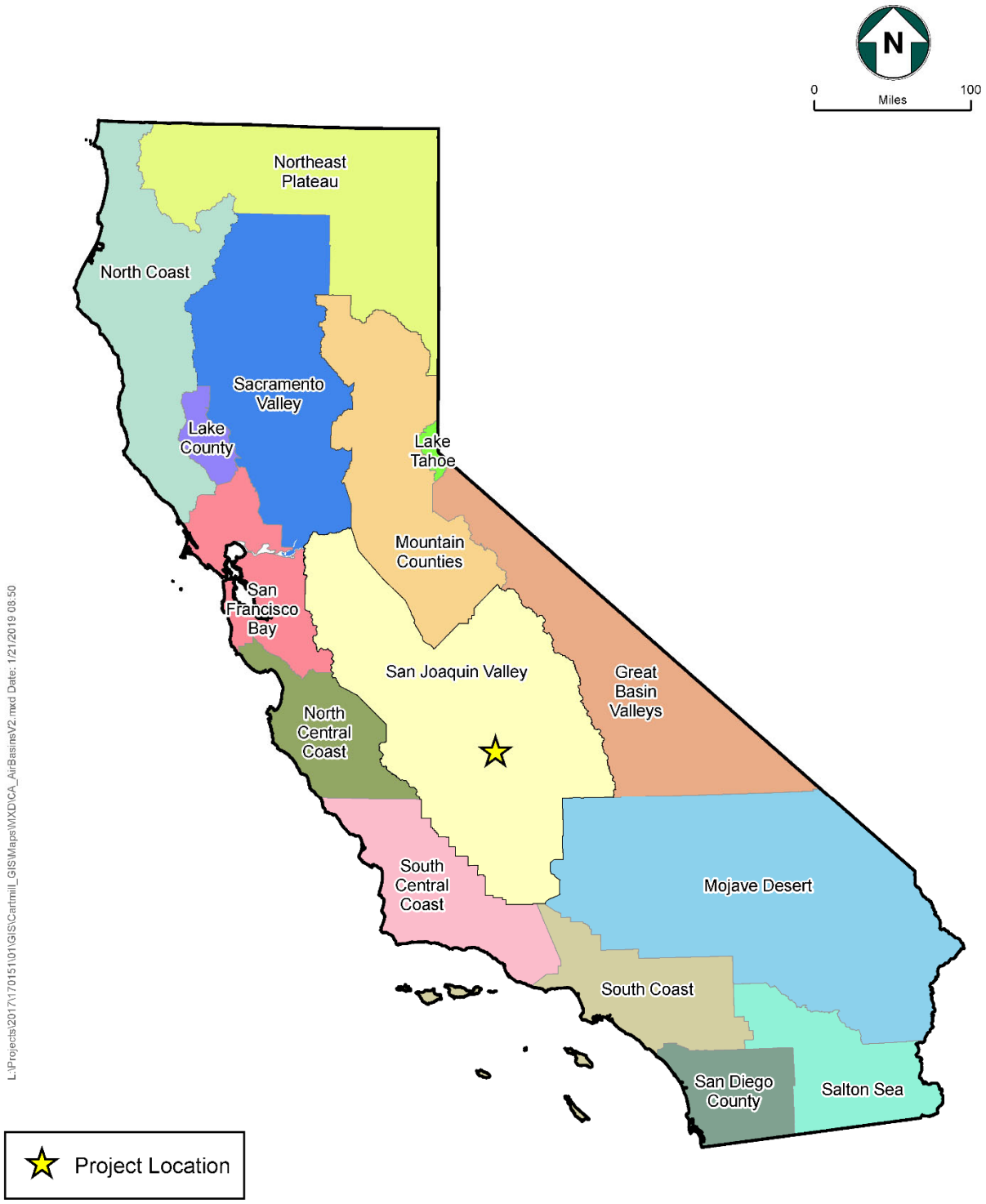


Figure 3.3-1
California Air Basins

Annual precipitation in the SJVAB averages around 10 inches, with approximately 90 percent occurring between November and April. Most of the rainfall occurs in northern and eastern parts of the SJVAB. The weather pattern is controlled by the "Pacific High" which consists of a semi-permanent subtropical high-pressure belt (Appendix B).

Inversions and Air Flow

Wind speed and direction play an important role in dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing and by transporting the pollution to other locations. Especially in summer, winds in the Valley most frequently blow from the northwesterly direction. The region's topographic features restrict air movement and channel the air mass towards the southeastern end of the Valley. Marine air can flow into the basin from the San Joaquin River Delta and over Altamont Pass and Pacheco Pass, where it can flow along the axis of the Valley, over the Tehachapi Pass, into the Southeast Desert Air Basin. The Coastal Range is a barrier to air movement to the west and the high Sierra Nevada is a significant barrier to the east (the highest peaks in the southern Sierra Nevada reach almost halfway through the Earth's atmosphere). Many days in the winter are marked by stagnation events where winds are very weak. Transport of pollutants during winter can be very limited. A secondary but significant summer wind pattern is from the southeasterly direction and can be associated with nighttime drainage winds, pre-frontal conditions and summer monsoons.

Two significant diurnal wind cycles that occur frequently in the Valley are the sea breeze and mountain-valley upslope and drainage flows. The sea breeze can accentuate the northwest wind flow, especially on summer afternoons. Nighttime drainage flows can accentuate the southeast movement of air down the Valley. In the mountains during periods of weak synoptic scale winds, winds tend to be upslope during the day and a downslope at night. Nighttime and drainage flows are especially pronounced during the winter when flow from the easterly direction is enhanced by nighttime cooling in the Sierra Nevada. Eddies can form in the Valley wind flow and can recirculate a polluted air mass for an extended period. Such an eddy occurs in the Fresno area during both winter and summer (Appendix B).

Solar radiation and temperature are particularly important in the chemistry of ozone (O_3) formation. The SJVAB averages over 260 sunny days per year. Photochemical air pollution (primarily O_3) is produced by the atmospheric reaction of organic substances, such as volatile organic compounds (VOCs) and nitrogen dioxide (NO_2), under the influence of sunlight. O_3 concentrations are very dependent on the amount of solar radiation, especially during late spring, summer and early fall. O_3 levels typically peak in the afternoon. After the sun goes down, the chemical reaction between nitrous oxide and O_3 begins to dominate. This reaction tends to scavenge the O_3 in the metropolitan areas through the early morning hours, resulting in the lowest O_3 levels, possibly reaching zero at sunrise in areas with high nitrogen oxides (NOx) emissions. At sunrise, NOx tends to peak, partly due to low levels of O_3 at this time and also due to the morning commuter vehicle emissions of NOx.

Generally, the higher the temperature, the more O_3 formed, since reaction rates increase with temperature. However, extremely hot temperatures can "lift" or "break" the inversion layer.

Typically, if the inversion layer doesn't lift to allow the buildup of contaminants to be dispersed, the O_3 levels will peak in the late afternoon. If the inversion layer breaks and the resultant afternoon winds occur, the O_3 will peak in the early afternoon and decrease in the late afternoon as the contaminants are dispersed or transported out of the SJVAB. O_3 levels are low during winter periods when there is much less sunlight to drive the photochemical reaction (Appendix B).

The vertical dispersion of air pollutants in the San Joaquin Valley can be limited by persistent temperature inversions. Air temperature in the lowest layer of the atmosphere typically decreases with altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. The height of the base of the inversion is known as the "mixing height." This is the level to which pollutants can mix vertically. Mixing of air is minimized above and below the inversion base. The inversion base represents an abrupt density change where little air movement occurs.

Inversion layers are significant in determining pollutant concentrations. Concentration levels can be related to the amount of mixing space below the inversion. Temperature inversions that occur on the summer days are usually encountered 2,000 to 2,500 feet above the Valley floor. In winter months, overnight inversions occur 500 to 1,500 feet above the Valley floor (Appendix B).

Precipitation, Humidity, and Fog

Precipitation and fog may reduce or limit some pollutant concentrations. O_3 needs sunlight for its formation, and clouds and fog can block the required solar radiation. Wet fogs can cleanse the air during winter as moisture collects on particles and deposits them on the ground. Atmospheric moisture can also increase pollution levels. In fogs with less water content, the moisture acts to form secondary ammonium nitrate particulate matter (PM). This ammonium nitrate is part of the Valley's particulate matter 2.5 micrometers or less in diameter ($PM_{2.5}$) and particulate matter 10 micrometers or less in diameter (PM_{10}) problem. The winds and unstable air conditions experienced during the passage of winter storms result in periods of low-pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the SJVAB floor. This creates strong low-level temperature inversions and very stable air conditions, which can lead to Tule fog. Wintertime conditions favorable to fog formation are also conditions favorable to high concentrations of $PM_{2.5}$ and PM_{10} (Appendix B).

When air temperatures increase with elevation, inversion layers are created as "vertical mixing" occurs. This abnormal pattern prevents the upward flow of air and thereby traps pollutants near the ground surface. There are two types of inversion layers in the SJVAB identified as radiation inversions and subsidence inversions.

Radiation inversions (vertical mixing) occur when nocturnal cooling takes place near the surface of the ground and extends upward for several hundred feet. This type of inversion is usually associated with a still evening air and no clouds. According to the San Joaquin Valley Air Pollution Control District (SJVAPCD):

> During summer months, daytime heat from the sun lifts the inversion to heights anywhere from 2,000 to over 5,000 feet (even higher over mountain ranges due to heating of the slopes), which helps disperse pollutants and lowers their concentrations. However, these same summer daytime conditions also increase ozone production, which can neutralize or offset the effects of enhanced vertical dispersion. Studies have shown that radiation inversions tend to persist longer into daylight hours in the southern part of the SJVAB due to a lack of marine air intrusion and associated atmospheric mixing. On the worst dispersion days, the inversion may remain only a few hundred feet above the surface of the SJVAB (2013 Plan for the Revoked 1-Hour Ozone Standard).

Subsidence inversions (horizontal mixing) occur when air descends downward and warms due to compression. This type of inversion is quite persistent, since heat from the ground does not reach the inversion base to break it up. High-pressure ridges over the State are associated with subsidence inversions.

Inversions occur during all seasons but are more persistent in the winter months at 50 to 1,000 feet above the SJVAB floor. Inversion layers are responsible for O_3 formation and increase levels of carbon monoxide (CO) and PM_{10}. High O_3 events can be linked to air pollutant emissions build up in the atmosphere below the inversion. During these occasions, it is not uncommon for 1-hour O_3 precursors to exceed federal standards. "During many high O_3 level events, the SJVAB is likely experiencing a combination of radiation and subsidence inversions." PM concentrations grow rapidly where inversion layers occur and cause a regional buildup of secondary species including ammonium nitrate, and chemically aged organic carbon species which results in an increase of toxicity (SJVAPCD, 2004).

Air pollution is transported by the dominant airflows through the SJVAB. Figure 3.3-1 provides an illustration of the SJVAB which is identified in brown. When winds mix at high velocity, the transport of pollutants is great. Transport of pollutants is guided by both the wind's speed and direction (vertical or horizon mixing). According to the SJVAPCD:

> Wind speed and direction data indicate that during the summer the light and variable winds usually result from an influx of air from the Pacific Ocean through the Bay Area Delta Region, entering the north end of the Valley. The wind generally flows in a south-southeasterly direction through the Valley, through the Tehachapi Pass, and into the Southeast Desert Air Basin portion of Kern County (2013 Plan for the Revoked 1-hour Ozone Standard).

The result of these conditions is a relatively high concentration of air pollution in the Valley during inversion episodes. Inversions cause haziness, which in addition to moisture may include suspended dust, emissions from vehicles, particulates from wood stoves, and other pollutants.

Regional Air Quality

The Environmental Protection Agency (EPA) has designated the SJVAB in extreme non-attainment area under the federal 8-hour O_3 standard and in non-attainment for $PM_{2.5}$. The California Air Resources Board (CARB) has designated the SJVAB in severe non-attainment under the 1-hour O_3 designation, and in non-attainment for the State's 8-hour O_3, PM_{10}, and $PM_{2.5}$ standards. The SJVAB meets the federal and State standards or is unclassifiable for all other pollutants.

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT

The primary role of the SJVAPCD is to develop plans and implement control measures in the SJVAB to control air pollution. These controls primarily affect stationary sources such as industry and power plants. Rules and regulations have been developed by the SJVAPCD to control air pollution from a wide range of air pollution sources. The SJVAPCD also provides uniform procedures for assessing potential air quality impacts of proposed projects and for preparing the air quality section of environmental documents.

The EPA and CARB designate air basins where Ambient Air Quality Standards (AAQS) are exceeded as "non-attainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National non-attainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Table 3.3-4 lists the updated federal and State attainment standards for Table 3.3-1 shows the most recent attainment status of the SJVAB.

Local Air Quality

The EPA requires states that have areas that do not meet the National Ambient Air Quality Standards (NAAQS) to prepare and submit air quality plans (AQPs) showing how the NAAQS will be met. If the states cannot show how the NAAQS will be met, then the states must show progress toward meeting the NAAQS. These plans are referred to as the State Implementation Plans (SIPs). California's adopted 2007 State Strategy was submitted to the EPA as a revision to its SIPs in November 2007. In addition, CARB requires regions that do not meet California Ambient Air Quality Standards (CAAQS) for O_3 to submit Clean Air Plans (CAPs) that describe measures to attain the standard or show progress toward attainment. To ensure Clean Air Act (CAA) compliance, the SJVAPCD adopted Air Quality Attainment Plans (AQAP) for O_3 and PM_{10}. The SJVAPCD is required to submit a "Rate of Progress" report to CARB that demonstrates past and planned progress toward reaching attainment for all criteria air pollutant. The CAA requires air pollution districts with severe or extreme air quality problems to provide for a five-percent reduction in non-attainment emissions per year. The AQAP prepared for the San Joaquin Valley by the SJVAPCD complies with this requirement.

Table 3.3-1
SJVAB 2018 Attainment Status

Pollutant	NAAQS[a]	CAAQS[b]
O_3, 1-hour	No Federal Standard[f]	Non-attainment/Severe
O_3, 8-hour	Non-attainment/Extreme[e]	Non-attainment
PM_{10}	Attainment[c]	Non-attainment
$PM_{2.5}$	Non-attainment[d]	Non-attainment
CO	Attainment/Unclassified	Attainment/Unclassified
NO_2	Attainment/Unclassified	Attainment
SO_2	Attainment/Unclassified	Attainment
Pb (Particulate)	No Designation/Classification	Attainment
H_2S	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing particulates	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Source: Appendix B

a. See 40 CFR, Part 81
b. See CCR, Title 17, Sections 60200-60210
c. On September 25, 2008, the EPA redesignated the San Joaquin Valley to attainment for the PM_{10} NAAQS and approved the PM_{10} Maintenance Plan.
d. The Valley is designated non-attainment for the 1997 $PM_{2.5}$ NAAQS. The EPA designated the Valley as non-attainment for the 2006 $PM_{2.5}$ NAAQS on November 13, 2009 (effective December 14, 2009).
e. Though the Valley was initially classified as serious non-attainment for the 1997 8-hour O_3 standard, the EPA approved Valley reclassification to extreme non-attainment in the Federal Register on May 5, 2010 (effective June 4, 2010).
f. Effective June 15, 2005, the EPA revoked the federal 1-hour O_3 standard, including associated designations and classifications. The EPA had previously classified the SJVAB as extreme non-attainment for this standard. The EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour O_3 non-attainment areas continue to apply to the SJVAB.

1-HOUR OZONE PLAN

CARB submitted the 2004 Extreme Ozone Attainment Demonstration Plan (Ozone Plan) to the EPA on November 15, 2004. The Ozone Plan was amended by the SJVAPCD in 2008. Effective June 15, 2005, the EPA revoked the federal 1-hour O_3 AAQS, finding that the 8-hour O_3 standard was more health protective. Under federal anti-backsliding provisions, the SJVAPCD has implemented the 2004 Plan's control measures and emissions reductions strategies, and the Valley must still attain the revoked standard before it can rescind the CAA, Section 185, fees collected under Rule 3170 (Appendix B).

8-HOUR OZONE PLAN

The SJVAPCD's Governing Board adopted the 2007 Ozone Plan on April 30, 2007. This far-reaching plan, with innovative measures and a "dual path" strategy, assures expeditious attainment of the federal 8-hour O_3 standard as set by the EPA in 1997. The Ozone Plan projects that the Valley will achieve the 8-hour O_3 standard for all areas of the SJVAB no later than 2023. CARB approved the Ozone Plan on June 14, 2007. The EPA approved the 2007 Ozone Plan effective April 30, 2012. As of this writing, it is expected that the Ozone Plan addressing the EPA's 2008 revised 8-hour O_3 standard will be due to the EPA in 2015.

PM_{10} PLAN

Based on PM_{10} measurements from 2003-2006, the EPA found that the SJVAB has reached federal PM_{10} standards. On September 21, 2007, the SJVAPCD's Governing Board adopted the 2007 PM_{10} Maintenance Plan and Request for Redesignation. This plan demonstrates that the Valley will continue to meet the PM_{10} standard. The EPA approved the document and on September 25, 2008, the SJVAB was redesignated to attainment.

$PM_{2.5}$ PLAN

The SJVAPCD adopted the 2012 $PM_{2.5}$ Plan on December 20, 2012 to assure that the Valley will attain the 2006 $PM_{2.5}$ NAAQS. The plan uses control measures to reduce NOx, which also leads to fine particulate formation in the atmosphere. The plan incorporates measures to reduce direct emissions of $PM_{2.5}$, including a strengthening of regulations for various SJVAB industries and the general public through new rules and amendments. The plan estimates that the SJVAB will reach the $PM_{2.5}$ standard by 2019. All of the above-referenced plans include measures (i.e. federal, State and local) that would be implemented through rule making or program funding to reduce air pollutant emissions in the SJVAB. Transportation Control Measures (TCMs) are part of these plans.

Tulare County Emissions Inventory

Table 3.3-2 summarizes the background concentrations for O_3, PM_{10}, $PM_{2.5}$, CO, NO_2, sulfur dioxide (SO_2), and lead (Pb) as of June 2015. Information is provided for the Visalia – North Church Street and Fresno – Garland monitoring stations for 2015 through 2017. As shown in the table, the most severe air quality problem in the San Joaquin Valley is high concentrations of O_3.

The types of air pollutant emission sources are commonly characterized as either point or area sources. A point source is a single, identifiable source of air pollutant emissions (for example, the emissions from a stack). An area source is a source of diffuse air pollutant emissions (for example, the emissions from use of landscape equipment). Sources may be further characterized as either stationary or mobile. Short-term sources (for example, construction emissions) constitute intermittent emissions. Long-term sources (stationary sources and development projects) constitute continuous emissions (SJVAPCD, 2012). Source categories consist of several broad groups:

- **Point Sources (Stationary Sources).** Facilities that have valid SJVAPCD permits for specific emissions units are called point sources. Refineries, gas stations, dry cleaners, and industrial plants are examples of point sources in the SJVAB.
- **Area Sources.** Area source emissions are from sources that are not permitted by the SJVAPCD or are individually so small that they may not be included in the SJVAPCD's emissions survey system. These small sources may not individually emit significant amounts of pollutants, but when aggregated can make an appreciable contribution to the emission inventory. Examples of these area sources are residential water heating and use of paints, varnishes, and consumer products.

Table 3.3-2
Existing Air Quality Monitoring Data in Project Area

Pollutant and Monitoring Station Location	Maximum Concentration			Days Exceeding Standard		
	2015	2016	2017	2015	2016	2017
O_3 – 1-hour CAAQS (0.09 ppm)						
Visalia – N. Church Street	0.110	0.098	0.109	9	1	9
O_3 – 8-hour CAAQS (0.07 ppm)						
Visalia – N. Church Street	0.091	0.083	0.092	52	19	65
O_3 – 8-hour NAAQS (0.070 ppm)						
Visalia – N. Church Street	0.090	0.083	0.091	49	18	61
PM_{10} – 24-hour CAAQS (50 µg/m^3)						
Visalia – N. Church Street	140.3	132.5	145.7	*	*	135.9
PM_{10} – 24-hour NAAQS (150 µg/m^3)						
Visalia – N. Church Street	28.9	43.3	47.4	*	0	0
$PM_{2.5}$ - 24-hour NAAQS (35 µg/m^3)						
Visalia – N. Church Street	86.3	48.0	86.1	17.9	21.3	26.7
CO - 8-Hour CAAQS & NAAQS (9.0 ppm)						
No data collected	*	*	*	*	*	*
NO_2 - 1-Hour CAAQS (0.18 ppm)						
Visalia – N. Church Street	0.062	0.057	0.058	0	0	0
NO_2 - 1-Hour NAAQS (0.10 ppm)						
Visalia – N. Church Street	0.062	0.058	0.058	0	0	0
SO_2 – 24-hour Concentration - CAAQS (0.04 ppm) & NAAQS (0.14 ppm)						
No data collected	*	*	*	*	*	*
Pb - Maximum 30-Day Concentration CAAQS (1500 mg/m^3)						
Fresno - Garland	8.3	12.1	8.4	0	0	0

Source: CARB, 2018.

- **Mobile Sources.** Mobile sources consist of motor vehicles and other portable sources. Mobile sources are classified as being on-road or off-road. On-road motor vehicles consist of passenger cars, trucks, buses and motorcycles. Off-road mobile sources generally consist of vehicles in which the primary function is not transportation. Examples of off-road vehicles include construction and farm equipment. Other mobile

sources include boats and ships, trains, and aircraft (which are not part of the City of Tulare's inventory).

- **Natural Sources.** Natural Sources are non-anthropogenic, naturally occurring emissions and are not typically included in a project-level emissions inventory for CEQA. Natural sources include biological and geological sources, wildfires, windblown dust, and biogenic emissions from plants and trees.

SENSITIVE RECEPTORS

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. "Sensitive receptors" are defined as facilities where sensitive population groups, such as children, the elderly, the acutely ill and the chronically ill, are likely to be located. These land uses include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

Table 3.3-3
Tulare County 2020 Estimated Annual Average Emissions

	Criteria Air Pollutant Emissions (Tons / Year)					
Scenario	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Stationary Sources	6.0	2.0	2.9	0.3	1.5	0.6
Area Sources	33.1	1.0	9.8	0.0	31.9	5.4
Mobile Sources	5.9	17.8	42.5	0.1	1.3	0.9
Total	**45.0**	**20.8**	**55.2**	**0.4**	**34.7**	**6.9**

Air quality monitoring stations are maintained throughout the SJVAB. The Visalia – North Church Street site is operated by the SJVAPCD and monitors O_3, $PM_{2.5}$, PM_{10}, NOx, and meteorology.

Local Sources of Air Pollutants

Local sources of air pollution include mobile source emissions (traffic) from the adjacent roadways (Arnold Way and Walden Drive) and from SR 99, located immediately west of the Project site. Additional sources of air pollution include area sources from farming activities on the surrounding lands. Farming activities generate fugitive dust (PM_{10} and $PM_{2.5}$) from tilling and windblown dust, and exhaust emissions (ROG, NOx, and CO) from agricultural equipment.

SENSITIVE RECEPTORS

Certain populations, such as children, the elderly, and persons with pre-existing respiratory or cardiovascular illness, are particularly sensitive to the health impacts of air pollution. For

purposes of CEQA, the SJVAPCD considers a sensitive receptor to be a location that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools. Office workers may also be considered sensitive receptors, based on their proximity to sources of toxic air contaminants (TACs) and that workers may be exposed over the duration of their employment (SJVAPCD, 2012). Single-family homes near the Project site are located to the north, west and south.

POLLUTANTS OF CONCERN

For reasons described previously, the criteria pollutants of greatest concern for the Project area are O_3, PM_{10}, and $PM_{2.5}$. Although the SJVAB is in attainment of the federal and State CO standards, CO is a pollutant of concern, due to the potential for localized "hotspots" to occur. Other pollutants of concern are TACs and asbestos (SJVAPCD, 2011). The following provides a summary of the pollutants of concern for the Project area.

OZONE

Ozone is not emitted directly into the air but is formed by a photochemical reaction in the atmosphere. O_3 precursors, which include reactive organic gases (ROGs) and NOx (O_3 precursors are discussed below), react in the atmosphere in the presence of sunlight to form O_3. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, O_3 is primarily a summer air pollution problem. Often, the effects of emitted ROG and NOx are felt a distance downwind of the emission sources. O_3 is subsequently considered a regional pollutant. Ground-level O_3 is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials.

O_3 can irritate lung airways and cause inflammation much like a sunburn. Other symptoms include wheezing, coughing, pain when taking a deep breath, and breathing difficulties during exercise or outdoor activities. People with respiratory problems are most vulnerable, but even healthy people who are active outdoors can be affected when O_3 levels are high. Chronic O_3 exposure can induce morphological (tissue) changes throughout the respiratory tract, particularly at the junction of the conducting airways and the gas exchange zone in the deep lung. Anyone who spends time outdoors in the summer is at risk, particularly children and other people who are more active outdoors. Even at very low levels, ground-level O_3 triggers a variety of health problems, including aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis.

O_3 also damages vegetation and ecosystems. It leads to reduced agricultural crop and commercial forest yields; reduced growth and survivability of tree seedlings; and increased susceptibility to diseases, pests, and other stresses such as harsh weather. In the United States alone, O_3 is responsible for an estimated $500 million in reduced crop production each year. O_3 also damages the foliage of trees and other plants, affecting the landscape of cities, national parks and forests, and recreation areas. In addition, O_3 causes damage to buildings, rubber, and some plastics.

O_3 is a regional pollutant, as the reactions forming it take place over time, and it materializes downwind from the sources of the emissions. As a photochemical pollutant, O_3 is formed only during daylight hours under appropriate conditions, but it is destroyed throughout the day and night. Thus, O_3 concentrations vary, depending upon both the time of day and the location. Even in pristine areas, some ambient O_3 forms from natural emissions that are not controllable. This is termed background O_3 . The average background O_3 concentrations near sea level are in the range of 0.015 to 0.035 parts per million (ppm), with a maximum of about 0.04 ppm.

REACTIVE ORGANIC GASES

Reactive organic gases are defined as any compound of carbon, excluding CO, carbon dioxide (CO_2), carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participate in atmospheric photochemical reactions. ROG consist of non-methane hydrocarbons and oxygenated hydrocarbons. Hydrocarbons are organic compounds that contain only hydrogen and carbon atoms. It should be noted that there are no State or federal AAQS for ROG because they are not classified as criteria pollutants. They are regulated, however, because a reduction in ROG emissions reduces certain chemical reactions that contribute to the formulation of O_3. ROGs are also transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} levels and lower visibility.

Because ROGs are an O_3 precursor, the health effects associated with ROGs emissions are due to its role in O_3 formation and, as discussed above, not due to direct effects.

NITROGEN OXIDES

During combustion of fossil fuels, oxygen reacts with nitrogen to produce NOx. This occurs primarily in motor vehicle internal combustion engines, and fossil fuel-fired electric utility facilities and industrial boilers. The pollutant NOx is a concern because it is an O_3 precursor, which means that it helps form O_3. When NOx and ROG are released in the atmosphere, they can chemically react with one another in the presence of sunlight and heat to form O_3. NOx can also be a precursor to PM_{10} and $PM_{2.5}$.

One of the most important health effects associated with NOx emissions is related to its role in O_3 formation, as discussed above. Its role in the secondary formation of ammonium nitrate results in particulate health effects described in the next section. NO_2 is the largest and most important component of NOx. NO_2 acts mainly as an irritant affecting the mucosa of the eyes, nose, throat, and respiratory tract. Extremely high-dose exposure (as in a building fire) to NO_2 may result in pulmonary edema and diffuse lung injury. Continued exposure to high NO_2 levels can contribute to the development of acute or chronic bronchitis. Low level NO_2 exposure may cause increased bronchial reactivity in some asthmatics, decreased lung function in patients with chronic obstructive pulmonary disease and increased risk of respiratory infections, especially in young children.

PARTICULATE MATTER

Particulate matter is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small that they can only be detected using an electron microscope. The size of particles is directly linked to their potential for causing health problems. Small particles less than 10 micrometers (μm) in diameter pose the greatest problems, because they can get deep into lungs and the bloodstream. The EPA health standards have been established for two categories of PM:

- PM_{10} – "inhalable coarse particles" with diameters larger than 2.5 micrometers and smaller than 10 micrometers; and
- $PM_{2.5}$ – "fine particles," with diameters that are 2.5 micrometers and smaller. For reference, $PM_{2.5}$ is approximately 0.0333 the size of the average human hair.

Although the PM_{10} standard is intended to regulate "inhalable coarse particles" that range from 2.5 to 10 micrometers in diameter, PM_{10} measurements contain both fine and coarse particles. These particles come in many sizes and shapes and can be made up of hundreds of different chemicals. Some particles, known as primary particles, are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks, or fires. Others form in complicated reactions in the atmosphere from chemicals such as SO_2 and NOx that are emitted from power plants, industrial activity, and automobiles. These particles, known as secondary particles, make up most of the fine particle pollution in the United States.

Particle exposure can lead to a variety of health effects. For example, numerous studies link particle levels to increased hospital admissions and emergency room visits and even to death from heart or lung diseases. Both long- and short-term particle exposures have been linked to health problems. Long-term exposures, such as those experienced by people living for many years in areas with high-particle levels, have been associated with problems such as reduced lung function, the development of chronic bronchitis, and even premature death. Short-term exposures to particles (hours or days) can aggravate lung disease, causing asthma attacks and acute bronchitis, and may increase susceptibility to respiratory infections. In people with heart disease, short-term exposures have been linked to heart attacks and arrhythmias. Healthy children and adults have not been reported to suffer serious effects from short-term exposures, although they may experience temporary minor irritation when particle levels are elevated.

CARBON MONOXIDE

CO is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Other non-road engines and vehicles (such as construction equipment and boats) contribute about 22 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing),

residential wood burning, and natural sources such as forest fires. Woodstoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are sources of CO indoors.

Motor vehicles are the dominant source of CO emissions in most areas. CO is described as having only a local influence because it dissipates quickly. 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. Because CO is a product of incomplete combustion, motor vehicles exhibit increased CO emission rates at low air temperatures. High CO concentrations occur in areas of limited geographic size, sometimes referred to as hotspots. Since CO concentrations are strongly associated with motor vehicle emissions, high CO concentrations generally occur in the immediate vicinity of roadways with high traffic volumes and traffic congestion, active parking lots, and in automobile tunnels. Areas adjacent to heavily traveled and congested intersections are particularly susceptible to high CO concentrations.

CO is a public health concern because it combines readily with hemoglobin, reducing the amount of oxygen transported in the bloodstream. The health threat from relatively low levels of CO is most serious for those who suffer from such heart-related diseases as angina, clogged arteries, or congestive heart failure. For a person with heart disease, a single exposure to CO at low levels may cause chest pain and reduce that person's ability to exercise; repeated exposures may contribute to other cardiovascular effects. High levels of CO can affect even healthy people. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity, and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death.

Toxic Air Contaminants

TACs are defined as air pollutants which may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, their high toxicity or health risk may pose a threat to public health even at very low concentrations. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts are not expected to occur. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the State and federal governments have set AAQS.

DIESEL PARTICULATE MATTER

CARB identified the PM emissions from diesel-fueled engines as TACs in August 1998 under California's Toxic Air Contaminant Program. In California, diesel engine exhaust has been identified as a carcinogen. Most researchers believe that diesel exhaust particles contribute the majority of the risk.

Diesel particulate matter (DPM) is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute approximately 40 percent of the

statewide total, with an additional 57 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources, contributing about three percent of emissions, include shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations. Emissions from these sources are from diesel-fueled internal combustion engines. Stationary sources that report DPM emissions also include heavy construction (except highway) manufacturers of asphalt, paving materials and blocks, and electrical generation.

DPM is a subset of $PM_{2.5}$ – diesel are typically 2.5 microns and smaller. In a document published in 2002, the EPA noted that in 1998, DPM made up about six percent of the total $PM_{2.5}$ inventory nationwide. The complex particles and gases that make up diesel exhaust have the physical properties of organic compounds that account for 80 percent of the total PM mass consisting of hydrocarbons and their derivatives and polycyclic aromatic hydrocarbons and their derivatives. Fifteen polycyclic aromatic hydrocarbons are confirmed carcinogens, a number of which are found in diesel exhaust. The chemical composition and particle sizes of DPM vary among different engine types (heavy-duty, light-duty), engine operating conditions (idling, accelerating, decelerating), expected load, engine emission controls, fuel formulations (high/low sulfur fuel), and engine year.

Some short-term (acute) health effects of diesel exhaust exposure includes eye, nose, throat, and lung irritation, and exposure can cause coughs, headaches, light-headedness, and nausea. Diesel exhaust is a major source of ambient PM pollution in urban environments. In a 2002 report from the Office of Environmental Health Hazard Assessment titled "Health Effects of Diesel Exhaust Report," it was noted that numerous studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. The National Toxicology Program (NTP) asserted that more serious, long-term health effects of diesel exhaust have demonstrated an increased risk of lung cancer, although the increased risk cannot be clearly attributed to diesel exhaust exposure in its 2005 Report on Carcinogens, Eleventh Edition.

ASBESTOS

Asbestos is the name given to a number of naturally occurring fibrous silicate minerals that have been mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95 percent of all asbestos contained in buildings in the United States.

Project construction sometimes requires the demolition of existing buildings where construction occurs. Buildings often include materials containing asbestos. Asbestos is also found in a natural state, known as naturally occurring asbestos. Exposure and disturbance of rock and soil that naturally contain asbestos can result in the release of fibers to the air and consequent exposure to the public. Asbestos most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (serpentinite) and often

contains chrysotile asbestos. In addition, another form of asbestos, tremolite, can be found associated with ultramafic rock, particularly near faults. 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.

Exposure to asbestos is a health threat; 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).

The Department of Conservation, Division of Mines and Geology published a guide for generally identifying areas that are likely to contain naturally occurring asbestos (Department of Conservation, 2000). According to the California Division of Mines and Geology, rock formations that contain naturally occurring asbestos are known to be present in 44 of California's 58 counties, including Tulare County.

VALLEY FEVER

The following information was taken from the Centers for Disease Control (CDC) for coccidioidomycosis (Valley fever).

CDC defines Valley Fever as:

> Coccidioides is a fungus found in the soil of dry, low rainfall areas. It is endemic (native and common) in many areas of the Southwestern United States, Mexico and, Central and South America. Coccidioidomycosis, also known as Valley fever, is a common cause of pneumonia in endemic areas. At least 30% – 60% of people who live in an endemic region are exposed to the fungus at some point during their lives. In most people the infection will go away on its own, but for people who develop severe infections or chronic pneumonia, medical treatment is necessary. Certain groups of people are at higher risk of developing severe disease. It is difficult to avoid exposure to coccidioides, but people who are at higher risk should try to avoid breathing in large amounts of dust if they are in endemic areas.

CDC defines Valley fever symptoms as:

> Most people who are exposed to the fungus do not develop symptoms or have very mild flu-like symptoms that go away on their own. Some people may develop a more severe infection, especially those who have a weakened immune system, are of African-American or Filipino descent, or are pregnant in their third trimester.

Symptoms of coccidioidomycosis include:

- Fever;
- Cough;

- Headache;
- Rash on upper trunk or extremities;
- Muscle aches; and/or
- Joint pain in the knees or ankles.

Symptoms of advanced coccidioidomycosis include:

- Skin lesions;
- Chronic pneumonia;
- Meningitis; and/or
- Bone or joint infection.

Symptoms of coccidioidomycosis may appear between one and three weeks after exposure to the fungus. Some patients have reported having symptoms for six months or longer, especially if the infection is not diagnosed right away. If the symptoms last for more than a week, a healthcare provider should be contacted (Appendix B).

Currently there are no mandated federal, State, or local regulations for addressing Valley fever at the workplace. According to the "Epidemiologic summaries of Selected General Communicable Diseases in California, 2001-2008" the CCR, Title 17, care providers are required to report all cases of Valley fever to local health departments.

3.3.2 - REGULATORY SETTING

Air pollutants are regulated at the national, State, and air basin level; each agency has a different degree of control. The EPA regulates at the federal level. CARB regulates at the State level and the SJVAPCD regulates at the regional air basin level.

Federal

U.S. ENVIRONMENTAL PROTECTION AGENCY

The EPA handles global, international, national, and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all SIPs, as well as provides research and guidance in air pollution programs and sets NAAQS (also known as federal standards). There are standards for six common air pollutants which are identified as criteria air pollutants that originated from provisions of the 1970 CAA. The six criteria pollutants are:

- Ozone (O_3);
- Particulate matter less than 10 microns and 2.5 microns and smaller (PM_{10} and $PM_{2.5}$);
- Nitrogen dioxide (NO_2);
- Carbon monoxide (CO);
- Lead (Pb); and
- Sulfur dioxide (SO_2).

Federal standards were set to protect public health, including that of sensitive individuals; thus, the standards continue to change as more medical research is available regarding the health effects of the criteria pollutants (EPA, 2012).

The CAA requires the EPA to set outdoor air quality standards for the nation. It also permits states to adopt additional or more protective air quality standards if needed. California has set standards for certain pollutants, such as PM and O_3, which are more protective of public health than respective federal standards. California has also set standards for some pollutants that are not addressed by federal standards. Table 3.3-4 lists federal and State AAQS for the six criteria pollutions along with five additional pollutants.

State

CALIFORNIA AIR RESOURCES BOARD

The SIPs for the State of California are administered by CARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. SIPs are prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain NAAQS. SIPs incorporate individual federal attainment plans for regional air districts. Federal attainment plans prepared by each air district are sent to CARB to be approved and incorporated into California SIPs. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring) control measures and strategies and enforcement mechanisms.

CARB also administers CAAQS for the 10 air pollutants designated in the California CAA. The 10 State air pollutants are the six criteria pollutants listed above as well as visibility reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. Visibility-reducing particles are suspended PM. Visibility is the distance through the air that an object can be seen without the use of instrumental assistance. Vinyl chloride is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. Visibility-reducing particles and vinyl chloride are not assessed in this analysis because the Project would not be exposed to or generate those pollutants.

State and federal AAQS are summarized in Table 3.3-4. The figures listed in the table come from CARB's most recently updated 2013 standards.

Comparison is made throughout the remainder of this report to the standards listed in Table 3.3-4. Details are also provided on the health risks associated of each pollutant in other sections throughout this report.

Table 3.3-4
Federal and State Ambient Air Quality Standards

		NAAQS	CAAQS
Pollutant	**Averaging Time**	**Concentration**	
O_3	8-Hour	0.070 ppm (137 µg/m³) [a]	0.070 ppm (137 µg/m³)
	1-Hour		0.09 ppm (180 µg/m³)
CO	8-Hour	9 ppm (10 mg/m³)	9 ppm (10 mg/m³)
	1-Hour	35 ppm (40 mg/m³)	20 ppm (23 mg/m³)
NO_2	Annual Average	53 ppb (100 µg/m³)	0.030 ppm (57 µg/m³)
	1-Hour	100 ppb (188.68 µg/m³)	0.18 ppm (339 µg/m³)
SO_2	3-Hour	0.5 ppm (1,300 µg/m³)	
	24 Hour	0.14 ppm (365 µg/m³)	0.04 ppm (105 µg/m³)
	1-Hour	75 ppb (196 µg/m³)	0.25 ppm (655 µg/m³)
Particulate Matter (PM_{10})	Annual Arithmetic Mean		20 µg/m³
	24-Hour	150 µg/m³	50 µg/m³
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m³	12 µg/m³
	24-Hour	35 µg/m³	
Sulfates	24-Hour		25 µg/m³
Pb [d]	Rolling Three-Month Average	0.15 µg/m³	
	30 Day Average		1.5 µg/m³
H_2S	1-Hour		0.03 ppm (42 µg/m³)
Vinyl Chloride (chloroethene)	24-Hour		0.010 ppm (26 µg/m³)
Visibility Reducing particles	8 Hour (1000 to 1800 PST)		[b]

ppm = parts per million; ppb = parts per billion; mg/m³ = milligrams per cubic meter; µg/m³= micrograms per cubic meter

Source: Appendix B

a. On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 to 0.070 ppm

b. In 1989, CARB converted both the general statewide 10-mile visibility standards 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

Renewable Portfolio Standard

In 2002, Senate Bill (SB) 1078 required electric utilities to increase procurement of power generated by eligible renewable energy sources to 20 percent of total generation by 2017. In 2006, SB 107 accelerated the timetable to require 20 percent renewable energy by 2010. Then, in 2008, Governor Schwarzenegger signed Executive Order S-14-08, which increased the required renewables content to 33 percent by 2020. In September 2009, the Governor signed Executive Order S-21-09, which directed CARB to adopt regulations consistent with the 33 percent renewable energy target in Executive Order S-14-08.

In the ongoing effort to codify the ambitious 33 percent by 2020 goal, SB X1-2 was signed by Governor Edmund G. Brown, Jr., in April 2011. This new renewable portfolio standard (RPS) preempts CARB's 33 percent renewable electricity standard and applies to all electricity retailers in the State including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities were required to adopt goals by the end of 2013 and adopt an even more stringent goal of 25 percent by the end of 2016.

Title 24, 2013 Standards (Effective July 1, 2014): The 2013 Building Energy Efficiency Standards (BEES) focus on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings and include requirements that will enable both demand reductions during critical peak periods and future solar electric and thermal system installations. The most significant efficiency improvements to the residential standards are proposed for windows, envelope insulation and HVAC system testing. The most significant efficiency improvements to the non-residential standards are proposed for lighting controls, windows, unitary HVAC equipment and building commissioning. The 2013 BEES also include updates to the energy efficiency divisions of the California Green Building Code Standards, Title 24, Part 11. California Green Building Standards: On January 12, 2010, the State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code, which went into effect on January 1, 2011. The Code is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings.

Toxic Air Contaminant Regulation

CARB's TACs Program traces its beginning to the Criteria Pollutant Program in the 1960s. For many years, the Criteria Pollutant Control Program has been effective at reducing TACs, since VOCs and PM constituents are also TACs. During the 1980s, the public's concern over toxic chemicals heightened. As a result, citizens demanded protection and control over the release of toxic chemicals into the air. In response to public concerns, the California legislature enacted the Toxic Air Contaminant Identification and Control Act governing the release of TACs into the air. This law charges CARB with the responsibility for identifying substances as TACs, setting priorities for control, adopting control strategies, and promoting alternative processes. CARB has designated almost 200 compounds as TACs. Additionally,

CARB has implemented control strategies for a number of compounds that pose high health risk and show potential for effective control (CARB, 2011).

In 2005, CARB approved an Air Toxics Control Measure (ATCM) to limit diesel-fueled commercial motor vehicle idling to reduce emissions of toxics and criteria pollutants. The driver of any vehicle subject to this section (1) shall not idle the vehicle's primary diesel engine for greater than five minutes at any location and (2) shall not idle a diesel-fueled auxiliary power system for more than five minutes to power a heater, air conditioner, or any ancillary equipment on the vehicle if it has a sleeper berth and the truck is located within 100 feet of a restricted area (homes and schools).

Naturally Occurring Asbestos Regulation

CARB has an ATCM for construction, grading, quarrying, and surface mining operations requiring the implementation of mitigation measures to minimize emissions of asbestos-laden dust. This ATCM applies to road construction and maintenance, construction and grading operations, and quarries and surface mines when the activity occurs in an area where naturally occurring asbestos is likely to be found (CARB, 2001). Areas, such as the Project site, are subject to the regulation if they are identified on maps published by the Department of Conservation (DOC) as ultramafic rock units or if the Air Pollution Control Officer or owner/operator has knowledge of the presence of ultramafic rock, serpentine, or naturally occurring asbestos on the site. The ATCM also applies if ultramafic rock, serpentine, or asbestos is discovered during any operation or activity (Department of Conservation, 2000).

California Air Resources Board Land Use Handbook

In 2005, CARB adopted the Air Quality and Land Use Handbook: A Community Health Perspective (Land Use Handbook). The Land Use Handbook provides information and guidance on siting sensitive receptors in relation to sources of TACs. The sources of TACs identified in the Land Use Handbook are high-traffic freeways and roads, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and large gasoline dispensing facilities. The proposed Project does not fall within the sources identified in the handbook. If the Project involves siting a sensitive receptor or source of TACs discussed in the Land Use Handbook, siting mitigation may be added to avoid potential land use conflicts, thereby reducing the potential for health impacts to the sensitive receptors (CARB, 2005).

Regional

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT

The air pollution control agency for the SJVAB is the SJVAPCD. The SJVAPCD is responsible for regulating emissions primarily from stationary sources, certain areawide sources, and indirect sources and maintains air quality monitoring stations throughout the SJVAB.

Other responsibilities include coordinating with eight countywide transportation agencies in the development, update, and implementation of AQPs for the SJVAB.

In addition to AQPs, the SJVAPCD has prepared the 2015 Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI), which sets forth recommended thresholds of significance, analysis methodologies, and provides guidance on mitigating significant impacts. The GAMAQI was first adopted in 1998 and revised in 2002. Workshops have since been held in 2012 and 2014 to update the guide. The 2015 GAMAQI is available on the SJVAPCD's website.

Attainment Plans

As described above under federal and State regulatory agencies, SIPs are federal requirements; each state prepares a plan to describe existing air quality conditions and measures that will be followed to attain and maintain the NAAQS. In addition, State O_3 standards have planning requirements. However, State PM_{10} standards have no attainment planning requirements; rather, air districts must demonstrate that all measures feasible for the area have been adopted.

OZONE PLANS

The SJVAB has developed a new plan for the EPA's revoked 1-hour ozone standard. Although the EPA approved the SJVAPCD's 2004 Plan for the 1-Hour Ozone Standard in 2010, the EPA withdrew this approval as a result of litigation. The SJVAPCD's 2013 Plan for the Revoked 1-Hour Ozone Standard was approved by the District Governing Board at a public hearing on September 19, 2013. The modeling confirms that the Valley will attain the revoked 1-hour O_3 standard by 2017. On May 6, 2014, the SJVAPCD submitted a formal request that the EPA determine that the Valley has attained the federal 1-hour O_3 standard, allowing non-attainment penalties to be lifted under CAA, Section 179B. On July 18, 2016, the EPA published in the Federal Register a final action determining that the San Joaquin Valley has attained the 1-hour O_3 NAAQS. This determination is based on the most recent three-year period (2012-2014) of sufficient, quality-assured, and certified data.

The District's Governing Board approved the 2016 Plan for the 2008 8-Hour Ozone Standard on June 16, 2016. The comprehensive strategy in this plan will reduce NOx emissions by over 60 percent between 2012 and 2031 and will bring the San Joaquin Valley into attainment of the EPA's 2008 8-hour O_3 standard as expeditiously as practicable, no later than December 31, 2031. However, the EPA set the newest NAAQS for 8-hour O_3 at 70 parts per billion (ppb) effective December 28, 2015. The EPA was expected to designate the San Joaquin Valley for this newest standard in late 2017. Addressing the 2015 8-hour O_3 standard will pose a tremendous challenge for the San Joaquin Valley, given the naturally high background O_3 levels and O_3 transport into the San Joaquin Valley.

PARTICULATE MATTER PLANS

The SJVAB was designated non-attainment of State and federal health-based air quality standards for PM_{10}. To meet CAA requirements for the PM_{10} standard, the SJVAPCD adopted

a PM_{10} Attainment Demonstration Plan (Amended 2003 PM_{10} Plan and 2006 PM_{10} Plan), which has an attainment date of 2010.

On September 20, 2007, the SJVAPCD adopted the 2007 PM_{10} Maintenance Plan and Request for Redesignation. The 2007 PM_{10} Maintenance Plan contains modeling demonstrations that show the SJVAB will not exceed the federal PM_{10} standard for 10 years after the expected EPA redesignation, monitoring, and verification measures, and a contingency plan. Even though the EPA revoked the federal annual PM_{10} standard, the 2007 PM_{10} Maintenance Plan addresses both the annual and 24-hour standards because both standards were included in the EPA-approved SIPs. The EPA finalized the determination that the SJVAB attained the PM_{10} standards on October 17, 2007, effective October 30, 2007. On September 25, 2008, the EPA redesignated the SJVAB as attainment for the federal PM_{10} standard and approved the PM_{10} Maintenance Plan.

The SJVAB is also designated non-attainment for the new federal $PM_{2.5}$ annual standard. CARB approved the SJVAPCD's 2012 $PM_{2.5}$ Plan at a public hearing on January 24, 2013. The $PM_{2.5}$ Plan, approved by the District Governing Board on December 20, 2012, will bring the Valley into attainment of the EPA's 2006 $PM_{2.5}$ standard by the 2019 deadline, with most areas seeing attainment well before then. In addition, the SJVAPCD adopted the 2018 $PM_{2.5}$ Plan for the 1997, 2006, and 2012 $PM_{2.5}$ standards on November 15, 2018. This plan addresses the EPA federal 1997 annual $PM_{2.5}$ standard of 15 $\mu g/m^3$ and 24-hour $PM_{2.5}$ standard of 65 $\mu g/m^3$; the 2006 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$; and the 2012 annual $PM_{2.5}$ standard of 12 $\mu g/m^3$.

Rules Applicable to the Project

The SJVAPCD rules and regulations that apply to this Project include, but are not limited to, the following:

Regulation VIII Fugitive PM_{10} Prohibitions: Rules 8011-8081 are designed to reduce PM_{10} emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and trackout, etc.

SJVAPCD Rule 2201: New and Modified Stationary Source Review Rule. The purpose of this rule is to provide for the review of new and modified stationary sources of air pollution and to provide mechanisms including emission tradeoffs by which authorities to construct such sources may be granted, without interfering with the attainment or maintenance of AAQS. No net increase in emissions above specified thresholds from new and modified stationary sources of all non-attainment pollutants and their precursors.

SJVAPCD Rule 3180: Administrative Fees for Indirect Source Review (ISR). The purpose of this rule is to recover the SJVAPCD's costs for administering the requirements of Rule 9510.

SJVAPCD Rule 4641: Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations. The purpose of this rule is to limit VOC emissions from asphalt paving and

maintenance operations. If asphalt paving will be used, then the paving operations will be subject to Rule 4641.

SJVAPCD Rule 4622: Gasoline Transfer into Motor Vehicle Fuel Tanks. The purpose of this rule is to limit emissions of gasoline vapors from the transfer of gasoline into motor vehicle fuel tanks.

SJVAPCD Rule 4692: Commercial Charbroiling. The purpose of this rule is to limit VOC and PM_{10} emissions from commercial charbroiling. This rule also specifies the administrative, recordkeeping requirements, and the test method.

SJVAPCD Rule 9510: Indirect Source Review. This rule reduces the impact of NOx and PM_{10} emissions from growth on the air basin. The rule places application and emission reduction requirements on development projects meeting applicability criteria in order to reduce emissions through onsite mitigation, offsite SJVAPCD-administered projects, or a combination of the two. This rule applies to new developments seeking a final discretionary approval that are over a certain threshold size. Any project exceeding the applicability thresholds listed below, which are identified in Section 2.0 of District Rule 9510, are required to submit an Air Impact Assessment (AIA) application prior to seeking final discretionary approval regardless of whether the proposed projects mitigated emissions are below two tons per year NOx and PM_{10}.

- 50 residential units
- 2,000 square feet of commercial space
- 9,000 square feet of educational space
- 10,000 square feet of government space
- 20,000 square feet of medical or recreational space
- 25,000 square feet of light industrial space
- 39,000 square feet of general office space
- 100,000 square feet of heavy industrial space
- 9,000 square feet of any land use not identified above

Compliance with SJVAPCD Rule 9510 reduces the emissions impact of the project through incorporation of onsite measures as well as payment of an offsite fee that funds emission reduction projects in the air basin. The emissions analysis for Rule 9510 is highly detailed and is dependent on the exact project design that is expected to be constructed or installed. Compliance with Rule 9510 is separate from the CEQA process, though the control measures used to comply with Rule 9510 may be used to mitigate CEQA impacts. Minor changes to project components between the CEQA analysis and project construction often occur. An example of such a change is a change in construction year, operational year, etc. The percentages of emission reductions required by Rule 9510 are:

Construction Exhaust:	20 percent of the total NOx emissions; and 45 percent of the total PM_{10} emissions.
Operational Emissions:	33 percent of NOx emissions over the first 10 years; and

50 percent of the PM_{10} emissions over the first 10 years.

A project's emissions can be reduced by incorporating the SJVAPCD approved mitigation measures. These include, but are not limited to, the following:

- Bicycle lanes throughout the project;
- Proximity to existing or planned bus stops;
- Proximity to existing or planned local retail;
- Eliminate woodstoves and fireplaces from the project;
- Cleaner fleet construction vehicles; and
- Energy efficiency beyond Title 24 requirements.

Under Rule 9510, an offsite emission reduction fee (offsite fee) shall be paid by the applicant to the SJVAPCD for any emission reductions required by the rule that are not achieved through onsite emission reduction measures. Any necessary offsite fee for a project is calculated based on information contained in the SJVAPCD's Offsite Emissions Estimator worksheet and Fee Estimator worksheet. The Offsite Emissions Estimator worksheet uses the project's total tons of NOx and PM_{10} as calculated using California Emissions Estimator Model (CalEEMod) and compares the unmitigated emissions against the mitigated emissions, determining whether the reduction in emissions is sufficient to satisfy the rule. If the reduction is not sufficient, the required offsite emission reductions are calculated using the SJVAPCD's offsite emission reduction equations set forth in Rule 9510, Section 7.0.

Fee Estimator is an Excel worksheet used to calculate the total dollar amount of offsite fees that must be paid to the SJVAPCD in order to cover the cost of obtaining the required offsite emission reductions, and therefore fulfill the rule requirement. This fee amount is derived by multiplying the total tons of offsite reductions by the applicable rate. Per the Rule 9510 fee schedule, the applicable rates are as follows:

Cost of NOx Reductions ($/ton)	$9,350.00
Cost of PM_{10} Reductions ($/ton)	$9,011.00

The monies collected from the offsite fee are used by the SJVAPCD to reduce emissions in the San Joaquin Valley on behalf of the project, with the goal of offsetting the emissions increase from the project by decreasing emissions elsewhere. More specifically, the fees received by the SJVAPCD are used in the SJVAPCD's existing Emission Reduction Incentive Program (ERIP) to fund emission reduction projects.

In addition to the following rules, the SJVAPCD has found a Voluntary Emissions Reduction Agreement (VERA) to be a feasible mitigation measure to mitigate emissions to less-than-significant levels. VERA is an instrument by which the project proponent provides monies to the SJVAPCD, which is used by the SJVAPCD to fund emissions reduction projects that achieve the reductions required by the Lead Agency. The SJVAPCD staff is available to meet with project proponents to discuss a VERA for specific projects. For more information, or questions concerning this topic, the SJVAPCD staff can be contacted at (559) 230-6000.

SAN JOAQUIN VALLEY REGIONAL BLUEPRINT

In early 2006 the eight Council of Governments (COGs) in the San Joaquin Valley came together in an unprecedented effort to develop a coordinated Valley vision – the San Joaquin Valley Regional Blueprint. This venture of eight counties is being conducted in each county and has been integrated to form a preferred vision for future development throughout the Valley to the year 2050.

On April 1, 2009 the San Joaquin Valley Regional Policy Council reviewed the Valley COGs' collaborative work on the Blueprint and took the following actions:

- Adopted a list of Smart Growth Principles to be used as the basis of blueprint planning in the San Joaquin Valley; and
- Adopted Scenario B+ as the Preferred Blueprint Growth Scenario for the San Joaquin Valley to the year 2050. This preferred scenario will serve as guidance for the Valley's local jurisdictions with land use authority as they update their general plans.

Local

CITY OF TULARE GENERAL PLAN

Pursuant to CCR, Title 14, Section 65300, the 2014 City of Tulare General Plan addresses air quality in its Conservation and Open Space Element, and Air Quality Element. Other policies related to greenhouse gas (GHG) reduction, which also directly affect air quality, are provided in the Tulare Climate Action Plan. The General Plan includes local, regional, State, and federal programs and regulations as well as a comprehensive set of guiding and implementing policies, listed below:

Conservation and Open Space Element

GOAL

COS-7 Implement the goals, policies, and actions of the Tulare Climate Action Plan to reduce GHG emissions in Tulare.

POLICIES

COS-P7.1 Air Pollution Control Technology. The City shall utilize the Best Available Control Measures (BACMs) and Reasonably Available Control Measures (RACMs) as adopted by the City to maintain healthful air quality and high visibility standards. These measures shall be applied to new development approvals and permit modifications as appropriate.

COS-P7.2 Air Quality Land Use Compatibility. The City shall consider industrial or other developments which are likely to cause undesirable air pollution with regard to wind direction and circulation in an effort to alleviate effects upon sensitive receptors.

COS-P7.3 CEQA Compliance. The City shall ensure that air quality impacts identified during the CEQA review process are fairly and consistently mitigated.

COS-P7.4 Compact Development. The City shall actively support the development of compact mixed-use projects that reduce travel distances and promote alternative modes of transportation.

COS-P7.5 Cooperation with Other Agencies. The City shall cooperate with other local, regional, federal, and State agencies in developing and implementing air quality plans (AQPs) to achieve State and federal AAQS. The City shall partner with the SJVAPCD, Tulare County Association of Governments (TCAG), and the State Air Pollution Control Board to achieve better air quality conditions locally and regionally.

COS-P7.6 Cumulative Air Quality Impacts. The City shall require developments to be located, designed, and constructed in a manner that would minimize cumulative air quality impacts. Developers shall be required to present alternatives that reduce air emissions and enhance, rather than harm, the environment.

COS-P7.7 Dust Suppression Measures. The City shall require developers to implement dust suppression measures during excavation, grading, and site preparation activities. Techniques may include, but are not limited to, the following:

- Site watering or application of dust suppressants;
- Phasing or extension of grading operations;
- Covering of stockpiles;
- Suspension of grading activities during high wind periods (typically winds greater than 25 miles per hour); and
- Revegetation of graded areas.

COS-P7.8 Indirect Source Review. The City shall require major development projects, as defined by the SJVAPCD, to mitigate air quality impacts associated with the project. As feasible the City shall work with SJVAPCD to determine mitigations that may include, but are not limited to the following:

- Providing bicycle access and parking facilities;
- Increasing density;
- Encouraging mixed use developments;
- Providing walkable and pedestrian-oriented neighborhoods;
- Providing increased access to public transportation;
- Providing preferential parking for high-occupancy vehicles, car pools, or alternative fuels vehicles; and
- Establishing telecommuting programs or satellite work centers.

COS-P7.9 Landscape. The City shall encourage the use of ecologically based landscape design principles that can improve local air quality by absorbing carbon dioxide, producing oxygen, and filtering particulates. These principles include, but are not limited to, the incorporation of parks, landscaped medians, and landscaping within development.

COS-P7.10 Mixed Land Uses. The City shall encourage the mixing of land uses that generate high trip volumes, especially when such uses can be mixed with support services and where they can be served by public transportation.

COS-P7.11 Paving or Treatment of Roadways for Reduced Air Emissions. The City shall require that all new roads be paved or treated to reduce dust generation where feasible. For new projects with unpaved roads, funding for roadway maintenance shall be adequately addressed and secured.

COS-P7.12 Prevent Incompatible Uses. The City shall discourage the intrusion into existing urban areas of new incompatible land uses that produce significant noise, odors, or fumes.

COS-P7.13 Purchase of Low Emission/Alternative Fuel Vehicles. The City shall encourage City departments to replace existing vehicles with low emission/alternative fuel vehicles as appropriate.

COS-P7.14 Ridesharing. The City shall continue to encourage ridesharing programs such as employer-based rideshare programs.

COS-P7.15 Support Statewide Global Warming Solutions. The City shall monitor and support the efforts of CARB, under Assembly Bill (AB) 32, to formulate mitigation strategies, if any, that may be implemented by local government, and further require the City to ultimately consider any such strategies once they become available. If the City Council, after seeking public input on the subject, chooses to implement any such measures it considers to be feasible and desirable, the City's commitment may take the form of a new ordinance, resolution, or other type of policy document.

COS-P7.16 Transportation and Air Quality. When developing the regional transportation system, the City shall work with TCAG to comprehensively study methods of transportation which may contribute to a reduction in air pollution in the City of Tulare. Some possible alternatives that should be studied are:

- Public transportation such as buses and light rail, to serve between communities of the Valley, publicly subsidized if feasible;
- Intermodal public transit such as buses provided with bicycle racks, bicycle parking at bus stations, and park and ride facilities; and
- Community bus or other public transportation systems, such as cycling or walking trails, with particular attention to high-density areas.

COS-P7.17 Wood Burning Devices. The City shall require the use of natural gas or the installation of low-emission, EPA-certified fireplace inserts in all open-hearth fireplaces in new homes as required under the SJVAPCD Rule 4901. The City shall promote the use of natural gas over wood products in space heating devices and fireplaces in all existing and new homes.

COS-P7.18 Climate Action Plan. The City shall, consistent with other City programming and capital priorities and its fiscal constraints, implement and ensure compliance with the goals, policies, and actions of the Tulare Climate Action Plan.

COS-P7.19 Monitoring. On a semi-annual basis, the City shall monitor and report its progress on implementing the goals, policies, and actions of the Climate Action Plan to the City Council.

COS-P7.20 Greenhouse Gas Emissions Reduction. The City should reduce GHG emissions from City operations, as well as from private development in compliance with the California Global Warming Act of 2006 and any applicable State regulations.

Air Quality Element

GOAL

AQ-1 **To promote better air quality conditions locally and regionally.**

POLICIES

AQ-P1.2 Cumulative Air Quality Impacts. The City shall require developments to be located, designed, and constructed in a manner that would minimize cumulative air quality impacts. Developers shall be required to present alternatives that reduce air emissions and enhance, rather than harm, the environment.

AQ-P1.5 CEQA Compliance. The City shall ensure that air quality impacts identified during the CEQA review process are fairly and consistently mitigated.

GOAL

AQ-2 To improve air quality by reducing single-occupancy vehicle trips and encouraging the use of alternative transportation.

POLICIES

AQ-P2.2 Indirect Source Review. The City shall require major development projects, as defined by the SJVAPCD, to mitigate air quality impacts associated with the

project. As feasible, the City shall work with the SJVAPCD to determine mitigations that may include, but are not limited to the following:

- Providing bicycle access and parking facilities;
- Increasing density;
- Encouraging mixed use developments;
- Providing walkable and pedestrian-oriented neighborhoods;
- Providing increased access to public transportation;
- Providing preferential parking for high-occupancy vehicles, car pools, or alternative fuels vehicles; and
- Establishing telecommuting programs or satellite work centers.

AQ-P2.4 Transportation Management Associations. The City shall encourage commercial, retail, and residential developments to participate in or create transportation management associations that can assist in the reduction of pollutants through provisions to support carpooling, alternative transportation, etc.

AQ-P2.6 Landscape. The City shall encourage the use of ecologically based landscape design principles that can improve local air quality by absorbing carbon dioxide, producing oxygen, and filtering particulates. These principles include, but are not limited to, the incorporation of parks, landscaped medians, and landscaping within development.

AQ-P2.7 Mixed Land Uses. The City shall encourage the mixing of land uses that generate high trip volumes, especially when such uses can be mixed with support services and where they can be served by public transportation.

GOAL

AQ-3 To reduce the presence of particulate matter and other pollutants in Tulare's air.

POLICIES

AQ-P3.1 Air Pollution Control Technology. The City shall utilize the Best Available Control Measures (BACMs) and Reasonably Available Control Measures (RACMs) as adopted by the City to maintain healthful air quality and high visibility standards. These measures shall be applied to new development approvals and permit modifications as appropriate.

AQ-P3.2 Dust Suppression Measures. The City shall require developers to implement Best Management Practices (BMPs) including dust suppression measures during excavation, grading, and site preparation activities: Techniques may include, but are not limited to, the following:

- Site watering or application of dust suppressants;
- Phasing or extension of grading operations;
- Covering of stockpiles;
- Suspension of grading activities during high wind periods (typically winds greater than 24 miles per hour); and
- Revegetation of graded areas.

AQ-P3.4 Wood Burning Devices. The City shall require the use of natural gas or the installation of low-emission, EPA-certified fireplace inserts in all open-hearth fireplaces in new homes as required under the SJVAPCD Rule 4901. The City shall promote the use of natural gas over wood products in space heating devices and fireplaces in all existing and new homes.

AQ-P3.5 Construction Emissions. The City shall require construction firms to reduce construction exhaust emissions to further aid in the reduction of PM_{10}, ROG, and NOx emissions.

City of Tulare Climate Action Plan

Chapter 5 of the City of Tulare Climate Action Plan summarizes the municipal reduction goals and measures to GHG emissions from community-wide sources within City boundaries. Chapter 6 details the City of Tulare Climate Action Plan's community-wide goals and measures. The goals of the Climate Action Plan each contain measures and action items that outline how these goals will be attained.

The municipal goals of the Climate Action Plan include:

- Increase energy efficiency and conservation;
- Promote and support renewable energy generation and use;
- Shift single-occupancy vehicle trips to alternative modes; and
- Reduce emissions from vehicles.

The community-wide goals of the Climate Action Plan include:

- Increase energy efficiency and conservation;
- Promote and support renewable energy generation and use;
- Shift single-occupancy vehicle trips;
- Reduce emissions from vehicles;
- Increase accessible land use to reduce vehicular trips;
- Reduce solid waste; and
- Promote low emissions in agriculture.

3.3.3 - IMPACT EVALUATION CRITERIA

Methodology

The methodology follows the GAMAQI, which sets forth recommended thresholds of significance, analysis methodologies, and provides guidance on mitigating significant impacts. Detailed methodology is described in each of the impact sections below.

The analysis was prepared using a variety of data sources and air quality models. The Traffic Impact Study for the Project, (Ruettgers & Schuler, 2018, Appendix G), was used to obtain level of service (LOS) and intersection volumes for the CO hotspot analysis and average daily trip generation to model operational motor vehicle emissions. The CalEEMod software was used to quantify Project related construction and operational emissions. CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The model incorporates Pavley standards and low-carbon fuel standards into the mobile source emission factors. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user.

The Health Risk Assessment (HRA) report summarized in this section and included in its entirety in Appendix B has been prepared based on the analysis procedure provided in the Guidance for Air Dispersion Modeling (SJVAPCD Guidance), prepared by the SJVAPCD, January 2007. The HRA also analyzes potential health risks associated with criteria pollutants.

Thresholds of Significance

According to *Appendix G, Environmental Checklist*, of the *CEQA Guidelines*, air quality impacts resulting from the implementation of the proposed Project would be considered significant if the Project would:

a) *Conflict with or obstruct implementation of the applicable air quality plan;*

b) *Violate any air quality standard or contribute substantially to an existing or projected air quality violation;*

c) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State Ambient Air Quality Standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors);*

d) Expose sensitive receptors to substantial pollutant concentrations; or

e) Create objectionable odors affecting a substantial number of people.

While the final determination of whether a project is significant is within the purview of the Lead Agency pursuant to *CEQA Guidelines*, *Section 15064(b)*, the SJVAPCD recommends that its quantitative and qualitative air pollution thresholds be used to determine the significance of project emissions. These thresholds are discussed under each impact section.

The SJVAPCD provides a guide intended to be an advisory document for use by other agencies, consultants, and project proponents. The recommended version of this advisory document is the GAMAQI – 2015. This document establishes thresholds of significance for criteria pollutants that the SJVAPCD recommends be used when evaluating project specific impacts in the San Joaquin Valley. The SJVAPCD has based the criteria thresholds on limits established in their New Source Review (NSR) rule (Rule 2201), which is a major component of their attainment strategy as it relates to growth and applies to new and modified stationary sources of air pollution. Non-compliance with a threshold of significance means the effect will normally be determined to be significant. Compliance with a threshold of significance means the effect normally will be determined to be less than significant.

The following regional significance thresholds have been established by the SJVAPCD to protect air resources within the SJVAB as a whole, as project emissions can potentially contribute to the existing emission burden and possibly affect the attainment and maintenance of AAQS (Table 3.3-5).

Table 3.3-5
SJVAPCD Regional Thresholds Tons per Year (TPY)

Criteria Pollutant	Significance Level	
	Construction	Operational
CO	100 TPY	100 TPY
NO_x	10 TPY	10 TPY
ROG	10 TPY	10 TPY
SO_x	27 TPY	27 TPY
PM_{10}	15 TPY	15 TPY
$PM_{2.5}$	15 TPY	15 TPY

Source*:* Appendix B

Projects within the SJVAB with regional construction or operational emissions exceeding any of the thresholds presented in Table 3.3-5 are considered to have a significant regional air quality impact. The SJVAPCD's thresholds of significance for TACs emissions are presented in Table 3.3-6.

Table 3.3-6
Toxic Air Contaminants Thresholds

Agency	Level	Description
Significance Thresholds Adopted for the Evaluation of Impacts Under CEQA		
SJVAPCD	Carcinogens	Maximally Exposed Individual risk **equals or exceeds** 20 in one million.
	Non-Carcinogens	**Acute**: Hazard Index **equals or exceeds** 1 for the Maximally Exposed Individual.
		Chronic: Hazard Index **equals or exceeds** 1 for the Maximally Exposed Individual.

Source: Appendix B

Carcinogenic (cancer) risk is expressed as cancer cases per one million. Non-carcinogenic (acute and chronic) hazard indices are expressed as a ratio of expected exposure levels to acceptable exposure levels.

3.3.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.3-a: Would the Project conflict with or obstruct implementation of the applicable air quality plan?

The proposed Project would generate both temporary (construction) and long-term (operational) emissions. The consistency with the AQAP is discussed below for construction and operations separately.

Construction

The SJVAPCD's attainment strategy as it relates to growth is directly related to their NSR rule as implementation of NSR ensures that there is no net increase in emissions above specified thresholds from new and modified stationary sources for all non-attainment pollutants and their precursors. The SJVAPCD thresholds of significance for criteria pollutants are applied to evaluate regional impacts of project-specific emissions of air pollutants and their impact on the SJVAPCD's ability to reach attainment.

Operational

CEQA Guidelines and the CAA (Sections 176 and 316) contain specific references on the need to evaluate consistencies between a proposed project and the applicable AQAP for the project sites. To accomplish this, CARB has developed a three-step approach to determine project conformity with the applicable AQAP:

- Determination that an AQAP is being implemented in the area where the project is being proposed. The SJVAPCD has implemented the current, modified AQAP as approved by CARB. The current AQAP is under review by the EPA;

- The proposed project must be consistent with the growth assumptions of the applicable AQAP. The proposed project is included within the growth projected in the Tulare County General Plan or City of Tulare General Plan; and
- The project must contain in its design all reasonably available and feasible air quality control measures. The proposed project incorporates various policy and rule-required implementation measures that will reduce related emissions.

The California CAA and AQAP identify transportation control measures as methods to further reduce emissions from mobile sources. Strategies identified to reduce vehicular emissions such as reductions in vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, and traffic congestion, in order to reduce vehicular emissions, can be implemented as control measures under the California CAA as well. Additional measures may also be implemented through the building process such as providing electrical outlets on exterior walls of structures to encourage use of electrical landscape maintenance equipment or measures such as electrical outlets for electrical systems on diesel trucks to reduce or eliminate idling time.

As the growth represented by the proposed Project was anticipated by the Tulare County General Plan and incorporated into the AQAP, conclusions may be drawn from the following criteria:

- The proposed emissions from the Project are by definition below the SJVAPCD's established emissions impact thresholds; and
- The findings of the analysis show that the Project's minimal employment increases are planned for the Project area.

CONCLUSION

Operation of the proposed Project would not exceed any established SJVAPCD thresholds; therefore, implementation of the proposed Project would not obstruct implementation of an AQP during operation. The Project would not conflict with, or obstruct implementation of, the applicable AQP, and would therefore result in a less-than-significant impact.

MITIGATION MEASURE(S)

MM AQ-1: To reduce operational emissions of O_3 precursors and PM_{10}, the following Project design will be implemented:

- Onsite shops and services for employees (restaurants, bank/ATM, dry cleaners, convenience market, etc.) will be encouraged to establish direct access between employment and retail areas, reducing vehicle trips to and from the Project site throughout the day.
- All required landscaping along major and arterial roadways will be designed with native drought-resistant species (plants, trees, and bushes) to reduce demand for gas-powered landscape maintenance equipment.

MM AQ-2: During construction related activities, the applicant will implement the following dust control practices:

- All disturbed areas, including storage piles that are not being actively utilized for construction purposes, will be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover;
- All onsite unpaved roads and offsite unpaved access roads will be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant;
- All land clearing, grubbing, scraping, excavation, leveling, grading, cut and-fill, and demolition activities will be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking;
- When materials are transported offsite, all material will be covered, effectively wetted to limit visible dust emissions, or maintained with six inches of freeboard space from the top of the container;
- All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.);
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles will be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant;
- Traffic speeds on unpaved roads will be limited to 15 mph;
- Sandbags or other erosion control measures will be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent;
- All soil stockpiles will be covered with tarps except when actively in use;
- Equipment will be shut down when not in use for extended periods of time; and
- Construction equipment will operate no longer than eight cumulative hours per day.

MM AQ-3: During construction related activities, the owners, developers, and/or successors-in-interest will comply with SJVAPCD Regulation VIII (Fugitive Dust Rules).

EFFECTIVENESS OF MITIGATION

With the implementation of the above mitigation measures, the potentially significant impact will be reduced to ***a less-than-significant level***.

Impact #3.3-b: Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction

Construction of the proposed Project would result in emissions of the air pollutants ROG, NOx, CO, PM_{10}, $PM_{2.5}$, and sulfur oxide (SOx). Emissions from construction would result from fuel combustion and exhaust from construction equipment as well as vehicle traffic, grading, and the use of toxic materials (e.g., paints and lubricants).

Criteria pollutant emissions from off-road construction equipment use were estimated using the CalEEMod. Default length of construction activity and default equipment type and activity levels for each activity phase were used.

Table 3.3-7 presents annual emissions for construction activities related to the proposed Project. As Table 3.3-7 shows, the SJVAPCD thresholds are not exceeded. Detailed emissions calculations are included in Appendix B.

Table 3.3-7
Estimated Annual Construction Emissions

Emissions Source	Pollutant (tons/year)					
	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Unmitigated						
2019	0.40	3.83	2.84	0.01	0.49	0.31
2020	1.34	1.06	0.94	0.00	0.08	0.06
2022	0.44	3.94	3.47	0.01	1.00	0.49
2023	0.39	2.89	3.30	0.01	0.51	0.20
2024	0.73	6.35	6.38	0.02	1.61	0.75
2025	4.61	3.66	4.06	0.01	0.52	0.21
2026	0.28	2.75	2.77	0.01	0.37	0.15
2027	0.28	2.73	2.73	0.01	0.37	0.15
2028	0.27	2.71	2.68	0.01	0.37	0.15
2029	4.46	0.64	0.91	0.00	0.07	0.04
Maximum Annual Emission	**4.61**	**6.35**	**6.38**	**0.02**	**1.61**	**0.75**
Mitigated						
2019	0.40	3.83	2.84	0.01	0.35	0.24
2020	1.34	1.06	0.94	0.00	0.08	0.06
2022	0.44	3.94	3.47	0.01	0.64	0.32
2023	0.39	2.89	3.30	0.01	0.51	0.20
2024	0.73	6.35	6.38	0.02	1.10	0.51
2025	4.61	3.66	4.06	0.01	0.67	0.27
2026	0.28	2.75	2.77	0.01	0.37	0.15
2027	0.28	2.73	2.73	0.01	0.37	0.15
2028	0.27	2.71	2.68	0.01	0.37	0.15
2029	4.46	0.64	0.91	0.00	0.07	0.04
Maximum Annual Emission	**4.61**	**6.35**	**6.38**	**0.02**	**1.10**	**0.51**
Significance Threshold	10	10	100	27	15	15
Is Threshold Exceeded for a Single Year After Mitigation?	NO	NO	NO	NO	NO	NO

Source: Appendix B

CalEEMod was also used to estimate the operational emissions for each Project phase. Operational emissions include emissions from mobile sources associated with the facility, natural gas usage, architectural coatings, consumer products, and landscaping equipment. CalEEMod also calculates emissions generated by electricity use, water and wastewater demand, and solid waste generation.

In addition, the ISR Rule (Rule 9510) requires developers to reduce construction NOx and PM_{10} exhaust emissions by 20 percent and 45 percent, respectively, and reduce operational NOx and PM_{10} emissions by 33.3 percent and 50 percent, respectively, as compared to the unmitigated baseline. The ISR Rule does not require the reduction of ROG but concentrates on the O_3 precursors of NOx and PM_{10} which have the most effect on the air quality in the San Joaquin Valley.

Operational

Emissions for each category are presented in Table 3.3-8, which shows that the Project's unmitigated operational emissions would not exceed the SJVAPCD thresholds for criteria air pollutants. Detailed emissions calculations are included in Appendix B. As shown in Table 3.3-8, operations-related emissions would be less than the SJVAPCD significant threshold levels.

Table 3.3-8
Estimated Operational Criteria Emissions

Emissions Source	Pollutant (tons/year)					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Unmitigated Emissions						
Phase 1 (Operational Year 2020)	2.58	4.46	17.14	0.04	3.62	1.01
Phases 1-2 (Operational Year 2025)	6.01	6.18	30.90	0.09	6.72	1.84
Phases 1-3 (Operational Year 2029)	11.56	12.45	55.15	0.19	20.85	6.65
Mitigated Emissions						
Phase 1 (Operational Year 2020)	2.42	3.42	13.02	0.03	2.34	0.65
Phases 1-2 (Operational Year 2025)	4.54	4.22	14.75	0.03	3.05	0.87
Phases 1-3 (Operational Year 2029)	9.50	8.96	29.40	0.08	8.77	2.44
SJVAPCD Threshold	10	10	100	27	15	15
Is Threshold Exceeded After Mitigation?	NO	NO	NO	NO	NO	NO

Source: Appendix B

CONCLUSION

As shown in Table 3.3-7 and Table 3.3-8, construction and operational activities of the proposed Project would have a less-than-significant impact with respect to a violation of air quality standards or contributing substantially to an existing or projected air quality violation.

MITIGATION MEASURE(S)

No mitigation measures are necessary.

Impact #3.3-c: Would the Project result in cumulatively considerable net increase of any criteria pollutant for which the Project region is in non-attainment under an applicable federal or State Ambient Air Quality Standard?

In accordance with *CEQA Guidelines*, *Section 15130(b)*, this analysis of cumulative impacts incorporates a summary of projections. The following three-tiered approach is to assess cumulative air quality impacts:

- Consistency with the SJVAPCD project-specific thresholds for construction and operation;
- Project consistency with existing AQPs; and
- Assessment of the cumulative health effects of the pollutants.

Project Specific Thresholds

As established previously in Impact #3.3-b, emissions are not expected to exceed the SJVAPCD regional significance thresholds.

Air Quality Plans

As established previously in Impact #3.3-a, the proposed Project is consistent with the latest O_3, PM_{10}, and $PM_{2.5}$ Attainment Plans that were established to document the strategies and measures to be undertaken to reach attainment of AAQS. While the SJVAPCD does not have direct authority over land use decisions, it was recognized that changes in land use and circulation planning were necessary to maintain clean air. As discussed above in Impact #3.3-a, the Project is compliant with the AQPs and would not result in a significant impact.

Cumulative Health Impacts

Records search of the City of Tulare Planning Division's records and development files and Tulare County Community Development Agency's geographic information system (GIS) viewer and records identified eight other projects within a one-mile radius of the proposed Project. The number or size of cumulative projects is of no particular significance since no "cumulative" emissions thresholds have been established by the SJVAPCD, the City of Tulare Planning Division, or the Tulare County Community Development Agency.

The significance analysis in Impact #3.3-b demonstrated that no significance threshold would be exceeded; therefore, the emissions from the proposed Project would not result in a significant cumulative health impact.

Table 3.3-9
Cumulative Operational Projects

One-Mile Radius Projects	Pollutant (tons/year)[1]					
	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Tulare County						
Total Cumulative One-Mile Projects	12.64	42.42	70.83	0.23	13.59	5.66
This Project	*9.5*	*8.98*	*29.4*	*0.08*	*8.77*	*2.44*
Total Cumulative Projects	**22.14**	**51.4**	**100.23**	**0.31**	**22.36**	**8.1**

1. These emissions are overestimated, as they are discretionary projects that are subject to various mitigation measures that have not yet been determined nor their impacts reduced herein.

The SJVAPCD's GAMAQI has identified CO impacts from impacted traffic intersections and roadway segments as being potentially cumulatively considerable. Traffic increases and added congestion caused by a project can combine to cause a violation of the SJVAPCD's CO standard also known as a "hotspot." There are two criteria established by the GAMAQI by which CO "hotspot" modeling is required:

- A traffic study for the project indicates that the LOS on one or more streets or at one or more intersections in the project vicinity will be reduced to LOS E or F; or
- A traffic study indicates that the project will substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the project vicinity.

A Traffic Generation Assessment Impact Study has been prepared for this Project and determined the Project will not reduce any streets or intersections to a LOS E or F and will not worsen an already existing LOS F of any street or intersection after mitigation (Ruettgers & Schuler, 2018). Therefore, CO "hotspot" modeling was not conducted for this Project and no concentrated excessive CO emissions are expected to be caused once the proposed Project is completed.

CONCLUSION

The proposed Project would not result in a cumulatively considerable net increase of a precursor to a criteria pollutant for which the region is in non-attainment under an applicable federal or State AAQS. Therefore, impacts would be less than significant.

MITIGATION MEASURE(S)

No mitigation measures are necessary.

Impact #3.3-d: Would the Project expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are defined as land uses where sensitive population groups are likely to be located (e.g., children, the elderly, the acutely ill, and the chronically ill). These land uses include residences, schools, childcare centers, retirement homes, convalescent homes, medical care facilities, and recreational facilities. Sensitive receptors that may be adversely affected by the proposed Project include the surrounding residential land uses.

Localized Dust

Impacts to sensitive receptors, particularly from dust, would vary depending on the level and type of activity, the silt content of the soil, and prevailing weather.

CO Hotspot

Ambient CO concentrations normally correspond closely to the spatial and temporal distributions of vehicular traffic. Relatively high concentrations of CO would be expected

along heavily traveled roads and near busy intersections. CO concentrations are also influenced by wind speed and atmospheric mixing. CO concentrations may be more uniformly distributed when inversion conditions are prevalent in the Valley. Under certain meteorological conditions CO concentrations along a congested roadway or intersection may reach unhealthful levels for sensitive receptors, e.g. children, the elderly, hospital patients, etc. This localized impact can result in elevated levels of CO, or "hotspots" even though concentrations at the closest air quality monitoring station may be below NAAQS and CAAQS.

A Traffic Generation Assessment Impact Study has been prepared for this Project and determined the Project will not reduce any streets or intersections to a LOS E or F and will not worsen an already existing LOS F of any street or intersection after mitigation (Ruettgers & Schuler, 2018). Therefore, CO "hotspot" modeling was not conducted for this Project and no concentrated excessive CO emissions are expected to be caused once the proposed Project is completed.

Toxic Air Contaminants

An HRA (see Appendix B) has been completed to determine the potential cancer risks from the onsite sources of TACs associated with the operation of the proposed Project. This analysis has been prepared based on the analysis procedure provided in the Guidance for Air Dispersion Modeling (SJVAPCD Guidance), prepared by SJVAPCD, January 2007.

The HRA also analyzes the potential criteria pollutant health risks requested in the opinion of *Sierra Club v. County of Fresno* that was filed May 27, 2014 by the Fifth District Court of Appeal, which established a legal standard for the level of analysis contained in HRAs. The opinion stated that the EIR discussion of air quality impacts failed to analyze and explain in adequate detail how the pollutants emitted by the project would impact public health. The EIR's discussion of adverse health effects was general in nature and short on analysis because it did not correlate the additional tons per year of emission that would be generated by the project to adverse human health impacts that could be expected to result from those emissions.

The following is provided in the HRA report:

- A description of the proposed Project;
- A description of TACs;
- A description of the non-attainment criteria pollutants and current monitored concentrations;
- A description of health risk standards;
- An analysis of the onsite sources of TACs from the proposed Project;
- A comparison of the calculated cancer and acute non-cancer risks from TACs with the SJVAPCD thresholds;
- An analysis of the emissions of non-attainment criteria pollutants in the vicinity of the Project site; and
- A comparison of the calculated local non-attainment criteria pollutant concentrations to the monitored concentrations and an estimate of associated health impacts.

Below is a summary of the HRA and its conclusions. For more information refer to the complete HRA report, contained in Appendix B.

Overview of Toxic Air Contaminants

TACs is a term that is defined under the California CAA and consists of the same substances that are defined as Hazardous Air Pollutants (HAPs) in the CAA. There are over 700 hundred different types of TACs with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least 40 different TACs. The most important of these TACs, in terms of health risk, are diesel particulates, benzene, formaldehyde, 1,3-butadiene, and acetaldehyde. Public exposure to TACs can result from emissions from normal operations as well as from accidental releases. Health effects of TACs include cancer, birth defects, neurological damage, and death.

TAC Risk Defined

Any project with the potential to expose sensitive receptors or the general public to substantial levels of TACs would be deemed to have a potentially significant impact. A health risk is the probability that exposure to TACs under a given set of conditions will result in an adverse health effect. The health risk is affected by several factors, such as the amount, toxicity, and concentration of the contaminant; meteorological conditions; distance from the emission sources to people; the distance between emission sources; the age, health, and lifestyle of the people living or working at a location; and the length of exposure to TACs.

The term "risk" usually refers to the chance of contracting cancer as a result of an exposure, and it is expressed as a probability: chances-in-a-million. The values expressed for cancer risk do not predict actual cases that will result from exposure to TACs. Rather, they state a probability of contracting cancer over and above the background level and over a given exposure to TACs.

According to the GAMAQI, any project that has the potential to expose the public to TACs in excess of the following threshold would be considered to result in a significant impact:

- If the Maximum Exposed Individual Cancer Risk from carcinogens equals or exceeds 10 in one million persons;
- If the Maximum Exposed Individual Acute Hazard Index from non-carcinogens equals or exceeds 1.0; or
- If the Maximum Exposed Individual Chronic Hazard Index from non-carcinogens equals or exceeds 1.0.

ESTIMATION OF HEALTH RISKS ASSOCIATED WITH TACS EMISSIONS

Cancer Risk

All TACs emissions concentrations at the nearby sensitive receptors were found to be below the 10.0 in a million-cancer risk threshold. A less-than-significant cancer risk would occur from TACs emissions created from the operation of the proposed Project.

Non-cancer Risk

Chronic Health Impacts. The criterion for significance is a Chronic Hazard Index increase of 1.0 or greater. The on-going operations of the proposed Project would result in a less-than-significant impact due to the non-cancer chronic health risk from TACs emissions created by the proposed Project.

Acute Health Impacts. The criterion for significance is an Acute Hazard Index increase of 1.0 or greater. The on-going operations of the proposed Project would result in a less-than-significant impact due to the non-cancer acute health risk from TACs emissions created by the proposed Project.

ESTIMATION OF HEALTH RISKS ASSOCIATED WITH LOCAL CONCENTRATION OF CRITERIA POLLUTANTS

For each pollutant and averaging period modeled, a "total" concentration was estimated by adding the maximum measured background air concentration to the maximum predicted Project impacts. The maximum measured background air concentrations used in this analysis were calculated from measured concentrations at the nearest monitoring stations.

The results of the air dispersion modeling demonstrate that the maximum impacts attributable to the Project, when considered in addition to the existing background concentrations, are below the applicable AAQS for NOx, SOx and CO.

CONCLUSION

The proposed Project would not expose the public to substantial pollutant concentrations, including TACs. Therefore, impacts would be less than significant.

MITIGATION MEASURE(S)

No mitigation measures are necessary.

Impact #3.3-e: Would the Project create objectionable odors affecting a substantial number of people?

The *CEQA Guidelines* indicate that a significant impact would occur if a project would create objectionable odors affecting a substantial number of people. While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress

among the public and often generating citizen complaints to local governments and the SJVAPCD.

The SJVAPCD's GAMAQI states "An analysis of potential odor impacts should be conducted for both of the following two situations:

- Generators – projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate; and
- Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources." (SJVAPCD, 2015)

Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, there are no quantitative or formulaic methodologies to determine the presence of a significant odor impact. The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. Because the operations of the Project are not expected to cause a public nuisance due to odor and the anticipated Project site is not listed in Table 6 of the GAMAQI as a source which would create objectionable odors, the Project is not expected to be a source of objectionable odors.

CONCLUSION

The proposed Project would not create objectionable odors affecting a substantial number of people. Therefore, impacts would be less than significant.

MITIGATION MEASURE(S)

No mitigation measures are necessary.

3.4 - Biological Resources

This section provides an evaluation of the potential impacts to biological resources that would result from Project implementation. An overview of the regulatory framework of applicable laws, ordinances, and other regulations that protect biological resources is presented. The affected environment, including a site-specific overview of local vegetation, flora, sensitive plant communities, wetlands, wildlife, and special-status species is discussed. An analysis of impacts is provided, along with recommended mitigation measures when warranted.

QK biologists completed a database search in June 2018 for historical records of special-status species and sensitive habitats occurring on the Project site. The California Natural Diversity Database (CNDDB) (2018), California Native Plant Society (CNPS) Database (2018), and U.S. Fish and Wildlife Service (USFWS) Threatened and Endangered Species List (2018a) were reviewed to obtain occurrences of sensitive natural communities, federally-listed species, State-listed species, other species of special concern, or USFWS critical habitat units that have been known to occur within the nine quadrangles surrounding the Project site. To satisfy other standard search criteria, CNDDB records within a 10-mile radius of the Project site were queried separately from the broader database search.

The results of the database inquiries were subsequently reviewed to extract pertinent information on site conditions and evaluate the potential for sensitive biological resources to occur within or near the Project site. Only those resources with the potential to be present and affected by the Project were included and considered in this document. The potential presence of natural communities and special-status species was based on distributional ranges overlapping the Project site and the presence of habitat and/or primary constituent habitat elements that would support the various species.

A reconnaissance-level biological survey was conducted on June 13, 2018. The survey focused on determining the locations and extent of vegetation communities and the potential for occurrences of sensitive plant and wildlife species within the Project (Table 2-1). Surveys consisted of walking meandering pedestrian transects throughout the Project site. Current land uses within the Project were documented along with the presence of all plants, wildlife, and wildlife sign (scat, burrows, feather, tracks, etc.). All suitable habitats that could potentially support wildlife within the Project were documented and photographs were taken. Results from the reconnaissance-level survey were used to determine the need and design of additional, more focused Project site surveys.

Based upon the results of the reconnaissance-level survey, it was determined that protocol-level surveys for special-status plant or wildlife species are not warranted, due to the continuous disking on the Project site there is an unlikely potential for special-status plants or wildlife species to be present on the site.

3.4.1 - ENVIRONMENTAL SETTING

Geography and Land Use

The Project site and surrounding land are relatively flat, at approximately 295 feet above sea level, and exhibits little topographic variation (Figure 2-1). The Project site is within the Central Valley, approximately 18 miles west of the foothills of the Sierra Nevada mountain range and approximately 52 miles east of the Temblor Range. State Route (SR) 99, which serves as a major arterial roadway between northern and southern California, is located adjacent to and west of the Project site. No major natural waterways, streams or rivers are located near the Project site. Kaweah River, located approximately nine miles north near the City of Visalia, is the closest natural waterway to the Project site.

The Project site has been historically and is currently used for agriculture. It has been recently disked or is currently cultivated with nut crops. An irrigation water canal exists on the eastern boundary and a water pump and piping exist on the northeast boundary. Active agricultural cultivation is adjacent to the Project site to the north and east. A paved frontage road to SR 99 is located to the west and Cartmill Avenue and Tulare are located to the south.

According to the Tulare General Plan, the Project site currently has a land use designation of Regional Commercial, and the surrounding land uses consist of Regional Commercial on the south, Regional Commercial and Office Commercial to the west, Low-density Residential and Parks and Recreation to the southwest, across SR 99, and agricultural land in the City's Urban Development Boundary (UDB) designated Village to the north of the Project site (Figure 2-2).

Existing developments in the vicinity include active agriculture to the north, east and west and Tulare with residential and commercial infrastructure to the south. SR 99 is located to the west of the Project site.

Climate and Soils

The climate of the San Joaquin Valley has a Mediterranean-type climate, characterized by hot, dry summers and cool, relatively moist winters. Summer daytime high temperatures frequently exceed 100°F. The mean annual temperature is 65°F. Average annual rainfall for the area taken at the Visalia Municipal Airport, which is eight miles from Tulare is 3.33 inches. The largest metropolitan area in the vicinity is Visalia, located approximately seven miles to the northeast. Most precipitation occurs between December and March. A dense, persistent ground fog, known as "Tule fog," can develop in winter, resulting in overcast, damp, cool weather.

Biological Resources

NATURAL COMMUNITIES AND PLANT SPECIES

The northern half of the Project site is currently cultivated with almond trees and nine scattered Valley Oaks (*Quercas lobata*). The southern half of the Project site is disked with only ruderal vegetation present, and three scattered Valley Oak trees were observed. The nearest CNDDB recorded occurrence for the Valley Sacaton Grassland is approximately 10 miles northeast of the Project site. There is no riparian habitat to support Great Valley, Valley Oak Riparian Forest within 10 miles of the Project site.

WILDLIFE SPECIES

The richness and abundance of wildlife populations that occur in an area are generally driven by the richness and abundance of the plant communities that are present. Wildlife activity observed on the Project site was very minimal, which is likely reflective of the highly disturbed plant communities present. A total of six avian species were observed on the Project site. These species included the red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni),* American kestrel *(Falco sparverius*), western kingbird (*Tyrannus verticalis),* and mourning dove (*Zenaida macroura*).

WETLANDS AND WATERS

Reviews of the National Wetlands Inventory (NWI) (USFWS 2018b) and National Hydrological Dataset (NHD) (2018) were completed to identify whether wetlands had previously been documented on or adjacent to the Project site. The NWI, which is operated by the USFWS, is a collection of wetland and riparian maps that depicts graphic representations of the type, size, and location of wetland, deep water, and riparian habitats in the United States. In addition to the NWI, regional hydrologic information was obtained from the United States Geological Survey (USGS) to evaluate the potential occurrence of blue-line streams within the Project site.

The Project site is entirely within an area designated by Federal Emergency Management Agency (FEMA) as an area of minimal flood hazard. An irrigation canal ditch is located to the east of the Project site and runs parallel south along the Project site then flows west under SR 99 (Figure 3.4-2). According to the NHD, there are no wetlands or waters of the State of California on or near the Project site; therefore, no focused surveys were conducted on the Project site. No jurisdictional waters or wetlands were observed during the reconnaissance survey.

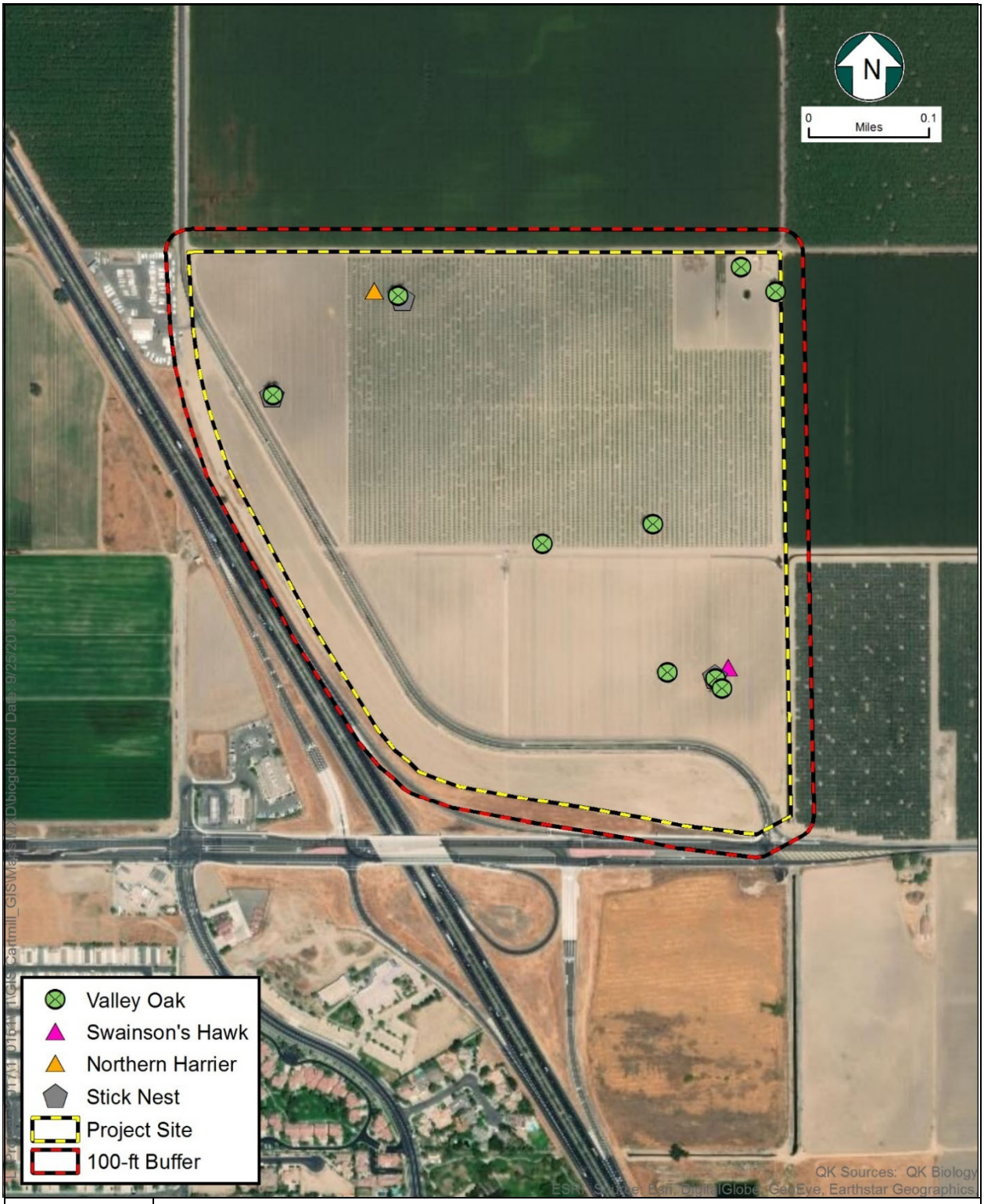


Figure 3.4-1
Biological Resources

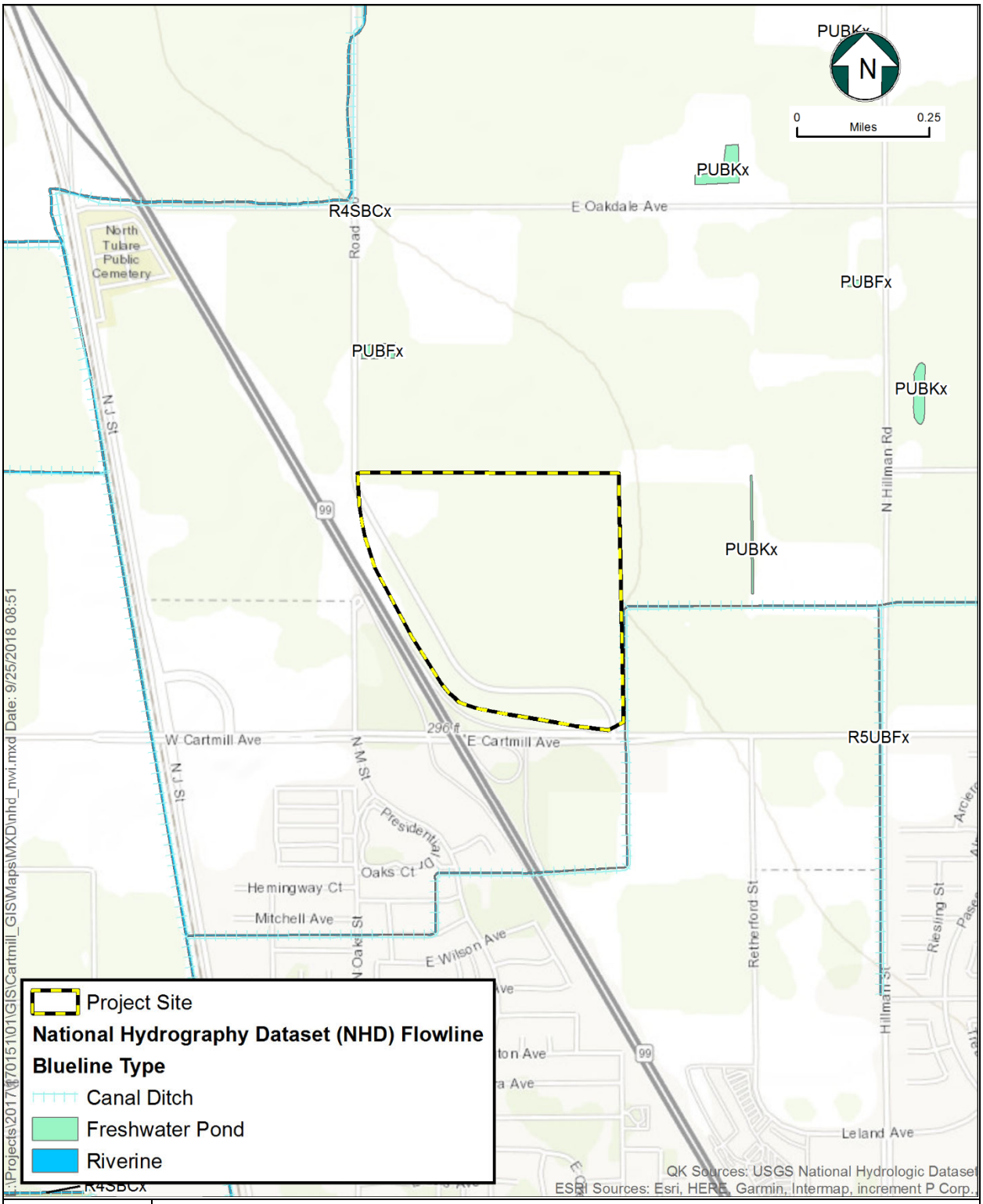


Figure 3.4-2
NHD Blue-line Types

SPECIAL-STATUS SPECIES

Wildlife

To date, focused surveys for special-status species have not been conducted on the Project site or surrounding area. Focused surveys for special-status species that may occur or are known to occur will be required prior to ground disturbance or construction activities.

Twenty-seven special-status wildlife species were identified in the CNDDB and USFWS database queries within the nine USGS 7.5-minute quadrangles that encompass and surround the Project site (Table 5-2). These included one crustacean, five invertebrates, one fish, three amphibians, four reptiles, eight birds, and five mammals. Thirteen special-status wildlife species were documented as occurring within the 10-mile radius of the Project. Four special-status wildlife species have the potential to occur on or near the Project site because the site provides suitable habitat and is within the geographic and elevational range of the species (Appendix C). The identified species include two birds and two mammals, detailed in the paragraphs that follow.

WESTERN BURROWING OWL

No western burrowing owl or its sign (i.e. whitewash or burrows) were observed on or near the Project site during the time of the survey. Marginal habitat is present on the Project due to the recent disking of the fields; however, this species may maintain partially collapsed burrows after disking has occurred. Suitable habitat for the species is present on nearby fields located to the south of the Project site.

SWAINSON'S HAWK

Three stick nests were observed in the reconnaissance survey area in large Valley Oak trees, though none were currently occupied. However, one individual was observed flying over the southern portion of the Project site near a stick nest in a large Valley Oak tree.

AMERICAN BADGER

No American badger or its sign (i.e. tracks, scat, or dens) were observed on or near the Project site during the time of the survey. Marginal habitat is present on the Project site due to the well-maintained disking of the fields. The American badger is known as a transient forager and could potentially be on the site at any time. Potential suitable habitat for the species is present on the nearby fields located to the south of the Project site.

SAN JOAQUIN KIT FOX

No San Joaquin kit fox or its sign (i.e. tracks, scat, or dens) were observed on or near the Project site during the time of the survey. Marginal habitat is present on the Project site due to the well-maintained disking of the field. The San Joaquin kit fox is known as a transient forager and could potentially be on the site at any time. Potential suitable habitat for the species is present on the nearby fields located to the south of the Project site.

Plant Species

Special-status plants are not limited to those that have been listed by State or federal agencies but include any plants that, based on all available data, are shown to be rare, threatened, or endangered in California. A species, subspecies, or variety of plant is "endangered" when the prospects of its survival and reproduction are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, or disease. A plant is "threatened" when it is likely to become endangered in the foreseeable future in the absence of protection measures. A plant is "rare" when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens.

Seventeen special-status plant species were identified in the CNDDB, CNPS, and USFWS databases (nine-quadrangle search) as occurring in the Project region. Eleven special-status plant species are known to occur within the CNDDB 10-mile search of the Project (Figure 5-1).

No special-status species were observed during the reconnaissance biological survey. The Project site had various common plant species present (Section 4, Table 4-1). The potential for special-status plant species to occur on the Project site is unlikely due to the maintained disking of the uncultivated portions or the current agricultural use of the Project site.

CRITICAL HABITAT

The USFWS designates a habitat as critical when the area may or may not be currently occupied by species, but holds the highest priority for the survival, conservation, and recovery of threatened or endangered species.

The USFWS identified a total of five critical habitats near the Project site (Figure 3.4-3). Critical habitats included vernal pool tadpole shrimp, vernal pool fairy shrimp, San Joaquin Orcutt grass, Hoover's spurge, and California tiger salamander. The nearest CNDDB recorded occurrence for vernal pool tadpole shrimp, vernal pool fairy shrimp, and California tiger salamander is approximately 12.3 miles north of the Project site. The nearest CNDDB recorded occurrence for Hoover's spurge and San Joaquin Orcutt grass is approximately 12.8 miles north of the Project site.

MOVEMENT CORRIDORS AND LINKAGE

Wildlife movement corridors, also referred to as dispersal corridors or landscape linkages, are generally defined as linear features along which animals can travel from one habitat or resource area to another. The USFWS does not identify any movement corridors or linkages on or near the Project site. The site and surrounding areas are not listed as a movement corridor; however, the area has the potential for transient wildlife to travel through the area. Potential transient wildlife species include San Joaquin kit fox and American badger. Both species are highly mobile and have the potential to be present on the Project site at any time.

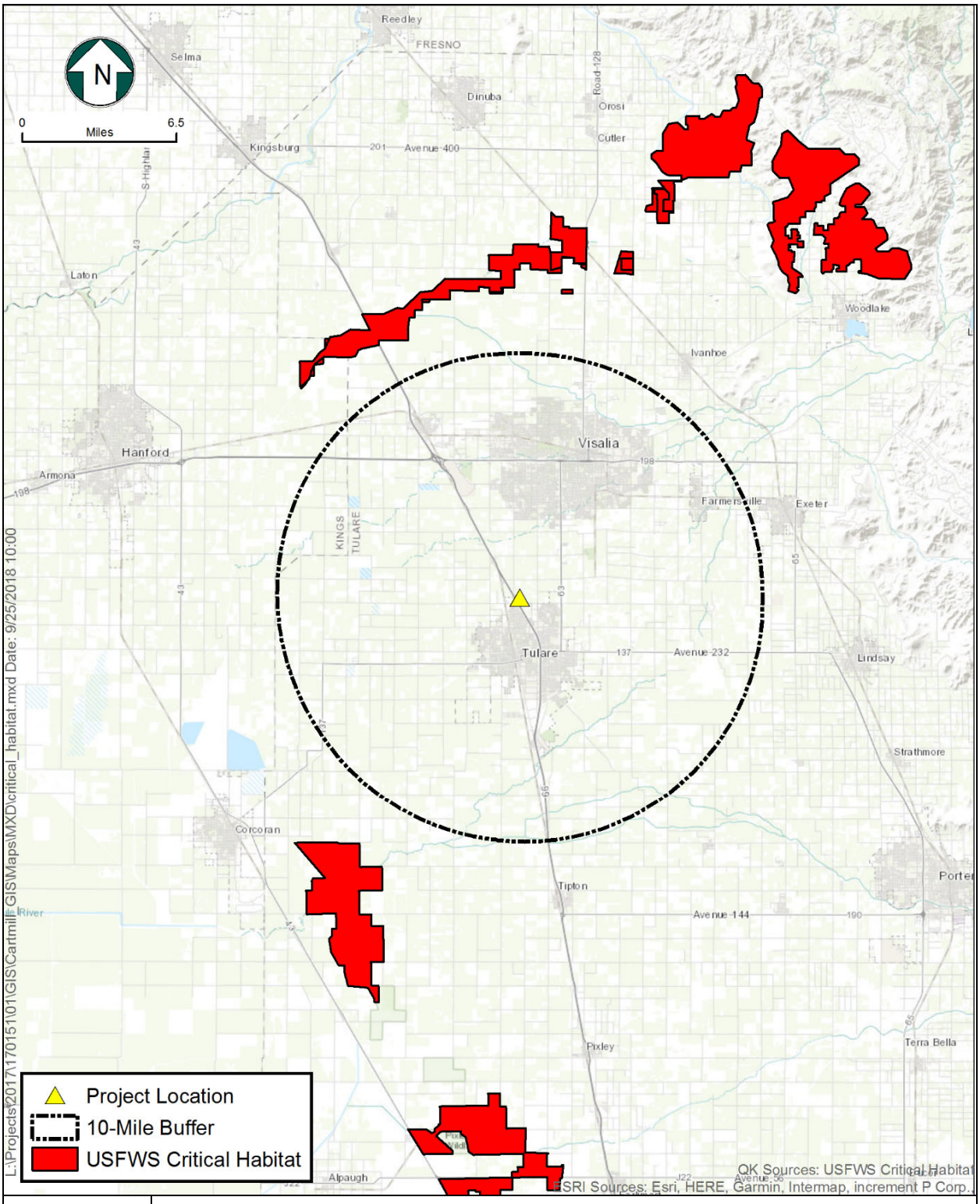


Figure 3.4-3
USFWS Critical Habitat

3.4.2 - REGULATORY SETTING

Federal

FEDERAL ENDANGERED SPECIES ACT

The Federal Endangered Species Act (FESA) protects threatened and endangered species from "take" unless the taking is incidental to an otherwise lawful activity and unless a permit is acquired through the USFWS or the National Oceanographic Administration Agency (NOAA). Permits for take are issued pursuant to Section 7 of FESA (for a federal action) or Section 10 of FESA (for a non-federal action). FESA defines an endangered species as "any species or subspecies that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species or subspecies that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Take is defined as "the killing, capturing, trapping, or harassing of a species." Proposed endangered or threatened species are those species for which a proposed regulation but not a final rule has been published in the Federal Register.

MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) is an international treaty among the United States, Canada, Mexico, Japan, and Russia for the conservation and management of bird species that may migrate through more than one country. The MBTA (50 CFR, Section 10) is enforced in the United States by the USFWS and covers 972 bird species. According to the provisions of the MBTA, it is unlawful to pursue, hunt, take, capture, or kill or attempt to do the same to any species covered by the MBTA, including their nests, eggs, or young. Any disturbance that causes nest abandonment or loss of reproductive effort is considered "take" and is potentially punishable by fines or imprisonment. Birds covered under the MBTA include all waterfowl, shorebirds, gulls, wading birds, raptors, owls, hummingbirds, warblers, flycatchers, and most perching bird species.

CLEAN WATER ACT – SECTION 404

The goal of Section 404 of the Clean Water Act (CWA) of 1972 is to maintain, restore, and enhance the physical, chemical, and biological integrity of the nation's waters. Under Section 404 of the CWA, the EPA has authority for the implementation of CWA, but the U.S. Army Corps of Engineers (USACE) regulates discharges of dredged and fill materials into "Waters of the United States" (WOTUS) (jurisdictional waters) with guidance from the EPA. WOTUS include a wide variety of types including waters used for interstate commerce and tributaries to those waters, intrastate lakes, rivers, streams, sandflats, mudflats, playa lakes, sloughs, wet meadows, wetlands, natural ponds, and wetlands adjacent to any WOTUS (33 CFR, Part 328, Section 328.3). Impacts to jurisdictional waters, including wetlands (a special category of WOTUS), require a permit from USACE and typically require mitigation. Impacts to wetlands often require "in kind" compensation to ensure no net loss of wetland function and value.

CLEAN WATER ACT – SECTION 401

Under Section 401 of the CWA, applicants for federal permits for activities that could result in discharges to water bodies must also obtain a State Water Quality Certification (WQC). The local Regional Water Quality Control Board (RWQCB) has jurisdiction over all those areas defined as jurisdictional under Section 404 of the CWA, and also regulates water quality for all waters of the State. State waters outside federal jurisdiction include isolated wetlands as defined under the California Porter-Cologne Water Quality Control Act (Porter Cologne; California Water Code, Division 7, Section 13000 et seq.). A Waste Discharge Permit (WDP) may be required to comply with the Porter-Cologne Water Quality Control Act even if the CWA would not apply. To obtain a WQC or WDP, the applicant must demonstrate that the proposed discharge would be consistent with the standards set forth by the State.

State

FISH AND GAME CODE SECTIONS 2050-2097 – CALIFORNIA ENDANGERED SPECIES ACT

Section 2080 of the California Endangered Species Act (CESA) prohibits the "take" of any State-listed threatened and endangered species. CESA defines take as "any action or attempt to hunt, pursue, catch, capture, or kill any listed species." If the proposed Project results in a take of a listed species, a permit pursuant to Section 2081(b) of CESA is required from CDFW.

FISH AND GAME CODE SECTIONS 3511, 4700, 5050, 5515 – CALIFORNIA FULLY PROTECTED SPECIES

Sections 3511, 4700, 5050, and 5515 of Fish and Game Code prohibit the "take" of any fully protected bird, mammal, reptile and amphibian, or fish species, respectively. Except as provided in Sections 2081.7 or 2835, fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the species for the protection of livestock.

FISH AND GAME CODE SECTIONS 1900-1913 – CALIFORNIA NATIVE PLANT PROTECTION ACT

The California Native Plant Protection Act (CNPPA) protects endangered and rare species, subspecies, and varieties of wild plants native to California. A "native plant" is defined as a plant growing in a wild, uncultivated state normally found native to the vegetation of California. The CNPPA affords the California Fish and Game Commission the authority to designate native plants as endangered or rare, and to require permits for collecting, transporting, or selling such plants.

PUBLIC RESOURCES CODE SECTION 15380 – CALIFORNIA ENVIRONMENTAL QUALITY ACT

It is the policy of CEQA to regulate projects to prevent significant environmental impacts. The typical mechanism to ensure environmental protection is the preparation and public review of an EIR, which is used to disclose potential environmental impacts and information

relevant to the project. Various responsible and trustee agencies and the public provide review, comments, and input into the final document.

Under *Appendix G* of the *CEQA Guidelines*, significant impacts to sensitive natural communities and special-status plant and wildlife species, including species of special concern, must be fully considered. Avoidance and minimization measures and/or mitigation must be implemented where feasible to reduce impacts to a less-than-significant level.

FISH AND GAME CODE SECTIONS 3503, 3503.5, 3800 – BIRDS OF PREY

Under the California Fish and Game Code (Section 3503.5), all birds of prey (orders *Falconiformes* and *Strigiformes*) are protected. The Fish and Game Code states that it is unlawful to take, possess, or destroy the nest or eggs of any such bird except in accordance with the Fish and Game Code. Any activity that would cause a nest to be abandoned or cause a reduction or loss in a reproductive effort is considered a take.

FISH AND GAME CODE SECTIONS 1600-1607 – LAKE OR STREAMBED ALTERATION

The CDFW is authorized under State Fish and Game Code, Sections 1600-1607, to develop mitigation measures and enter into Lake or Streambed Alteration Agreements with applicants (both public and private) that propose a project that would divert or obstruct the natural flow of or change the bed, channel, or bank of any lake or stream in which there is a fish or wildlife resource. Through this agreement, the CDFW may impose conditions to limit and fully mitigate impacts on fish and wildlife resources.

Local

CITY OF TULARE GENERAL PLAN

Pursuant to CCR, Title 14, Section 65300, the City of Tulare General Plan (City of Tulare, 2014) addresses biological resources in its Conservation and Open Space Element. The General Plan also includes local, regional, State, and federal programs and regulations as well as a comprehensive set of guiding and implementing policies. The City of Tulare General Plan sets forth the following goals and policies relevant to biological resources and to the Project:

Conservation and Open Space Element

GOAL

COS-2 To preserve and protect sensitive significant habitats, enhance biodiversity, and promote healthy ecosystems throughout the Urban Development Boundary (UDB).

POLICIES

COS-P2.1 Protection of Rare and Endangered Species. The City shall support preservation, restoration, and enhancement of designated habitats of State or

federally-listed rare, threatened, endangered and/or other sensitive and special status species.

COS-P2.2 Protection of Natural Areas. The City shall support preservation, maintenance, restoration, and enhancement of natural systems, waterways, and open space.

COS-P2.3 Development in Environmentally-Sensitive Areas. The City shall require careful planning of new development in environmentally sensitive habitat areas and to avoid or otherwise mitigate potential significant impacts whenever feasible. The focus of efforts shall be on project design to avoid impacts whenever feasible. Environmentally-sensitive habitat shall include, at a minimum, the following:

- Any habitat for a federally- or State-listed rare, threatened or endangered animal or plant; and
- Identifiable wildlife movement corridors, including, but not limited to, non-fragmented stream environment zones, and avian and mammalian migratory routes.

COS-P2.4 Site Planning. The City shall encourage site planning that incorporates and protects creek and wetland edges.

COS-P2.5 Open Space Buffers. The City shall require buffer areas between development projects and significant watercourses, riparian vegetation, wetlands, and other sensitive habitats and natural communities.

COS-P2.6 Planting of Native Vegetation. The City shall encourage the planting of native trees, shrubs, and grasslands in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native vegetation and wildlife, and ensure that a maximum number and variety of well-adapted plants are maintained.

COS-P2.7 Valley Oaks. The City shall preserve mature Valley Oaks and their habitats located within the UDB to the extent possible.

COS-P2.8 Wetlands Dedication. The City shall require all preserved wetlands be dedicated to the City or a non-profit organization approved by the City and preserved through perpetual covenants enforceable by the City or other appropriate agencies.

COS-P2.9 Wetlands Management. The City shall support the management of wetland and riparian plant communities for passive recreation, groundwater recharge, and wildlife habitats. Such communities shall be restored or expanded, where possible and as appropriate. Any project that proposes to restore or enhance riparian habitat shall require a Streambed Alteration Agreement in compliance with California Fish and Game Code, Sections 1600-1616. Any

project that proposes to restore, enhance, or otherwise affect a jurisdictional wetland shall require consultation with the U.S. Army Corps of Engineers and compliance with the Clean Water Act.

COS-P2.10 Stream Buffer. The City shall require a conservation easement or setback of a minimum of 100 feet from the edge of the Elk Bayou riparian zone to avoid the stream channel and the surrounding riparian vegetation. The riparian zone should encompass the edge of the bayou bank (minimally) to the edge of the riparian vegetation bordering the stream (maximally).

CITY OF MUNICIPAL CODE

Municipal Code Chapter 8.52 Heritage Trees Protection

Chapter 8.52 of the Municipal Code regulates the preservation and protection of heritage trees. Heritage trees are known as Valley Oaks (*Quercus lobata*) with a trunk of two inches or greater at diameter breast height (DBH). Historic tress are any trees designated by resolution of the City of Tulare Council because of an association of an event or a person of historical significance to the community. Other trees may qualify as heritage trees based on their size, condition, or aesthetic qualities. For a tree to qualify, except for Valley Oak, requires the consent of the property owner. Approved heritage trees are protected from destruction, removal, or pruning without a permit on both public and private properties; however, emergency events and public utilities are exempt.

3.4.3 - IMPACT EVALUATION CRITERIA

Methodology

During the NOP review period, no comments were received regarding potential impacts to biological resources. Potential impacts to biological resources were determined by analyzing the change(s) to the existing setting, as described above, and associated disturbances to biological resources as they relate to the current environmental regulatory framework. Potential impacts were assessed with reference to sensitive biological resources of concern, which included:

- Each potentially affected special-status species, considered individually;
- Each potentially affected plant community;
- Each potentially affected water, wetland, or riparian resource; and
- Breeding migratory birds.

Thresholds of Significance

Significance thresholds are based upon *Appendix G* of the *CEQA Guidelines* and on *Section 15065* of the *CEQA Guidelines.* Using these sources, the Project would have a significant impact on biological resources if it would:

a) *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in a local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;*

b) *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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;*

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

d) *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;*

e) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or*

f) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan.*

3.4.4 - Impacts and Mitigation Measures

Impact #3.4-a: Would the Project 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Some special-status species could potentially be present on the Project site and be impacted by the Project. Each species is discussed below and appropriate measures to reduce impacts to below significant levels are provided where appropriate. With implementation of appropriate mitigation measures, Project activities will not contribute to significant impacts to special-status species.

Special-status Plant Species

No special-status plant species were observed on the Project site during the reconnaissance-level survey. The Project site does not contain habitat that would support special-status plant species. The Project site is heavily disturbed, so the potential for special-status plant species to occur on the Project site is unlikely. No impacts to special-status plant species would occur.

Special-status Wildlife Species

No special-status wildlife species were observed on the Project site during the reconnaissance-level survey, but some special-status species could occur on the Project site. These species include the western burrowing owl, Swainson's hawk, American badger, and San Joaquin kit fox. Of these species, a single Swainson's hawk individual was observed flying over the southern portion of the Project site near a stick nest in a large Valley Oak tree. Three stick nests were observed in the Valley Oak trees present onsite, but none were occupied at the time of the survey. Potential suitable habitat for the western burrowing owl, Swainson's hawk, American badger, and San Joaquin kit fox is present on the nearby fields located to the south of the Project site but there is marginal suitable habitat on the Project site for these species.

CONCLUSION

In the absence of mitigation, Project-related impacts to special-status wildlife species will be potentially significant.

MITIGATION MEASURE(S)

MM BIO-1: Nesting surveys for the Swainson's hawks shall be conducted in accordance with the protocol outlined in the "Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley" (Swainson's Hawk Technical Advisory Committee, 2000). If potential Swainson's hawk nests or nesting substrates are located within 0.5 miles of the Project site, then those nests or substrates must be monitored for activity on a routine and repeating basis throughout the breeding season, or until Swainson's hawks or other raptor species are verified to be using them. The protocol recommends that 10 visits be made to each nest or nesting site: one during January 1-March 20 to identify potential nest sites, three during March 20-April 5, three during April 5-April 20, and three during June 10-July 30. To meet the minimum level of protection for the species, surveys shall be completed for at least the two survey periods immediately prior to Project-related ground disturbance activities. If Swainson's hawks are not found to nest within the survey area, then no further action is warranted.

If Swainson's hawks are found to nest within the survey area, during the nesting period, active Swainson's hawk nests shall be avoided by 0.5 miles unless this avoidance buffer is reduced through consultation with the CDFW and/or USFWS. If a construction area falls within this nesting site, construction must be delayed until the young have fledged (left the nest). The 2,500-foot radius no construction zone may be reduced in size. A qualified biologist must conduct construction monitoring on a daily basis, inspect the nest on a daily basis, and ensure that construction activities do not disrupt breeding behaviors. In no case shall the no construction zone be reduced to less than 500 feet.

EFFECTIVENESS OF MITIGATION

Implementation of Mitigation Measure MM BIO-1 will prevent Project-related disruption of Swainson's hawk nesting activity. Implementation of this measure will reduce potential impacts to the Swainson's hawk to a level that is ***less than significant.***

MITIGATION MEASURE(S)

MM BIO-2: A pre-construction survey shall be performed on the Project site, and within 500 feet of its perimeter, in areas where there is a potential for nesting raptors and other migratory birds to occur if construction occurs during the breeding season (February 1 to August 31). These areas include power poles or trees that are suitable for the establishment of nests. Areas also include non-native annual grassland habitat and agriculturally developed land, which provide potential breeding habitat for ground-nesting birds such as the western meadowlark and northern harrier. The pre-construction survey shall be performed within 14 days of construction to identify active nests and mark those nests for avoidance.

If nesting raptors are identified during the surveys, during the nesting period, active raptor nests shall be avoided with a buffer of 500 feet and all other migratory bird nests shall be avoided with a buffer of 250 feet. Avoidance buffers may be reduced through consultation with the CDFW and/or USFWS.

No construction or earth-moving activity shall occur within a non-disturbance buffer until it is determined by a qualified biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid Project construction zones. This typically occurs by early July, but September 1 is considered the end of the nesting period unless otherwise determined by a qualified biologist. Once raptors have completed nesting and young have fledged, disturbance buffers will no longer be needed and can be removed, and monitoring can be terminated.

EFFECTIVENESS OF MITIGATION

Implementation of Mitigation Measure MM BIO-2 will prevent Project-related disruption of raptor and migratory bird nesting activities. Implementation of this measure will reduce Project impacts to nesting raptors and other migratory birds to a level that is ***less than significant.***

MITIGATION MEASURE(S)

MM BIO-3: The following measures shall be implemented to reduce potential impacts to San Joaquin kit fox and American badger: Because there is the potential for the San Joaquin kit fox to occur on the Project site, the USFWS "Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance" (USFWS, 2011) shall be followed. The measures that are listed below have been excerpted from those guidelines and would protect San Joaquin kit foxes and American badgers from direct mortality and from destruction of active dens and natal or pupping dens. The Lead Agency or designee shall

determine the applicability of the following measures depending on specific construction activities and shall implement such measures when required.

- Pre-construction surveys shall be conducted no fewer than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities, or any project activity likely to impact the San Joaquin kit fox or American badger. Exclusion zones shall be placed in accordance with USFWS Recommendations using the following:

Potential Den	50-foot radius
Known Den	100-foot radius
Natal/Pupping Den (Occupied and Unoccupied)	Contact U.S. Fish and Wildlife Service for guidance
Atypical Den	50-foot radius

  If any den is found within the construction area and must be removed, it must be appropriately monitored and excavated by a trained wildlife biologist. Destruction of natal dens and other "known" kit fox dens must not occur until authorized by USFWS. Replacement dens will be required if such dens are removed. Potential dens that are removed do not need to be replaced if they are determined to be inactive after monitoring.
- Project-related vehicles shall observe a daytime speed limit of 20 mph throughout the site in all project areas, except on county roads and State and federal highways; this is particularly important at night when kit foxes and American badgers are most active. Night-time construction shall be minimized to the extent possible. However, if it does occur, then the speed limit shall be reduced to 10 mph. Off-road traffic outside of designated project areas shall be prohibited.
- To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than two-feet deep shall be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted at the addresses provided below.
- Kit foxes and American badgers are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.

- All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from a construction or project site.
- Use of firearms on the site shall adhere to USFWS protocols.
- No pets, such as dogs or cats, shall be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.
- Use of rodenticides and herbicides in project areas shall be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds shall observe label and other restrictions mandated by the EPA, California Department of Food and Agriculture, and other State and federal legislation, as well as additional project-related restrictions deemed necessary by the USFWS. If rodent control must be conducted, zinc phosphide shall be used because of a proven lower risk to kit fox.
- A representative shall be appointed by the project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the USFWS.
- An employee education program shall be conducted. The program shall consist of a brief presentation by persons knowledgeable in San Joaquin kit fox biology and legislative protection to explain endangered species concerns to contractors, their employees, and military and/or agency personnel involved in the project. The program shall include the following: A description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information shall be prepared for distribution to the previously referenced people and anyone else who may enter the project site.
- Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. shall be re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas shall be determined on a site-specific basis in consultation with the USFWS, CDFW, and revegetation experts.
- In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the USFWS shall be contacted for guidance.
- Any contractor, employee, or military or agency personnel who are responsible for inadvertently killing or injuring a San Joaquin kit fox shall immediately report the incident to their representative. This representative shall contact the CDFW immediately in the case of a dead, injured or entrapped kit fox. The CDFW contact for immediate assistance is State Dispatch at (916) 445-0045. They will contact the local

warden or Mr. Paul Hofmann, the wildlife biologist, at (530) 934-9309. The USFWS shall be contacted at the numbers below.

- The Sacramento Fish and Wildlife Office of USFWS and CDFW shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project-related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The USFWS contact is the Chief of the Division of Endangered Species, at the addresses and telephone numbers below. The CDFW contact is Mr. Paul Hofmann at 1701 Nimbus Road, Suite A, Rancho Cordova, California 95670, (530) 934-9309.
- All sightings of the San Joaquin kit fox shall be reported to the CNDDB. A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed shall also be provided to the service at the address below.

Any project-related information required by the USFWS or questions concerning the above conditions or their implementation may be directed in writing to the U.S. Fish and Wildlife Service at:

Endangered Species Division
2800 Cottage Way, Suite W2605
Sacramento, California 95825-1846
(916) 414-6620 or (916) 414-6600

EFFECTIVENESS OF MITIGATION

Implementation of Mitigation Measure MM BIO-3 would reduce potential impacts to the San Joaquin kit fox and American badger to a level that is ***less than significant.***

MITIGATION MEASURE(S)

MM BIO-4: An environmental awareness training program shall be presented to all construction personnel before they access the Project site and begin work. The presentation shall include the life history information for all special-status species that could potentially occur on the Project site. The presentation shall discuss the legal protection status of each species, the definition of "take" under existing environmental laws, specific measures that workers would employ to avoid take of wildlife species, and the penalties for violations. An attendance sheet shall be circulated at all training sessions to document worker attendance.

EFFECTIVENESS OF MITIGATION

Implementation of Mitigation Measure MM BIO-4 would reduce potential impacts to special-status species to a level that is ***less than significant.***

Impact #3.4-b: Would the Project 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

There are no riparian habitats or sensitive natural communities present on the Project site.

CONCLUSION

The Project will have no impacts to riparian habitats or sensitive natural communities.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.4-c: Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

There are no wetlands or waters on the Project site that would be regulated by the USACE through Section 404 of the CWA.

CONCLUSION

The Project would have no impacts to federally protected wetlands or waters as defined by Section 404 of the CWA.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.4-d: Would the Project 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?

Wildlife movement corridors are routes that provide shelter and sufficient food supplies to support wildlife species during migration movement across home ranges. Movement corridors generally consist of riparian, woodland, or forested habitats that span contiguous acres of undisturbed habitat and are important elements of resident species' home ranges. The Project site does not serve as a vital linkage between wildlife habitats, although some wildlife species, including migratory birds, may pass through it. The Project site does not occur within California Essential Habitat Connectivity Areas identified by the CDFW (CDFW Biogeographic Information and Observation System, 2015). The reconnaissance-level survey found no evidence of wildlife nursery sites on the Project site. Because the Project site does not serve as a wildlife movement corridor or as a wildlife nursery site, Project implementation would not impede wildlife movement or the use of a wildlife nursery site.

CONCLUSION

The Project will have no impacts to wildlife corridors or wildlife nursery sites.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.4-e: Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

There are nine Valley Oak trees located on the Project site meeting the requirements for protection under the City's Ordinance for the Preservation of Heritage Trees (City Code, Chapter 8.52). The preference of the City is for the protection of these trees in place and for the design of the Project to include their protection, as determined by a certified arborist. If the trees cannot be incorporated into the design of the Project, the applicant would have to apply for a permit to relocate or remove the trees.

CONCLUSION

In the absence of mitigation, Project-related impacts due to conflict with the City's Tree Preservation Policy would be potentially significant.

MITIGATION MEASURE(S)

MM BIO-5: Any person desiring to destroy or remove a heritage tree on private or public property must first obtain a removal permit by applying in writing to the Director of Community Services for such a permit. Within seven days of receipt of the application, the Director shall inspect the premises whereon the heritage trees are located and shall issue an intended decision in writing as to whether or not the application will be approved, with or without conditions; provided, however, that failure to render an intended decision within such period shall not be deemed approval. The intended decision of the Director shall be based upon reasonable standards, including, but not limited to, the following:

- The condition of the heritage tree with respect to its general health, status as a public nuisance, danger of falling, proximity to existing or proposed structures, interference with utility services and its status as host for plant, pest or disease endangering other species of trees or plants with infection or infestations;
- The necessity of the requested action to allow construction of improvements or otherwise allow economic or other reasonable enjoyment of property;
- The topography of the land and the effect of the requested action on soil retention, water retention and diversion or increased flow of surface waters;
- The number, species, size and location of existing trees in the area and the effect of the requested action on shade areas, air pollution, historic values, scenic beauty and the general welfare of the city as a whole; and/or

- Good forestry practices such as, but not limited to, the number of healthy trees the subject parcel of land will support. In the intended decision on an application for a permit, the Director may attach reasonable conditions to insure compliance with the stated purposes of this section, such as, but not limited to, a condition requiring up to two replacement trees from 15-gallon containers or larger, in a suitable location as substitutes for the removed tree or trees, at the sole expense of the applicant. Any such intended decision shall include a statement for the reasons for the decision.

EFFECTIVENESS OF MITIGATION MEASURE

Implementation of Mitigation Measure MM BIO-5 would reduce potential impacts to special-status species to a level that is ***less than significant.***

Impact #3.4-f: Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan?

There are no implemented Habitat Conservation Plans or Natural Community Conservation Plans in the vicinity of the Project site. The Project will follow the implemented San Joaquin Valley Upland Species Recovery Plan for all 34 special-status species listed. Therefore, there will be less-than-significant impacts to any listed species.

CONCLUSION

A less-than-significant impact has been identified.

MITIGATION MEASURES)

No mitigation measures are required.

3.5 - Cultural Resources

This section of the EIR is based on a Cultural Resources Technical Memo prepared for the proposed Project (Appendix D) that describes cultural resources that potentially exist in the proposed Project area or in its vicinity that may be adversely affected by Project implementation. Other information is based on Cultural Resources Assessment prepared by the Basin Research Associates for the Sequoia Gateway Commerce Park Project certified EIR (County of Tulare, 2018). Cultural resources are defined as prehistoric and historic archeological sites, architectural properties (e.g., buildings, bridges, and structures), and traditional properties with significance to Native Americans. This definition includes historic properties as defined by the National Historic Preservation Act (NHPA).

3.5.1 - Environmental Setting

Ethnography/Ethnohistory

The Southern Valley Yokuts occupied the areas surrounding Tulare, Buena Vista and Kern Lakes and their connecting sloughs, and the lower portions of the Kings, Kaweah, Tule and Kern Rivers. The groups spoke a Southern Valley-type dialect of the Yokuts language of the Penutian family of languages. The identity of the Yokuts tribe was residential, linguistic, and cultural. They were hunters and gatherers who depended on almost year-round fishing, hunting waterfowl and collecting shellfish, roots and seeds. Villages were selected for proximity to water and many were on small open flats at the water's edge. Within a geographic area, villages functioned as the center of each tribe (County of Tulare, 2018).

The *Telamni,* alternatively *Talumne* Yokuts, occupied Cross, Mill and Packwood Creeks and held Buena Vista Lake. A large village with an estimated population of 550, known as *Waitatshulul* or *Waitachuiyui*, appears to have been located on the north side of Packwood Creek within the southeastern part of the City of Visalia or to its southeast. *Waitatshulul* was located "some seven miles north of Tulare City" (County of Tulare, 2018).

An epidemic devastated the Native American population in 1832-1833. Later, the discovery of gold in 1848 and the ensuing flow of miners and immigrants further decimated the indigenous populations. The 1850 Lieutenant G.H. Derby Expedition describes about 17 rancherias in the area northeast of Tulare Lake with a population of about 3,000. Wallace estimates that the pre-contact *Telamni*, *Wo'lasi*, and *Choynok* population of 3,800 was reduced to 800 by 1850. The Mariposa Indian War, waged from December 1850 through May 1851, also had a major impact on Native Americans in the general study area. Nonetheless, Native Americans were still occupying villages in the general study area through the early 1860s (County of Tulare, 2018).

Historic Period

Exploration and Hispanic settlement in what was to become Tulare County was minimal due to geographic features including the almost impenetrable *tulares* (tule marsh) of the San

Joaquin Valley, absence of reliable freshwater, and generally dry, sandy washes which became raging streams after heavy rainfall (County of Tulare, 2018).

Father Crespi, who accompanied Pedro Fages in 1772, was probably the first Euro-American to see the San Joaquin Valley during wet season, and thereafter other groups generally referred to it as the *Valle de los Tulares* and *Llano del Tular* (plain). The Sierra Nevada was first seen by Father Juan Crespi, but the mountains were not named at this time. In 1776, Pedro Font mapped and used the name "*Sierra Nevada,*" a name which appears to have been in use (as suggested by a reference by Padre Garces on April 25, 1776). Crespi also viewed the San Joaquin River in March 1772 while attempting to reach Point Reyes. In 1804, Juan Martin entered the Kaweah River Delta and called the people *Telame* (County of Tulare, 2018).

In the mid-19th century, most of the rancho and pueblo lands in California were subdivided as the result of population growth and the American takeover. The initial explosion in population was associated with the Gold Rush beginning in 1848, followed later by the construction of the Transcontinental Railroad beginning in 1869. The United States government encouraged the settlement of the west by permitting individuals and corporations to patent public domain lands under the Homestead Act of 1862 (County of Tulare, 2018).

Mining was responsible for the early disruptive intrusion of Euro-Americans into the study area and resulted in eventual retaliation by Native American groups and, later, a military presence.

Tulare County was created in 1852 from the southern part of Mariposa County and its boundaries were modified in 1856, 1866, 1872, 1874, 1876, 1893, and 1923. It was named for the *Tule* or *Tular* marshlands (cattail or bulrush and similar plants), common on the west side of the lower San Joaquin Valley prior to the reclamation projects of the late 19th and early 20th centuries. The first county seat was Wood's Cabin, later known as Woodsville, a landing at "Four Creeks County." The county seat moved in 1853 to Visalia (County of Tulare, 2018).

3.5.2 - REGULATORY SETTING

Federal, State, and local governments have developed laws and regulations which are designed to protect significant cultural resources that may be affected by proposed projects. The NHPA and CEQA are the basic federal and State laws governing the preservation of historic and archaeological resources national, regional, State, and local significance.

Federal

NATIONAL REGISTER OF HISTORIC PLACES

The National Register of Historic Places (NRHP) was established by the NHPA of 1966 as “an authoritative guide to be used by federal, State, and local governments; private groups; and

citizens to identify the nation's historic resources and indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). The NRHP recognizes both historical-period and prehistoric archaeological properties that are significant at the national, State, and local levels. In the context of the Project, which does not involve any historical-period structures, the NRHP criteria below are given as the basis for evaluating archaeological resources.

- To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (U.S. Department of the Interior, 1995):
  - The resource is associated with events that have made a significant contribution to the broad patterns of our history;
  - The resource is associated with the lives of persons significant in our past;
  - The resource embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master or possesses high artistic values or represents a significant and distinguishable entity whose components may lack individual distinction; and
  - The resource has yielded, or may be likely to yield, information important to prehistory or history.
- Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for NRHP.

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as "the ability of a property to convey its significance" (U.S. Department of the Interior, 1995). The NRHP recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association.

State

CALIFORNIA REGISTER OF HISTORICAL RESOURCES

Created in 1992 and implemented in 1998, the California Register of Historical Resources (CRHR) is "an authoritative guide in California to be used by State and local agencies, private groups, and citizens to identify the State's historical resources and indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change." Certain properties, including those listed in or formally determined eligible for listing in the NRHP and California Historical Landmarks (CHL) (Nos. 770 and higher), are automatically included in the CRHR. Other properties recognized under the California Points of Historical Interest (CPHI) Program, identified as significant in historic resources surveys, or designated by local landmarks programs may be nominated for inclusion in the CRHR. A resource, either an individual property or a contributor to a historic district, may be listed in

the CRHR if the State Historical Resources Commission (SHRC) determines that it meets one or more of the following criteria, which are modeled on the NRHP criteria:

- **Criterion 1.** The resource is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- **Criterion 2.** The resource is associated with the lives of persons important in our past;
- **Criterion 3.** The resource embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of an important creative individual or possesses high artistic values; and
- **Criterion 4.** The resource has yielded, or may be likely to yield, information important in history or prehistory.

Furthermore, under PRC, Section 4852(c), a cultural resource must retain integrity to be considered eligible for the CRHR. Specifically, it must retain sufficient character or appearance to be recognizable as a historical resource and convey reasons of significance. Integrity is evaluated with regard to retention of such factors as location, design, setting, materials, workmanship, feeling, and association. Cultural sites that have been affected by ground-disturbing activities, such as grazing and off-road vehicle use (both of which have occurred within the Project site), often lack integrity because they have been damaged. Typically, a prehistoric archaeological site in California is recommended eligible for listing in the CRHR according to its potential to yield information important in prehistory or history (Criterion 4). Important information includes chronological markers such as projectile point styles or obsidian artifacts that can be subjected to dating methods or undisturbed deposits that retain their stratigraphic integrity. Sites such as these have the ability to address research questions.

CALIFORNIA HISTORICAL LANDMARKS

California Historical Landmarks are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value and have been determined to have statewide historical significance by meeting at least one of the criteria listed below. The resource also must be approved for designation by the County Board of Supervisors (or the city/town council whose jurisdiction it is located), be recommended by the SHRC, and be officially designated by the Director of California State Parks. The specific standards now in use were first applied in the designation of CHL No. 770. CHL Nos. 770 and above are automatically listed in the CRHR.

To be eligible for designation as a landmark, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type in the State or within a large geographic region (Northern, Central, or Southern California); and
- It is associated with an individual or group having a profound influence on the history of California.

It is a prototype of, or an outstanding example of, a period, style, architectural movement, or type of construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder.

CALIFORNIA PUBLIC RECORDS ACT

Sections 6254(r) and 6254.10 of the California Government Code (within the Public Records Act) were enacted to protect archaeological sites from unauthorized excavation, looting, or vandalism. Section 6254(r) explicitly authorizes public agencies to withhold information from the public relating to "Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission." Section 6254.10 specifically exempts from disclosure requests for "records that relate to archaeological site information and reports maintained by, or in the possession of, the Department of Parks and Recreation, the SRHC, the State Lands Commission, the Native American Heritage Commission (NAHC), another State agency, or a local agency, including records that the agency obtains through a consultation process between a Native American tribe and a State or local agency."

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Section 15064.5 of the *CEQA Guidelines* provides guidance for determining the significance of impacts to archaeological and historical resources. Demolition or material alteration of a historical resource, including archaeological sites, is generally considered a significant impact. CEQA requires Lead Agencies to carefully consider the potential effects of a project on historical resources. A "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant (PRC, Section 5020.1). *Section 15064.5* of the *CEQA Guidelines* specifies criteria for evaluating the importance of cultural resources, including:

- The resource is associated with events that have made a contribution to the broad patterns of California history;
- The resource is associated with the lives of important persons from our past;
- The resource embodies the distinctive characteristics of a type, period, region or method construction, or represents the work of an important individual or possesses high artistic values; or
- The resource has yielded, or may be likely to yield, important information in prehistory or history.

NATIVE AMERICAN HERITAGE COMMISSION

Section 5097.91 of the California Public Resources Code (PRC) established the NAHC, the duties of which include inventorying places of religious or social significance to Native Americans and identifying known graves and cemeteries of Native Americans on private lands. Section 5097.98 of the PRC specifies the protocol to be followed when the NAHC receives notification of the discovery of Native American human remains from a county coroner.

CALIFORNIA ASSEMBLY BILL (AB) 52

AB 52, signed by Governor Edmund G. Brown, Jr., in September of 2014, seeks to protect a new class of resources under CEQA: "tribal cultural resources." It requires that Lead Agencies undertaking CEQA review must, upon written request of a California Native American tribe, begin consultation prior to the release of a Negative Declaration (ND), Mitigated Negative Declaration (MND) or Environmental Impact Report (EIR) for a project.

CALIFORNIA HEALTH AND SAFETY CODE SECTION 7050.5 (B)

California Health and Safety Code (HSC), Section 7050.5(B) requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are identified as Native American, the coroner must contact the California NAHC.

CALIFORNIA HEALTH AND SAFETY CODE SECTION 7052

This section of the California HSC establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

PUBLIC RESOURCES CODE SECTION 5024 AND 5024.5

Public Resources Code (PRC), Sections 5024 and 5024.5, requires State agencies to inventory and protect historical structures and artifacts under their jurisdiction.

PUBLIC RESOURCES CODE SECTION 5097.9

This section of the PRC states that it is contrary to the free expression and exercise of Native American religion to interfere with or cause severe or irreparable damage to any Native American cemetery, place of worship, religious or ceremonial site or sacred shrine.

PUBLIC RESOURCES CODE 21083.2

If an archaeological resource does not meet the definition of a "historical resource" as defined by CEQA's criterion of significance, it may meet the definition of a "unique archaeological resource." An archaeological resource is "unique" if it: a) contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information; b) has a special and particular quality as being the oldest of its type or the best available example of its type; or c) is directly associated with a scientifically recognized important prehistoric or historical event or person.

Local

CITY OF TULARE GENERAL PLAN

The City of Tulare General Plan (City of Tulare, 2014) sets forth the following goals and policies relevant to cultural and paleontological resources:

Conservation and Open Space Element

GOAL

COS-5 To manage and protect sites of cultural and archaeological importance for the benefit of present and future generations.

POLICIES

COS-P5.1 Archaeological Resources. The City shall support efforts to protect and/or recover archaeological resources.

COS-P5.2 Evaluation of Historic Resources. The City shall use appropriate State and federal standards in evaluating the significance of historical resources that are identified in the City.

COS-P5.3 Historic Preservation. The City shall encourage the preservation of historic residences and neighborhoods wherever appropriate.

COS-P5.4 Historic Buildings. The City shall encourage the preservation and adaptive use of historic buildings, particularly in the downtown.

COS-P5.5 Historic Structures and Sites. The City shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures, sites, and districts. Where applicable, preservation efforts shall conform to the current Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Building.

COS-P5.6 Protection of Resources with Potential State or Federal Designations. The City shall encourage the protection of cultural and archaeological sites with potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values.

COS-P5.7 State Historic Building Code. The City shall utilize the State Historic Building Code for designated properties.

COS-P5.8 Design Compatibility with Historic Structures. The City shall ensure design compatibility of new development within close proximity to designated historic structures and neighborhoods.

COS-P5.9 Discovery of Archaeological Resources. In the event that archaeological/paleontological resources are discovered during site excavation, grading, or construction, the City shall require that work on the

site be suspended within 100 feet of the resource until the significance of the features can be determined by a qualified archaeologist /paleontologist. If significant resources are determined to exist, an archaeologist shall make recommendations for protection or recovery of the resource. City staff shall consider such recommendations and implement them where they are feasible in light of project design as previously approved by the City.

COS-P5.10 Discovery of Human Remains. Consistent with Section 7050.5 of the California Health and Safety Code and *CEQA Guidelines* (*Section 15064.5*), if human remains of Native American origin are discovered during project construction, it is necessary to comply with State laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (Public Resources Code, Section 5097). If any human remains are discovered or recognized in any location on the project site, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:

- The Tulare County Coroner/Sheriff has been informed and has determined that no investigation of the cause of death is required; and
- If the remains are of Native American origin:
  - The descendants of the deceased Native Americans have made a timely recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code, Section 5097.98.
  - The Native American Heritage Commission was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the commission, or
  - The landowner or his or her authorized representative rejects any timely recommendations of the descendent, and mediation conducted by the Native American Heritage Commission has failed to provide measures acceptable to the landowner.

COS-P5.11 Impact Mitigation. If preservation of cultural/historical resources is not feasible, the City shall make every effort to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records.

COS-P5.12 Mitigation Monitoring for Historical Resources. The City shall develop standards for monitoring mitigation measures established for the protection of historical resources prior to development.

COS-P5.13 Alteration of Sites with Identified Cultural Resources. When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. The City shall permit development in these areas only after a site-specific

investigation has been conducted pursuant to CEQA to define the extent and value of resource, and mitigation measures proposed for any impacts the development may have on the resource.

COS-P5.14 Education Program Support. The City shall support local, State, and national education programs on cultural and archaeological resources.

COS-P5.15 Solicit Input from Local Native Americans. The City shall solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.

COS-P5.16 Confidentiality of Archaeological Sites. The City shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect resources that are determined to exist. An archaeologist/paleontologist shall make recommendations for protection or recovery of the resource. City staff shall consider such recommendations and implement them where they are feasible in light of project design as previously approved by the City.

COS-P5.17 Cooperation of Property Owners. The City shall encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities and encourage public support for the preservation of these resources.

COS-P5.18 Archaeological Resource Surveys. Prior to project approval, the City shall require project applicant to have a qualified archaeologist conduct the following activities:

- Conduct a record search at the Regional Archaeological Information Center located at California State University Bakersfield and other appropriate historical repositories;
- Conduct field surveys where appropriate; and
- Prepare technical reports, where appropriate, meeting California Office of Historic Preservation Standards (Archaeological Resource Management Reports).

3.5.3 - IMPACT EVALUATION CRITERIA

Methodology

DATABASE AND RECORDS SEARCH RESULTS

Investigations into potential cultural resources issues for the Project included a review of materials provided by a record search conducted by the Southern San Joaquin Valley Information Center of the California Historical Resources Information System. Other

referenced materials included site documents, maps, and survey and evaluation reports archived at the facility's office (Appendix D).

NATIVE AMERICAN AND HISTORICAL SOCIETY COORDINATION

The NAHC responded to a request from the cultural resource's consultant for a search of its sacred lands file. The NAHC's representative indicated in a written letter report that the file search failed to indicate the presence of Native American cultural resources in the immediate Project area. However, the NAHC's representative did recommend contacting other potential sources of information. A list of Native American contacts was provided. The list included:

- Ms. Julie Turner, Secretary, Kern Valley Indian Community;
- Robert Robinson, Chairperson, Kern Valley Indian Community;
- Mr. Kenneth Woodrow, Chairperson, Wuksache Indian Trive/Eshom Valley Band;
- Mr. Reuben Barrios Sr., Chairperson, Santa Rosa Ranchera Tachi Yokut Tribe;
- Robert L. Gomez, Jr., Tribal Chairperson, Tubatulabals of Kern Valley; and
- Neil Peyron, Chairperson, Tule River Indian Tribe.

The identified tribal representatives were contacted regarding the proposed Project. To date (April 30, 2019), no responses have been received.

FIELD SURVEYS

The entire property has been previously surveyed for cultural resources (County of Tulare, 2006). One additional survey included a small portion of the southwestern portion of the Project site (Appendix D). Neither of these surveys revealed and cultural resources.

Five cultural resource studies have been carried out within 0.5 miles of the Project site. Two cultural sites, a historical building and a segment of the Southern Pacific/Central Pacific Railroad, have been recorded within 0.5 miles.

CULTURAL RESOURCES ELIGIBLE FOR THE CALIFORNIA REGISTER EVALUATION CRITERIA

The PRC, Section 5024.1 and Title 14, California Code of Regulations (CCR), Section 4850 et seq., created the California Register of Historical Resources. In order to be eligible for inclusion on the California Register, a cultural resource must be at least 50 years old, possess integrity, including physical, stratigraphic, location, setting, and ambience, and, meet one or more of four criteria (PRC, Sections 5020.1(j) and 5024.1):

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possess high artistic values; and
- Has yielded, or may be likely to yield, information important in prehistory or history.

UNIQUE CULTURAL RESOURCES EVALUATION CRITERIA

Impacts to Historic and Paleontological Resources

The *CEQA Guidelines* (*14 CCR, Section 15064.5(b)*) state:

A project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment.

- Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
- The significance of an historical resource is materially impaired when a project:
  - Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or
  - Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
  - Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a Lead Agency for purposes of CEQA.

An archaeological resource must be determined to be "unique" or "historic" for an impact to the resource to be considered significant. A "unique archaeological resource" is defined in Section 21083.2(g) of CEQA and is discussed above.

An impact to paleontological resources would be considered a significant impact if a project results in the direct or indirect destruction of a unique or important paleontological resource or site. A project site is deemed paleontologically sensitive if (1) it has fossils that have previously been recovered from a particular geologic unit; (2) there are recorded fossil localities within the same geologic units as occur within the project area; and (3) the types of fossil materials that have been recovered from the geologic unit are unique or important.

Thresholds of Significance

The *CEQA Guidelines, Appendix G* Checklist states that the Project would have a significant impact on cultural resources if it would:

a) Cause a substantial adverse change in the significance of a historical resource, as defined in CEQA Guidelines, Section 15064.5;

b) Cause a substantial adverse change in the significance of an archaeological resource, as defined in CEQA Guidelines, Section 15064.5;

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or

d) Disturb human remains, including those interred outside of dedicated cemeteries.

3.5.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.5-a: Would the Project cause a substantial adverse change in the significance of a historical resource, as defined in *CEQA Guidelines*, *Section 15064.5*?

As noted in the Cultural Resources Technical Memo (Appendix D), a records search at the Southern San Joaquin Valley Information Center identified no records of any previously documented cultural resources either within the Project area or adjacent to the Project site. Additionally, no listings were identified for the Project site or records search radius, NRHP, CPHI, CRHR, CHL, California State Historic Resources Inventory, and a review of cultural resource reports on file. There are few remnants of the Project site's former uses and the remnants are too recent to have achieved any historical significance.

Based on the results of field survey and database research findings, the generally favorable surface visibility conditions, and the extent of previous disturbance observed within the area of the site, the potential to encounter subsurface historical deposits is minimal. This suggests that there is a low potential for ground-disturbing activities to expose and affect previously unknown significant cultural resources, including historical resources at the proposed site. However, there is still a possibility that historical (or archaeological) materials may be exposed during construction. Grading and trenching, as well as other ground-disturbing actions, have the potential to damage or destroy these previously unidentified and potentially significant cultural resources within the Project area, including historical resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact under CEQA.

CONCLUSION

Damage or destruction to prehistoric or historical cultural resources that are encountered on the proposed Project site during future construction is a potentially significant impact.

MITIGATION MEASURE(S)

MM CUL-1: In the event that resources potentially qualifying as historical resources or unique archaeological resources per *CEQA Guidelines*, *Section 15064.5* and PRC, Section 21083.2 are inadvertently discovered during ground-disturbing activities, all work within 50 feet of the find shall halt until a qualified archaeologist who meets the Secretary of the Interior's professional qualifications standards in prehistoric or historical archaeology, as appropriate, shall evaluate the find and make recommendations. Cultural resource materials

may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified archaeologist determines that the discovery represents either an historical resource or a unique archaeological resource, the archaeologist shall recommend to the City potential means of addressing impacts to such resources. Such additional measures may include avoidance, testing, and evaluation or data recovery excavation. The City shall then determine whether any such recommended measures are feasible in light of Project design, economics, logistics, and other factors. If avoidance is infeasible based on these factors, then testing or data recovery shall be the preferred method of dealing with the affected resources. Once the measure(s) chosen by the City have been identified and implemented, construction work in the area within 50 feet of the find shall be resumed.

EFFECTIVENESS OF MITIGATION

The implementation of Mitigation Measure MM CUL-1 will ensure that any impacts to prehistoric or historical resources are reduced to a level that is ***less than significant.***

Impact #3.5-b: Would the Project cause a substantial adverse change in the significance of an archaeological resource, as defined in *CEQA Guidelines*, *Section 15064.5*?

As discussed in Impact #3.5-a, record searches and field surveys of the proposed Project site revealed that no archeological (i.e., prehistoric) resources have been found within the area of the Project. Therefore, the potential to encounter subsurface archaeological deposits is minimal. This suggests that there is a low potential for ground-disturbing activities to expose and affect previously unknown significant cultural resources, including archeological resources, at the site. However, there is still a possibility that archaeological materials may be exposed during construction. Grading and trenching, as well as other ground-disturbing actions, have the potential to damage or destroy these previously unidentified and potentially significant cultural resources within the Project area, including archeological resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact under CEQA. Implementation of Mitigation Measure MM CUL-1 would reduce potential impacts on cultural resources, including archeological resources, associated with the proposed Project to less-than-significant levels.

Operation of the proposed Project would not result in impacts related to the disturbance of archaeological resources.

CONCLUSION

Damage or destruction to cultural resources that are encountered on the proposed Project site during future construction is a potentially significant impact.

MITIGATION MEASURE(S)

Implement Mitigation Measure MM CUL-1.

EFFECTIVENESS OF MITIGATION

The implementation of Mitigation Measure MM CUL-1 will ensure that any impacts to unique archaeological resources are reduced to a level that is ***less than significant.***

Impact #3.5-c: Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The paleontological potential of the Pleistocene units exposed on and in the subsurface of the Project site are considered low because no localities are known in the immediate Project vicinity and their fossil occurrences are spotty and generally unpredictable. Should the construction crew or monitor uncover any bones or teeth, all construction-related activities in the immediate vicinity should be diverted until the monitor or paleontologist has assessed the find and, if deemed significance, salvaged it for deposit in a repository such as the University of California Museum of Paleontology where it will be properly curated and preserved for scientific study. With implementation of Mitigation Measure MM CUL-2, impacts of the Project to paleontological resources would be considered less than significant.

CONCLUSION

Damage or destruction to paleontological resources that are encountered on the proposed Project site during future construction is a potentially significant impact.

MITIGATION MEASURE(S)

MM CUL-2: Should any fossils be discovered during grading or development, all work will be halted, and a qualified paleontologist will be contacted to assess the finds and recommend procedures, if necessary, prior to resumption of construction. A copy of the report shall be provided to the City and to the Natural History Museum of Los Angeles County.

EFFECTIVENESS OF MITIGATION

The implementation of Mitigation Measure MM CUL-2 will ensure that any impacts to cultural resources are reduced to a level that is ***less than significant.***

Impact #3.5-d: Would the Project disturb human remains, including those interred outside of dedicated cemeteries?

There is no indication, either from the archival research results or the archaeological survey, that any particular location in the Project area has been used for human burial purposes in the recent or distant past. However, given the sensitivity for buried archaeological resources, the Project could inadvertently uncover or damage human remains, which would be a significant impact. In the unlikely event that human remains are uncovered, implementation of Mitigation Measure MM CUL-3 would mitigate impacts to a less-than-significant level.

Operation of the proposed Project would not result in impacts related to the disturbance of unknown human remains or cultural resources.

CONCLUSION

Damage or destruction of unintentionally uncovered human remains that are encountered on the proposed Project site during construction is a potentially significant impact.

MITIGATION MEASURE(S)

MM CUL-3: If human remains are uncovered during Project construction, the Project proponent shall immediately halt work, contact the Tulare County Coroner to evaluate the remains, and follow the procedures and protocols set forth in *Section 15064.5(e)(1)* of the *CEQA Guidelines*. The City of Tulare Community and Economic Development Director shall also be notified of the discovery. If the County Coroner determines that the remains are Native American, the City shall contact the NAHC, in accordance with HSC, Section 7050.5, subdivision(c), and PRC, Section 5097.98 (as amended by AB 2641). The NAHC shall identify the person or persons believed to be most likely descended from the deceased Native American. The most likely descendant shall be afforded the opportunity to provide recommendations concerning the future disposition of the remains and any associated grave goods as provided in PRC 5097.98. Per PRC, Section 5097.98, the Project operator shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this section (PRC 5097.98), with the most likely descendent regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.

EFFECTIVENESS OF MITIGATION

The implementation of Mitigation Measure MM CUL-3 will ensure that any impacts to unknown human remains are reduced to a level that is ***less than significant.***

3.6 - Geology, Soils, and Seismicity

This section assesses the potential for seismic hazards, soil erosion, other geological hazards, and occurrence of mineral resources in the regional vicinity of the proposed Project site. This section identifies any specific geological impact that is likely to result from implementation of the proposed Project along with feasible mitigation measures to address those impacts.

3.6.1 - Environmental Setting

Regional Geology

Tulare County consists of two major geologic provinces that vary greatly in seismicity. The Central Valley is an area of relatively low tectonic activity bordered by mountain ranges on either side. The Sierra Nevada, partially located within Tulare County, are created by the movement of tectonic plates. The Coast Range lies on the west side of the Central Valley and is also a result of this movement. The remaining seismic hazards in Tulare County generally result from movement along faults associated with the creation of these ranges.

The Sierra Nevada Physiographic Province, in the eastern portion of Tulare County, is underlain by metamorphic and igneous rock. It consists mainly of homogeneous granitic rocks, with several islands of older metamorphic rock. The central and western parts of Tulare County are part of the Central Valley Province, underlain by marine and non-marine sedimentary rocks. It is basically a flat, alluvial plain, with soil consisting of material deposited by the uplifting of the mountains. The foothill area of Tulare County is essentially a transition zone, containing old alluvial soils that have been dissected by the west-flowing rivers and streams that carry runoff from the Sierra Nevada. This gently rolling topography is punctured in many areas by outcropping soft bedrock. The native mountain soils are generally quite dense and compact.

Seismic Faulting

The term seismicity refers to the location, frequency, magnitude and other characteristics of earthquakes. To understand the implications of seismic events, a discussion of faulting and seismic hazards is provided below.

Faults form in rocks when stresses overcome the internal strength of the rock, resulting in a fracture. Large faults develop in response to large regional stresses operating over a long time, such as those stresses caused by the relative displacement between tectonic plates. These stresses build up in the Earth's crust until enough stress has built up to exceed the strength along a fault and cause a brittle failure. The rapid slip between the two stuck plates or coherent blocks generates an earthquake. Following an earthquake, stress will build once again until the occurrence of another earthquake. The magnitude of slip is related to the maximum allowable stress that can be built up along a particular fault segment. The greatest buildup in stress due to the largest relative motion between tectonic plates or fault blocks over the longest period will generally produce the largest earthquakes.

Faults are mapped to determine earthquake hazards, since they occur where earthquakes tend to recur. A historic plane of weakness is more likely to fail under stress than a previously unbroken block of crust. Faults are, therefore, a prime indicator of past seismic activity, and faults with recent activity are presumed to be the best candidates for future earthquakes. However, since slip is not always accommodated by faults that intersect the surface along traces, and since the orientation of stress and strain in the crust can shift, predicting the location of future earthquakes is complicated. Earthquakes sometimes occur in areas with previously undetected faults or along faults previously thought inactive (California Department of Conservation, 2010).

"Active" faults are those that have been active within the past 11,000 years. Earthquakes originate as movement or slippage occurring along an active fault. These movements generate shock waves that result in ground shaking.

The proposed Project site is located approximately 80 miles east of dominantly active faults associated with the boundary between the Pacific Plate and North American Plate (e.g., San Andreas Fault).

Although a number of faults have been located along the western edge of the Sierra Nevada, none are known to be active. The Owens Valley fault group poses the greatest seismic threat. The center of the fault zone is thought to be able to produce a maximum probable earthquake of 7.0 on the Richter Scale at a recurrence interval of 125 years, while the central area is thought to be capable of producing an earthquake of 8.25 magnitude every 300 to 10,000 years. The faults found in the region of Tulare County include:

- San Andreas Fault: located approximately 40 miles west of the Tulare County boundary. This fault has a long history of activity and is the primary focus in determining seismic activity within the Tulare County. Seismic activity along the fault varies along its span from the Gulf of California to Cape Mendocino. Just west of Tulare County lies the "Central California Active Area," where many earthquakes have originated.

- Owens Valley Fault Group: a complex system containing both active and potentially active faults, located on the eastern base of the Sierra Nevada. The group is located within Tulare and Inyo Counties and has historically been the source of seismic activity within Tulare County.

- Clovis Fault: considered to be active within the Quaternary Period (within the past two million years), although there is no historic evidence of its activity, and is therefore classified as "potentially active." This fault lies approximately six miles south of the Madera County boundary in Fresno County. Activity along this fault could potentially generate more seismic activity in Tulare County than the San Andreas or Owens Valley fault systems. In particular, a strong earthquake on the fault could affect northern Tulare County. However, because of the lack of historic activity along the Clovis Fault, inadequate evidence exists for assessing maximum earthquake impacts.

GROUND SHAKING

The severity of ground shaking depends on several variables such as earthquake magnitude, epicenter distance, local geology, thickness, and seismic wave-propagation properties of unconsolidated materials, groundwater conditions, and topographic setting. Ground shaking hazards are most pronounced in areas near faults or with unconsolidated alluvium.

The most common type of damage from ground shaking is structural damage to buildings, which can range from cosmetic cracks to total collapse. The overall level of structural damage from a nearby large earthquake would likely be moderate to heavy, depending on the characteristics of the earthquake, the type of ground, and the condition of the building. Besides damage to buildings, strong ground shaking can cause severe damage from falling objects or broken utility lines. Fire and explosions are also hazards associated with strong ground shaking.

Site Geology

Natural Resource Conservation Service (NRCS) soil map units which overlay the proposed Project site consists of the following: Colpien loam, which consists of deep, moderately well-drained soils formed in granitic alluvium; and Nord fine sandy loam, which consists of shallow, well-drained soils formed in mixed alluvium.

Mineral Resources

Mineral extraction in Tulare County consists mainly of sand, gravel, and crushed stone (aggregate) operations. An estimated 932 million tons of aggregate is located in Tulare County. The figure includes 219 million tons of reserves available for mining and 200 million tons located in the hard rock quarries southeast of Porterville. Of that total, 19 million tons are located in northern Tulare County. Lemon Cove has been the most highly-extracted area for Portland cement concrete (PCC) quality aggregate supplies (Tulare County General Plan Update 2030, Background Report). There are three streams that have provided the main source of high-quality sand and gravel in Tulare County to make PCC and asphaltic concrete (AC). They include the Kaweah River, Lewis Creek, and the Tule River. The highest quality deposits are located at the Kaweah and Tule Rivers. Other sources of construction material are also mined in the hard rock deposits of the foothills.

3.6.2 - REGULATORY SETTING

Federal

There are no specific federal regulations applicable to mineral resources. The following addresses seismicity and soils.

UNIFORM BUILDING CODE

The Uniform Building Code (UBC) incorporates data regarding the response of structures to seismic events as a basis for structural design. The UBC considers primary lateral seismic forces and general soil type. The objective of the UBC is to protect the life safety of building occupants and the public. The UBC provisions are enforced through the building permit process during which plans for proposed structures are examined for compliance with the applicable provisions of the UBC. In large earthquakes, compliance with provisions of the UBC would reduce the risk of complete structural failure, although structural damage may be expected. All new construction must comply with the current version of the UBC.

EARTHQUAKE HAZARDS REDUCTION ACT

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act (EHRA) to reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective Earthquake Hazards Reduction Program. To accomplish this, the EHRA established the National Earthquake Hazards Reduction Program (NEHRP). The NEHRP was significantly amended in November 1990 by the National Earthquake Hazards Reduction Program Act (NEHRPA) by refining the description of agency responsibilities, program goals, and objectives.

The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. The NEHRPA designates FEMA as the Lead Agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, National Science Foundation, and U.S. Geological Survey.

CLEAN WATER ACT (EROSION CONTROL)

The Clean Water Act (CWA) (33 USC 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the Waters of the United States (WOTUS). The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point-source and certain nonpoint-source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA, Section 402). Projects that disturb one or more acres of land are required to obtain NPDES coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit), Order No. 99-08-DWQ. The General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which includes Best Management Practices (BMPs) to protect stormwater runoff, including measures to prevent soil erosion.

State

CALIFORNIA BUILDING CODE

The State of California provides minimum standards for building design through the California Building Code (CBC) (CCR, Title 24). Where no other building codes apply, Chapter 29 regulates excavation, foundations, and retaining walls. The CBC applies to building design and construction in the State and is based on the federal UBC used widely throughout the country (generally adopted on a state-by-state or district-by-district basis). The CBC has been modified for California conditions with numerous more detailed and/or more stringent regulations.

The State Earthquake Protection Law (HSC, Section 19100 et seq.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. The CBC identifies seismic factors that must be considered in structural design.

Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, and Appendix Chapter A33 regulates grading activities, including drainage and erosion control, and construction on unstable soils, such as expansive soils and areas subject to liquefaction.

ALQUIST-PRIOLO EARTHQUAKE FAULT ZONING ACT

The Alquist-Priolo Earthquake Fault Zoning Act (Conflict Prevention and Resolution Center (CPRC) Division 2, Chapter 7.5) is intended to provide policies and criteria to assist cities, counties, and State agencies in the exercise of their responsibility to prohibit the location of developments and structures for human occupancy across the trace of active faults. In order to assist cities and counties, the State Geologist shall delineate, by December 31, 1973, appropriately wide earthquake fault zones to encompass all potentially and recently active traces of faults and shall compile maps delineating these zones.

SEISMIC HAZARDS MAPPING ACT

The Seismic Hazards Mapping Act (CPRC Division 2, Chapter 7.8 and CCR Title 14, Article 10) provides for a statewide Seismic Hazard Mapping and Technical Advisory Program to assist cities and counties in fulfilling their responsibilities for protecting the public health and safety from the effects of strong ground shaking, liquefaction, landslides or other ground failure and other seismic hazards caused by earthquakes.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

In California, the State Water Resources Control Board (SWRCB) administers regulations promulgated by the EPA (55 CFR 47990) requiring the permitting of stormwater-generated pollution under the NPDES. In turn, the SWRCB's jurisdiction is administered through nine regional water quality control boards. Under these federal regulations, an operator must obtain a General Permit through the NPDES Stormwater Program for all construction

activities with ground disturbance of one acre or more. The General Permit requires the implementation of BMPs to reduce sedimentation into surface waters and control erosion. One element of compliance with the NPDES permit is preparation of a SWPPP that addresses control of water pollution, including sediment, in runoff during construction. (**See Section 3.9, Hydrology and Water Quality** for more information about NPDES and SWPPPs.)

CALIFORNIA SURFACE MINING AND RECLAMATION ACT OF 1975

The Surface Mining and Reclamation Act (SMARA) was enacted by the California Legislature in 1975 (PRC, Section 2710 et seq.) to regulate surface mining in the State. SMARA requires the State and counties to identify, map and classify aggregate resources throughout the State so that local governments could make land use decisions informed of the presence of aggregate resources and the need to preserve access to them. Local jurisdictions are required to enact specific procedures to guide mineral conservation and extraction at particular sites, and to incorporate mineral resource management policies into their general plans. In compliance with the SMARA, the California Department of Conservation, Division of Mines and Geology has established a classification system to denote both the location and significance of four major key extractive resource categories, which are:

- MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood for their presence exists;
- MRZ-2: Areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists;
- MRZ-3: Areas containing mineral deposits the significance of which cannot be evaluated from available data; and
- MRZ-4: Areas where available information is inadequate for assignment of any other MRZ zone.

Local

CITY OF TULARE GENERAL PLAN

Conservation and Open Space Element – Mineral Resources

GOAL

COS-8 To protect the current and future extraction of mineral resources that are important to the City's economy while minimizing impacts of this use on the public and the environment.

POLICIES

COS-P8.1 Compatibility. Develop mineral deposits in a manner compatible with surrounding land uses.

COS-P8.2 Conserve Mineral Deposits. Emphasize the conservation of identified and/or potential mineral deposits, recognizing the need for identifying, permitting, and maintaining a 50-year supply of locally available Portland cement.

COS-P8.3 Future Resource Development. Provide for the conservation of identified and/or potential mineral deposits within the UDB as areas for future resource development.

COS-P8.4 Identify New Resources. Encourage exploration, evaluation, identification, and development of previously unrecognized but potentially significant hard rock resources for production of crushed stone aggregate.

COS-P8.5 Incompatible Development. Proposed incompatible land uses shall not be on lands containing, or adjacent to, identified mineral deposits or along key access roads, unless adequate mitigation measures are adopted or a statement of overriding considerations stating public benefits and overriding reasons for permitting the proposed use are adopted.

COS-P8.6 Limited In-city Mining. Within the Urban Development Boundary (UDB), new commercial mining operations should be limited due to environmental and compatibility concerns.

COS-P8.7 Minimize Adverse Impacts. Minimize the adverse effects on environmental features such as water quality and quantity, air quality, flood plains, geophysical characteristics, biotic, archaeological and aesthetic factors.

COS-P8.8 Minimize Hazards and Nuisances. Minimize the hazards and nuisances to persons and properties in the area during extraction, processing, and reclamation operations.

COS-P8.9 Recognize Mineral Deposits. Recognize as a part of the General Plan those areas which have identified and/or potential mineral deposits.

COS-P8.10 Resources Development. The City will promote the responsible development of identified and/or potential mineral deposits.

COS-P8.11 Surface Mining and Reclamation Act (SMARA) Requirements. All surface mines, unless otherwise exempted, shall be subject to reclamation plans that meet SMARA requirements. Reclamation procedures shall restore the site for future beneficial use of the land. Mine reclamation costs shall be borne by the mine operator and guaranteed by financial assurances set aside for restoration procedures.

Safety Element – Seismicity

GOAL

SAF-1 To regulate future development to ensure the protection of public health and safety from hazards and hazardous materials and the adequate provision of emergency services.

POLICIES

SAF-P1.4 Building and Codes. Except as otherwise allowed by State law, the City shall ensure that all new buildings intended for human habitation are designed in compliance with the latest edition of the California Building Code, California Fire Code, and other adopted standards based on risk (e.g., seismic hazards, flooding), type of occupancy, and location (e.g., floodplain, fault).

SAF-P1.5 Hazard Awareness and Public Education. The City shall continue to promote awareness and education among residents regarding possible natural hazards, including soil conditions, earthquakes, flooding, fire hazards, and emergency procedures.

GOAL

SAF-4 To protect people and property from seismic and geotechnical hazards.

POLICIES

SAF-P4.1 Update Seismic Safety Element. The City shall prepare an updated Seismic Safety Element to address earthquake and other seismic hazards within the City and planning area.

SAF-P4.2 Evaluation of Earthquake Risks. The City shall evaluate areas to determine levels of earthquake risk.

SAF-P4.3 Financial Assistance for Seismic Upgrades. The City shall request federal and State financial assistance to implement corrective seismic safety measures required for existing City buildings and structures.

SAF-P4.4 Alquist-Priolo Act Compliance. The City shall not permit any structure for human occupancy to be placed within designated Earthquake Fault Zones (pursuant to and as determined by the Alquist-Priolo Earthquake Fault Zoning Act; Public Resources Code, Chapter 7.5) unless the specific provisions of the Act and Title 14 of the California Code of Regulations have been satisfied.

SAF-P4.5 Subsidence. The City shall confirm that development is not located in any known areas of active subsidence. If urban development may be located in

such an area, a special safety study will be prepared and needed safety measures implemented.

SAF-P4.6 Protection of Emergency Facilities. Emergency communication centers, fire stations, and other emergency service facilities should be examined as to their earthquake resistant capacities. If found below acceptable standards, a program to mitigate potential hazards should be established.

SAF-P4.7 Review of Critical Facilities. All critical facilities constructed prior to 1948 should be reviewed by a structural engineer for potential hazards. Since many of these structures have regional impact, the source of funding for the inspection program ought to be at the regional level.

3.6.3 - IMPACT EVALUATION CRITERIA

Consistent with *Appendix G* of the *CEQA Guidelines*, the proposed Project is considered to have a significant impact on the environment if it will:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42;
ii. Strong seismic ground shaking;
iii. Seismic-related ground failure, including liquefaction; or
iv. Landslides;

b) Result in substantial soil erosion or the loss of topsoil;

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or offsite landslide, lateral spreading, subsidence, liquefaction or collapse;

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property;

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water;

f) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State; or

g) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

The Lead Agency determined in the NOP/IS (see Appendix A) that the following environmental issue areas would result in no impact or a less-than-significant impact and therefore were scoped out of requiring further review in this Draft EIR. Please refer to Appendix A of this Draft EIR for a copy of the NOP/IS and additional information regarding these issue areas:

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

3.6.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.6-a: Would the Project cause exposure of people or structures to potential substantial adverse effects from fault rupture and seismic-related ground failure?

The nearest active faults that are expected to be the sources of future major earthquakes are the San Andreas and Owens Valley faults, which are 80 or more miles away from the Project site. No earthquakes of magnitude 5.5 or greater have ever been recorded in the Tulare area, nor have there been reports of damage in the area from earthquakes of such magnitude outside Tulare County. The proposed Project site is not located on or in close proximity to an active fault or special studies earthquake fault zone and is not located within an Alquist-Priolo earthquake hazard zone. The site has low potential for any seismic-related ground failure, including liquefaction, landslides, or expansive soils. There is a potential for moderate ground shaking on the proposed Project site from an event along one of the regionally active, distant faults. All new construction will conform to seismic requirements of the UBC and CBC as a minimum standard.

CONCLUSION

This impact is considered less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.6-b: Would the Project result in substantial soil erosion or the loss of topsoil?

Although the proposed Project site is relatively flat, grading will be required prior to the construction of approximately 120 acres of residential and commercial development. Motorized graders scraping, lifting, transporting and spreading the surface soils of the site will result in loosened, exposed soils that can lead to soil erosion and/or soil instability.

CONCLUSION

This impact is potentially significant.

MITIGATION MEASURE(S)

MM GEO-1: Projects that disturb one or more acres of land are required to obtain NPDES coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit), Order No. 99-08-DWQ. The General Permit requires the development and implementation of a SWPPP, which includes BMPs to protect stormwater runoff, including measures to prevent soil erosion. Prior to issuance of grading permits, an erosion control plan shall be submitted and approved by the City of Tulare that reduces erosion and water quality degradation. The erosion control plan shall indicate the proper control of erosion, sedimentation, siltation and other pollutants will be implemented to meet NPDES permit requirements and City standards (see **Section 3.9** of this EIR). The plan shall address storm drainage during construction and set forth BMPs that shall be carried out during construction to minimize erosion, sedimentation and water quality degradation. BMPs selected shall be in accordance with the California Stormwater Quality Association Stormwater Best Management Practices Handbook and will include vegetated swales; bioretention areas; and a flow-based, storm water treatment device.

The plan shall require that all drainage facilities shall be constructed to the City of Tulare specifications. The plan shall indicate whether grading will occur in the winter months.

The plan shall also require that:

- Drainage facilities shall be protected as necessary to prevent erosion of onsite soils immediately following grading activities;
- Cut slopes and drainage ways within native material shall be protected from direct exposure to water runoff immediately following grading activities;
- The design for collected run-off shall dissipate immediately following grading activities;
- Cut and fill embankment slopes shall be protected from sheet, rill, and gully erosion; and
- Where soil stockpiling or borrow areas are to remain for more than one construction season, proper erosion control measures shall be applied as specified in the improvement plans/grading plans.

EFFECTIVENESS OF MITIGATION

Implementation of Mitigation Measure MM GEO-1 will reduce this impact to a level of *less than significant*.

Impact #3.6-c: Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?

As discussed earlier in this section, the Project site has low potential for any seismic-related ground failure, including liquefaction, landslides, or expansive soils. The U.S. Department of Agriculture (USDA) and NRCS Web Soil Survey website indicates two soil types on the Project site: Colpien loam and Nord fine sandy loam. These soils are not subject to subsidence. The proposed Project would implement all applicable requirements of the most recent CBC standards, which provides criteria for the seismic design of buildings. Potential impacts will be less than significant.

CONCLUSION

There is no impact.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.6-d: Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? The site of the proposed project is not located in an area known to contain expansive soil, as defined in Table 18-1-B of the Uniform Building Code. Nevertheless, the project would be designed to comply with applicable building codes and structural improvement requirements to withstand the effects of expansive soils. Implementation of Building Code requirements, as applicable, would minimize the potential impact of expansive soils.

CONCLUSION

There is no impact.

MITIGATION MEASURE(S)

No mitigation measures are required.

3.7 - Greenhouse Gases

This section provides an analysis of the potential greenhouse gas (GHG) impacts that may be caused by implementation of the proposed Project. Potential impacts may include GHG emissions that would affect the environment or conflict with a regional adopted Air Quality Plan (AQP). This section is based on the Air Quality Impact Analysis prepared for the Project (Insight Environmental/Trinity Consultants, 2018, Appendix B).

3.7.1 - ENVIRONMENTAL SETTING

Greenhouse Gases

The constituent gases that trap heat in the Earth's atmosphere are called GHGs. GHGs play a critical role in the global radiation budget by trapping infrared radiation emitted from the Earth's surface, which would otherwise have escaped into space. Prominent GHGs contributing to this process include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). Without the natural heat-trapping effect of GHG, the Earth's surface would be about 34°F cooler. This is a natural phenomenon, known as the "greenhouse effect," and is responsible for maintaining a habitable climate. However, anthropogenic emissions of these GHGs in excess of natural ambient concentrations are responsible for the enhancement of the greenhouse effect and have led to a trend of unnatural warming of the Earth's natural climate known as global warming or climate change, or more accurately global climate disruption. Emissions of these gases that induce global climate disruption are attributable to human activities associated with the following land uses: industrial/manufacturing, utilities, transportation, residential, and agricultural sectors (EPA, 2006).

"Global Warming Potential" (GWP) describes the ability of a unit of gas emitted in the present to trap heat in the atmosphere over a certain timeframe, indexed relative to a reference gas, CO_2, which is assigned a GWP value of one. The larger the GWP, the more warming the gas causes. For example, methane's 100-year GWP is 25, which means that CH_4 will cause 25 times as much warming as an equivalent mass of CO_2 over a 100-year time period (EPA, 2015).

Carbon Dioxide (CO_2) is a colorless, odorless gas consisting of molecules made up of two oxygen atoms and one carbon atom. When an organic carbon compound (such as wood) or fossilized organic matter, (such as coal, oil, or natural gas) is burned in the presence of oxygen, CO_2 is produced. CO_2 is the reference gas for GWP with a value of one. Removal of CO_2 from the atmosphere is caused by CO_2 "sinks," such as absorption by seawater and photosynthesis by ocean-dwelling plankton and land plants, including forests and grasslands. However, seawater is also a source of CO_2 to the atmosphere, along with land plants, animals, and soils, when CO_2 is released during respiration. Whereas the natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean, humankind has altered the natural carbon cycle by burning coal, oil, natural gas, and wood. Carbon dioxide's lifetime is poorly defined because the process by which carbon is transferred to ocean sediments is extremely slow.

Since the industrial revolution began in the mid-1700s, each of these activities has increased in scale and distribution. Prior to the industrial revolution, concentrations of CO_2 were stable at a range of 275 to 285 ppm. The National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) indicates that global concentration of CO_2 were 396.72 ppm in April 2013. In addition, the CO_2 levels at Mauna Loa averaged over 400 ppm for the first time during the week of May 26, 2013. These concentrations of CO_2 exceed by far the natural range over the last 650,000 years (180 to 300 ppm) as determined from ice cores.

Methane (CH_4) is a colorless, odorless non-toxic gas consisting of molecules made up of four hydrogen atoms and one carbon atom. As mentioned above, methane's 100-year GWP is 25. CH_4 is combustible, and it is the main constituent of natural gas – a fossil fuel. CH_4 is released when organic matter decomposes in low oxygen environments. Natural sources include wetlands, swamps and marshes, termites, and oceans. Human sources include the mining of fossil fuels and transportation of natural gas, digestive processes in ruminant animals such as cattle, rice paddies and the buried waste in landfills. Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of CH_4. Other anthropogenic sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide (N_2O) is a colorless, non-flammable gas with a sweetish odor, commonly known as "laughing gas," and sometimes used as an anesthetic. N_2O is more persistent in the atmosphere with a GWP value of 298. N_2O is naturally produced in the oceans and in rainforests. Man-made sources of N_2O include the use of fertilizers in agriculture, nylon and nitric acid production, cars with catalytic converters and the burning of organic matter. Concentrations of N_2O also began to rise at the beginning of the industrial revolution.

Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane with chlorine and/or fluorine atoms. CFCs are non-toxic, non-flammable, insoluble, and chemically un-reactive in the troposphere (the level of air at the Earth's surface). CFCs have no natural source but were first synthesized in 1928. It was used for refrigerants, aerosol propellants, and cleaning solvents. Because of the discovery that they are able to destroy stratospheric ozone, an ongoing global effort to halt their production was undertaken and has been extremely successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

There are four main categories of fluorinated gases – hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). The largest sources of fluorinated gas emissions are described below (Appendix B):

Hydrofluorocarbons (HFCs) are synthesized chemicals that are used as a substitute for CFCs. Out of all of the GHGs, HFCs are one of four groups with the highest GWP. HFCs are assigned a GWPs between 12,000-14,800. HFCs are synthesized for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons (PFCs) have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Due to the persistent nature of PFCs the GWPs are assigned a range of 7,390-12,200. The two main sources of PFCs are aluminum production and semiconductor manufacture.

Nitrogen Trifluoride (NF_3) is a colorless gas with little odor. Traces of active fluorides give it a pungent, musty or moldy odor. NF_3 is rather inert chemically, but at elevated temperatures is a potent oxidizer. NF_3 has been assigned a GWP of 17,200. High purity NF_3 finds use in the manufacture of semiconductors, as an oxidizer of high-energy fuels, for the preparation of tetrafluorohydrazine, as an etchant gas in the electronic industry, and as a fluorine source in high-power chemical lasers.

Sulfur Hexafluoride (SF_6) is an extremely potent GHG. SF_6 is very persistent, with an atmospheric lifetime of more than a 1,000 years. Thus, a relatively small amount of SF_6 can have a significant long-term impact on global climate change. As an extremely persistent GHG, SF_6 has an assigned GWP of 22,800. SF_6 is human-made, and the primary user of SF_6 is the electric power industry. Because of its inertness and dielectric properties, it is the industry's preferred gas for electrical insulation, current interruption, and arc quenching (to prevent fires) in the transmission and distribution of electricity. SF_6 is used extensively in high voltage circuit breakers and switchgear, and in the magnesium metal casting industry.

GHG EMISSION LEVELS

According to the World Resources Institute (WRI) in 2005, total worldwide GHG emissions were estimated to be 37,797 million tons of carbon dioxide equivalent (CO_2e) ($MtCO_2e$), and GHG emissions per capita worldwide were 5.9 tCO_2e. These emissions exclude GHG emissions associated with the land use, land-use change, and forestry sector and bunker fuels. The WRI reports that in 2009, total GHG emissions in the U.S. were 6,469 $MtCO_2e$, with average GHG emissions per capita of 21.09 tCO_2e, and total GHG emissions in California were 446.07 $MtCO_2e$, with average GHG emissions per capita of 12.07 tCO_2e.

California has a larger percentage of its total GHG emissions coming from the transportation sector (50 percent) than the U.S. emissions (29 percent) and a smaller percentage of its total GHG emissions from the electricity generation sector, i.e. California has 11 percent but the U.S. has 32 percent.

In April 2011, the City of Tulare published a community-wide GHG Inventory. The estimated emissions from community-wide sources in 2006 are presented in Table 3.7-1.

Table 3.7-1
San Joaquin Valley Air Basin Attainment Status

Sector	2006	2010	2020	2030
Residential	81,246	88,882	111,262	139,276
Commercial/ Industrial	320,769	392,690	651,168	1,079,782
Transportation & Mobile	160,587	175,871	220,750	268,282
Solid Waste	42,809	48,168	65,438	90,513
Other	214,879	66,455	213,431	257,415
Total	**820,291**	**206,695**	**1,262,252**	**1,835,455**
% Change from 2006	**0%**	**11.23%**	**53.88%**	**123.76%**

Source: City of Tulare, 2011

The GHG Inventory estimated the community-wide GHG emissions in 2006 and estimated forecasted GHG emissions in 2010, 2020, and 2030 if consumption trends continue as they did in 2006, absent any new federal, State, regional, or local policies or actions that would reduce GHG emissions. It was forecasted that GHG emissions in the City of Tulare would be 53.88 percent higher than 2006 in 2020 and by 2030 the emissions would increase 123.76 percent.

Potential Environmental Effects

Worldwide, average temperatures are likely to increase by 3°F to 7°F by the end of the 21st century. However, a global temperature increase does not directly translate to a uniform increase in temperature in all locations on the Earth. Regional climate changes are dependent on multiple variables, such as topography. One region of the Earth may experience increased temperature, increased incidents of drought, and similar warming effects, whereas another region may experience a relative cooling. According to the Intergovernmental Panel on Climate Change (IPCC) Working Group II Report, climate change impacts to North America may include diminishing snowpack, increasing evaporation, exacerbated shoreline erosion, exacerbated inundation from sea level rising, increased risk and frequency of wildfire, increased risk of insect outbreaks, increased experiences of heat waves, and rearrangement of ecosystems, as species and ecosystem zones shift northward and to higher elevations.

California Implications

Even though climate change is a global problem and GHGs are global pollutants, the specific potential effects of climate change on California have been studied. The California Natural Resources Agency (CNRA) summarized the best-known science on climate change impacts in seven specific sectors and provided recommendations on how to manage against those threats. Generally, research indicates that California should expect overall hotter and drier conditions with a continued reduction in winter snow (with concurrent increases in winter rains), as well as increased average temperatures, and accelerating sea-level rise.

In addition to these changes, the intensity of extreme weather events is also changing. The impacts assessment indicates that extreme weather events, such as heat waves, wildfires, droughts, and floods are likely to be some of the earliest climate impacts experienced. It is anticipated that temperatures in California could increase 5°F by 2050 and 9°F by 2100. Precipitation is expected to increase by 35 percent by 2050 and sea levels are expected to rise by 18 inches by 2050 and by 55 inches by 2100.

In fact, in a report prepared by California's Office of Environmental Health Hazard Assessment it is reported that more extreme hot days, fewer cold nights, and shifts in the water and growing cycles are already being observed in California; forest and wildland fires are becoming more frequent and intense, in part because dry seasons have started earlier and ended later; sea levels have risen by six inches or more along much of the California coast over the last century; and increased temperatures with decreased winter snowfall, as well as earlier snowmelt and greater rainwater runoff occurring earlier in the year, threaten the State's major water supply – the Sierra Nevada snowpack and timed downstream reservoir releases.

3.7.2 - REGULATORY SETTING

GHG pollutants are regulated at the national, State, and air basin level; each agency has a different degree of control. The EPA regulates at the federal level. The California Air Resources Board (CARB) regulates at the State level and the San Joaquin Valley Air Pollution Control District (SJVAPCD) regulates at the air basin level.

International

Natural processes and human activities emit GHGs. The presence of GHGs in the atmosphere affects the Earth's temperature. Without the natural heat trapping effect of GHG, the Earth's surface would be about 34°C cooler (Climate Action Team, 2006). As such, climate change is a global issue involving all of the World's population. Therefore, countries such as those discussed below have made an effort to reduce GHGs.

Intergovernmental Panel on Climate Change: In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

United Nations Framework Convention on Climate Change (Convention): On March 21, 1994, the United States joined a number of countries around the World in signing the Convention. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

Kyoto Protocol: The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at average of five percent against 1990 levels over the five-year period 2008-2012. The Convention (as discussed above) encouraged industrialized countries to stabilize emissions; however, the protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities."

The United States has not approved implementation of the Kyoto Protocol. Other countries that have approved the Kyoto Protocol include Australia, Canada, China, the European Union (Belgium, Denmark, Germany, the Hellenic Republic, Spain, France, Ireland, Italy, Luxembourg, Netherlands, Austria, Portugal, Finland, Sweden, Great Britain, and Northern Ireland), Japan, Mexico, and New Zealand.

Federal

The federal government is taking a number of common-sense steps to address the challenge of climate change. The EPA collects various types of GHG emissions data. This data helps policy makers, businesses, and the EPA track GHG emissions trends and identify opportunities for reducing emissions and increasing efficiency. The EPA has been collecting a national inventory of GHG emissions since 1990 and in 2009 established mandatory reporting of GHG emissions from large GHG emissions sources.

The EPA is also achieving GHG reductions through partnerships and initiatives; evaluating policy options, costs, and benefits; advancing the science; partnering internationally and with states, localities, and tribes; and helping communities adapt (OB-1 Air Analysis 2015). Below are a list of laws and programs that have been implemented by the federal government.

Climate Action Plan: In June 2013, President Barack Obama unveiled his Climate Action Plan (Plan). The Plan is a national blueprint to slow the effects of climate change and focuses on both CO_2 and short-lived climate pollutants, such as CH_4 and HFCs. The Plan encompasses many sources of GHG emissions, including industrial and transportation sources. The Plan directs the EPA to promulgate rules to address CO_2 emissions from new and existing power plants, which nationally emitted over two billion metric tons of CO_2 in 2012; the largest single source of GHG emissions in the United States.

Power Plants: In September 2013, the EPA proposed a rule, under Section 111(b) of the Federal CAA, to limit CO_2 emissions from future fossil-fueled power plants. On June 2, 2014, the EPA released a proposed rule to regulate CO_2 emissions from existing power plants under Section 111(d) of the CAA, also known as the Clean Power Plan. The EPA estimates that the proposed rule will reduce CO_2 emissions from the power sector 30 percent by 2030 from 2005 emissions. Instead of regulating emissions from individual power plants, the proposed rule focuses heavily on energy efficiency and renewable energy programs as a whole, which

are two mechanisms championed by states like California where much progress and success have already been achieved. The EPA also recognized the fact that State power grids are interconnected and has included flexibility in the proposed rule allowing the option for states to work together to develop multi-state compliance plans.

Clean Vehicles: Congress first passed the Corporate Average Fuel Economy Law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On April 1, 2010, the EPA and the DOT's National Highway Traffic Safety Administration (NHTSA) announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards would cut CO_2 emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016). The EPA and the NHTSA are working on a second-phase joint rulemaking to establish national standards for light-duty vehicles for model years 2017 and beyond.

On October 25, 2010, the EPA and the U.S. DOT proposed the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20 percent reduction in CO_2 emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10 percent reduction for gasoline vehicles and 15 percent reduction for diesel vehicles by 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the agencies are proposing engine and vehicle standards starting in the 2014 model year, which would achieve up to a 10 percent reduction in fuel consumption and CO_2 emissions by the 2018 model year.

Renewable Fuel Standard (RFS) Program: The RFS Program was created under the Energy Policy Act (EPAct) of 2005 and established the first renewable fuel volume mandate in the United States. As required under EPAct, the original RFS Program (RFS1) required 7.5 billion gallons of renewable- fuel to be blended into gasoline by 2012. Under the Energy Independence and Security Act (EISA) of 2007, the RFS Program was expanded in several key ways:

- EISA expanded the RFS Program to include diesel, in addition to gasoline;
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022;

- EISA established new categories of renewable fuel, and set separate volume requirements for each one; and
- EISA required EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

Mandatory Reporting of GHGs: The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule. The rule requires reporting of GHG emissions from large sources and suppliers in the United States and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA.

New Source Review (NSR): The EPA issued a Final Rule on May 13, 2010 that establishes thresholds for GHG that define when permits under the NSR, Prevention of Significant Deterioration (PSD) and Title V Operating Permit Programs are required for new and existing industrial facilities. This Final Rule "tailors" the requirements of these CAA Permitting Programs to limit which facilities will be required to obtain PSD and Title V Permits.

State

There has been significant legislative and regulatory activity that affects climate change and GHG in California, as discussed below.

Executive Order S-3-05: On June 1, 2005, the Governor issued Executive Order S-3-05 which set the following GHG emission reduction targets:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

To meet these targets, the Climate Action Team (CAT) prepared a report to the Governor in 2006 that contains recommendations and strategies to help ensure the targets in Executive Order S-3-05 are met.

Executive Order B-30-15: On April 29, 2015, the Governor issued Executive Order B-30-15 which established an interim California GHG reduction target of 40 percent below 1990 levels by 2030.

AB 32: In 2006, the California State Legislature enacted the California Global Warming Solutions Act of 2006, also known as AB 32. AB 32 focuses on reducing GHG emissions in California. GHGs, as defined under AB 32, include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. CARB

is the State agency charged with monitoring and regulating sources of emissions of GHGs that cause global warming in order to reduce emissions of GHGs. AB 32 also requires that by January 1, 2008, CARB must determine what the statewide GHG emissions level was in 1990, and it must approve a statewide GHG emissions limit, so it may be applied to the 2020 benchmark. CARB approved a 1990 GHG emissions level of 427 $MtCO_2e$, on December 6, 2007 in its staff report. Therefore, in 2020, emissions in California are required to be at or below 427 $MtCO_2e$.

Under the "business as usual or (BAU)" scenario established in 2008, statewide emissions were increasing at a rate of approximately one percent per year as noted below. It was estimated that the 2020 estimated BAU of 596 $MtCO_2e$ would have required a 28 percent reduction to reach the 1990 level of 427 $MtCO_2e$.

Climate Change Scoping Plan: The Climate Change Scoping Plan released by CARB in 2008 outlined the State's strategy to achieve the AB 32 goals. This Plan, developed by CARB in coordination with CAT, proposed a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health. It was adopted by CARB at its meeting in December 2008. According to the Scoping Plan, the 2020 target of 427 $MtCO_2e$ requires the reduction of 169 $MtCO_2e$, or approximately 28.3 percent, from the State's projected 2020 BAU emissions level of 596 $MtCO_2e$.

However, in May 2014, CARB developed, in collaboration with CAT, the first update to California's Climate Change Scoping Plan (Update), which shows that California is on track to meet the near-term 2020 GHG limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32. In accordance with the United Nations Framework Convention on Climate Change (UNFCCC), CARB is beginning to transition to the use of the IIPCC's Fourth Assessment Report (AR4) 100-year GWPs in its Climate Change Programs. CARB has recalculated the 1990 GHG emissions level with the AR4 GWPs to be 431 $MtCO_2e$; therefore the 2020 GHG emissions limit established in response to AB 32 is now slightly higher than the 427 $MtCO_2e$ in the initial Climate Change Scoping Plan.

SB 375: Senate Bill (SB) 375 passed the Senate on August 30, 2008 and was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions and contributes over 40 percent of the GHG emissions in California, with automobiles and light trucks alone contributing almost 30 percent. SB 375 indicates that GHGs from automobiles and light trucks can be reduced by new vehicle technology. However, significant reductions from changed land use patterns and improved transportation also are necessary. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32". SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Title 24: Although not originally intended to reduce GHGs, CCR, Title 24, Part 6: California's Energy Efficiency Standards for Residential and Non-residential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. The 2008 standards became effective January 1, 2010. The requirement for when the 2008 standards must be followed is dependent on when the application for the building permit is submitted. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions.

California Green Building Standards: On January 12, 2010, the State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code (CGBSC) (Part 11 of Title 24, CCR), which went into effect on January 1, 2011. The CGBSC is a comprehensive and uniform regulatory code, periodically updated to include new advancements, for all residential, commercial and K-14 school buildings.

The CGBSC does not prevent a local jurisdiction from adopting a more stringent code as State law provides methods for local enhancements. The CGBSC recognizes that many jurisdictions have developed construction and demolition ordinances, and defers to them as the ruling guidance provided, they provide a minimum 50 percent diversion requirement. The CGBSC also provides exemptions for areas not served by construction and demolition recycling infrastructure. State Building Code provides the minimum standard that buildings need to meet in order to be certified for occupancy. Enforcement is generally through the local building official.

Pavley Regulations: California AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. The regulation was stalled by automaker lawsuits and by the EPA's denial of an implementation waiver. On January 21, 2009, CARB requested that the EPA reconsider its previous waiver denial. On January 26, 2009, President Obama directed that the EPA assess whether the denial of the waiver was appropriate. On June 30, 2009, the EPA granted the waiver request, which begins with motor vehicles in the 2009 model year.

The standards phase in during the 2009 through 2016 model years. When fully phased in, the near term (2009-2012) standards will result in about a 22-percent reduction compared with the 2002 fleet, and the mid-term (2013-2016) standards will result in about a 30-percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

Low-carbon Fuel Standard - Executive Order S-01-07: The Governor signed Executive Order S-01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 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 California Energy Commission (CEC), CARB, 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 (SIP) for alternative fuels (State Alternative Fuels Plan adopted by the CEC on December 24, 2007) and was submitted to CARB for consideration as an "early action" item under AB 32. CARB adopted the LCFS on April 23, 2009. CARB approved some amendments to the LCFS in December 2011, which became effective on November 26, 2012, and were implemented by CARB on January 1, 2013 (Appendix B).

SB 97: Passed in August 2007, SB 97 added Section 21083.05 to the PRC. The PRC states "(a) On or before July 1, 2009, the OPR shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the OPR pursuant to subdivision (a)." Section 21097 was also added to the PRC.

On April 13, 2009, OPR submitted to the Secretary for Natural Resources its recommended amendments to the *CEQA Guidelines* for addressing GHG emissions, as required by SB 97. On February 16, 2010, the Office of Administrative Law approved the amendments, and filed them with the Secretary of State for inclusion in the CCR. The CEQA amendments became effective on March 18, 2010.

CEQA Guidelines Update: As required by SB 97, the Governor's OPR prepared and transmitted recommended amendments to the *CEQA Guidelines* for GHG emissions to the CNRA on April 13, 2009. After a public comment period, the CNRA proposed revisions to the text of the proposed Guidelines amendments. The CNRA provided additional public comment time on the revised text. The CNRA adopted the *CEQA Guidelines* amendments with minor, non-substantial changes.

SB 1078, SB 107, and Executive Order S-14-08: On September 12, 2002, Governor Gray Davis signed a bill (SB 1078) requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established an RPS target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020.

Regional

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT

The Project is within the SJVAB, which is under the jurisdiction of the SJVAPCD. Currently, the agency has several rules and plans in place that help to guide and reduce impacts from GHG emissions.

In 2009, the SJVAPCD adopted a comprehensive regional policy and guidance on addressing and mitigating GHG emission impacts caused by industrial, commercial, and residential development in the San Joaquin Valley. This set of guidance documents was designed to assist local permitting agencies and businesses by answering several questions related to CEQA and how to address GHG impacts under existing CEQA law.

To assist Lead Agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project specific GHG emissions on global climate change, the SJVAPCD has adopted the guidance: "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA." The guidance and policy rely on the use of performance-based standards, otherwise known as Best Performance Standards (BPS) to assess significance of project specific GHG emissions on global climate change during the environmental review process, as required by CEQA. Use of BPS is a method of streamlining the CEQA process of determining significance and is not a required emission reduction measure. Projects implementing BPS would be determined to have a less-than-cumulatively-significant impact. Otherwise, demonstration of a 29 percent reduction in GHG emissions, from BAU, is required to determine that a project would have a less-than-cumulatively-significant impact. The guidance does not limit a Lead Agency's authority in establishing its own process and guidance for determining significance of project related impacts on global climate change.

Local

CITY OF TULARE GENERAL PLAN

Pursuant to CCR, Title 14, Section 65300, the 2035 City of Tulare General Plan addresses GHG emissions in its Conservation and Open Space Element. Other policies related to GHG reduction, which also directly affect air quality, are provided in **Section 3.3, Air Quality**. The General Plan also includes local, regional, State, and federal programs and regulations as well as a comprehensive set of guiding and implementing policies, listed below.

Conservation and Open Space Element

POLICIES

COS-P7.18 Climate Action Plan. The City shall, consistent with other City programming and capital priorities and its fiscal constraints, implement and ensure compliance with the goals, policies, and actions of the Tulare Climate Action Plan.

COS-P7.19 Monitoring. On a semi-annual basis, the City shall monitor and report its progress on implementing the goals, policies, and actions of the Climate Action Plan to the City Council.

COS-P7.20 Greenhouse Gas Emissions Reduction. The City should reduce greenhouse gas emissions from City operations, as well as from private development in

compliance with the California Global Warming Act of 2006 and any applicable State regulations.

Many of the General Plan policies relevant to air quality are also beneficial toward the reduction of GHG emissions.

CITY OF TULARE CLIMATE ACTION PLAN

Chapter 5 of the City of Tulare's Climate Action Plan summarizes the municipal reduction goals and measures to reduce GHG emissions from community-wide sources within City boundaries. Chapter 6 details the Plan's community-wide goals and measures. The goals of the Climate Action Plan each contain measures and action items that outline how these goals will be attained.

The municipal goals of the Climate Action Plan include:

- Increase energy efficiency and conservation;
- Promote and support renewable energy generation and use;
- Shift single-occupancy vehicle trips to alternative modes; and
- Reduce emissions from vehicles.

The community-wide goals of the Climate Action Plan include:

- Increase energy efficiency and conservation;
- Promote and support renewable energy generation and use;
- Shift single-occupancy vehicle trips;
- Reduce emissions from vehicles;
- Increase accessible land use to reduce vehicular trips;
- Reduce solid waste; and
- Promote low emissions in agriculture.

3.7.3 - IMPACT EVALUATION CRITERIA

Methodology

Applied methodology comes from the SJVAPCD's "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" and the "District Policy - Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency." As discussed previously, projects complying with any SJVAPCD adopted BPSs are not required to provide a specific quantification of GHG emissions and thus would be determined to have a less-than-significant cumulative impact for GHG emissions. Projects not complying with BPSs thus require quantification of GHG emissions and demonstration that GHG emissions have been reduced or mitigated by 29 percent below BAU, as targeted by ARB's AB 32 Scoping Plan to be considered to have a less-than-significant impact on climate change.

Thresholds of Significance

According to *CEQA Guidelines, Appendix G Environmental Checklist*, to determine whether GHG emissions impacts are significant environmental effects, the following questions are analyzed and evaluated. Would the Project:

a) *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or*

b) *Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?*

Generally, the evaluation of an impact under CEQA requires measuring data from a project against a "threshold of significance". The OPR's amendments to the *CEQA Guidelines* state that "[w]hen adopting thresholds of significance, a Lead Agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the Lead Agency to adopt such thresholds is supported by substantial evidence".

However, the *CEQA Guidelines* amendments do not identify a threshold of significance for GHG emissions, nor does it prescribe assessment methodologies or specific mitigation measures. Instead, it calls for a "good faith effort, based on available information, to describe, calculate or estimate the amount of GHG emissions resulting from a project."

CEQA Guideline 15064.4(a) states, "…A Lead Agency shall have discretion to determine, in the context of a particular project, whether to: (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use…; or (2) Rely on a qualitative analysis or performance-based standards."

The *CEQA Guidelines* amendments for GHG emissions state that a Lead Agency may take into account the following three considerations in assessing the significance of impacts from GHG emissions:

Consideration No. 1: The extent to which the project may increase or reduce GHG emissions compared with the existing environmental setting. This discussion could involve a quantification of GHG emissions to the extent feasible;

Consideration No. 2: Whether the project emissions exceed a threshold of significance that the Lead Agency determines applies to the project; and

Consideration No. 3: The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are

still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

In accordance with the SJVAPCD's guidance for addressing GHG emission impacts for new projects under CEQA, a project would be considered to have a less-than-significant individual and cumulative impact on climate change if it were to do at least one of the following:

- Be exempt from the requirements of CEQA; or
- Comply with an approved GHG Emission Reduction Plan or GHG Mitigation Program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located. Such plans or programs must be specified in law or approved by the Lead Agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the Lead Agency; or
- Implement approved BPS; or
- Quantify project GHG emissions and reduce those emissions by at least 29 percent compared to BAU. BAU is referenced in CARB's AB 32 Scoping Plan as emissions occurring in 2020 if the average baseline emissions during the 2002–2004 period grew to 2020 levels without additional control. Therefore, 2002–2004 emissions factors, on a unit of activity basis, multiplied by the activity expected to occur in 2020, is an appropriate representation of 2020 BAU. Also, see page 3.7-8 for more information on BAU. The reductions can be based on any combination of reduction measures, including GHG reductions achieved as a result of changes in building and appliance standards occurring since the 2002–2004 baseline period.

The Project is not exempt from CEQA. The Scoping Plan prepared pursuant to AB 32 demonstrates how California would reduce GHG emissions to 1990 levels by the year 2020; however, most of the measures in the Scoping Plan are not applicable to the Project. There are no approved SJVAPCD BPS that would apply to the Project. Therefore, the approach used in this analysis is to quantify GHG emissions and reduce the emissions by at least 29 percent compared to BAU.

District Significance Thresholds

It is widely recognized that no single project could generate enough GHG emissions to noticeably change the global climate temperature. However, the combination of GHG emissions from past, present and future projects could contribute substantially to global climate change. Thus, project specific GHG emissions should be evaluated in terms of whether or not they would result in a cumulatively significant impact on global climate change.

In the SJVAPCD's staff report, staff reviewed the relevant scientific information and concluded that the existing science is inadequate to support quantification of the extent to which project specific GHG emissions would impact global climate features such as average air temperature, average rainfall, or average annual snow pack. In other words, the SJVAPCD was not able to determine a specific quantitative level of GHG emissions increase, above

which a project would have a significant impact on the environment, and below which would have an insignificant impact.

In the absence of scientific evidence supporting establishment of a numerical threshold, the SJVAPCD policy applies performance-based standards to assess project specific GHG emission impacts on global climate change. The determination is founded on the principal that projects whose emissions have been reduced or mitigated consistent with AB 32, should be considered to have a less than significant impact on global climate change. The SJVAPCD provides a tiered approach in assessing significance of project specific GHG emission increases.

- Projects complying with an approved GHG Emission Reduction Plan or GHG Mitigation Program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less than significant individual and cumulative impact for GHG emissions. Projects complying with an approved GHG Emission Reduction Plan or GHG Mitigation Program would not be required to implement BPS.
- Projects implementing BPS would not require quantification of project-specific GHG emissions. Consistent with the *CEQA Guidelines*, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.
- Projects not implementing BPS would require quantification of project-specific GHG emissions and demonstration that project specific GHG emissions would be reduced or mitigated by at least 29 percent, compared to BAU, including GHG emission reductions achieved since the 2002-2004 baseline period, consistent with GHG emission reduction targets established in CARB's AB 32 Scoping Plan. Projects achieving at least a 29 percent GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.

3.7.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.7-a: Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

During construction, GHG emissions would be generated from operation of both on-road and off-road equipment. Once operational, emissions would be generated both directly and indirectly. A summary of all GHG emissions from the proposed Project is presented in Table 3.7-2.

The SJVAPCD has determined that GHG emission from development projects primarily occur indirectly through energy consumption and vehicle miles traveled (VMT). They suggest that developers can reduce GHG emissions from energy consumption through building designs that increase energy efficiency, water conservation, and the use of energy efficient appliances.

Table 3.7-2
Proposed Project GHG Emissions

Source	CO_2	CH_4	N_2O	CO_2e
Construction Emissions				
2019 Construction Emissions	493.46	0.10	0.00	495.99
2020 Construction Emissions	161.71	0.03	0.00	162.48
2022 Construction Emissions	780.45	0.14	0.00	783.89
2023 Construction Emissions	854.04	0.09	0.00	856.23
2024 Construction Emissions	1567.72	0.24	0.00	1573.80
2025 Construction Emissions	1069.36	0.13	0.00	1072.49
2026 Construction Emissions	785.11	0.09	0.00	787.26
2027 Construction Emissions	778.53	0.09	0.00	780.68
2028 Construction Emissions	769.91	0.09	0.00	772.06
2029 Construction Emissions	171.33	0.03	0.00	172.17
Operational Emissions				
Phase 1-3	10,563.08	16.01	0.10	10,994.09
Annualized Construction Emissions[1]	*247.721*	*0.03387*	*0*	*248.568*
Project Emissions	**10,810.80**	**16.04**	**0.10**	**11,242.66**

*Note: 0.00 could represent <0.00
1 Per South Coast AQMD's Methodology

Developers can further reduce GHG emissions through project designs that reduce VMT through features that promote pedestrian access and use of public transportation.

While it is not possible to determine whether the Project individually would have a significant impact on global warming or climate change, the Project would potentially contribute to cumulative GHG emissions in California as well as to related health effects. The Project emissions would only be a very small fraction of the statewide GHG emissions. However, without the necessary science and analytical tools, it is not possible to assess, with certainty, whether the Project's contribution would be cumulatively considerable, within the meaning of *CEQA Guidelines*, *Sections 15065(a)(3) and 15130*.

The Project will not result in the emissions of HFCs, PFCs, or SF_6, the other gases identified as GHG in AB 32. The proposed Project will be subject to any regulations developed under AB 32 as determined by CARB. The Project will reduce GHG emissions by 41.83 percent; thus, it will meet the required 29 percent reduction to meet the AB 32 goals (Table 3.7-3); therefore, consistent with SJVAPCD Policies (APR 2005), the GHG emissions increases associated with this Project would have a less-than-significant individual and cumulative impact on global climate change.

Table 3.7-3
Comparison of Unmitigated and Mitigated GHG Emissions (MT/Year)

	Project Unmitigated	Project Mitigated (2020)
CO2e Emissions	18,899.76	10,994.09
Percent Reduction		41.83%

CONCLUSION

Compliance will all mitigation measures included in **Section 3.3, Air Quality**, would reduce GHG emissions from the proposed Project to less-than-significant levels.

EFFECTIVENESS OF MITIGATION

Impacts would be ***less than significant.***

Impact #3.7-b: Would the Project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

Tulare County Association of Governments (TCAG) Air Quality Conformity Analysis considers GPAs and zone changes that were enacted at the time of the analysis as projected growth within the area based on land use designations incorporated within the Tulare County General Plan. Land use designations that are altered based on subsequent GPAs that were not included in the Air Quality Conformity Analysis were not incorporated into TCAG analysis. Consequently, if a proposed project is not included in the regional growth forecast using the latest planning assumptions, it may not be said to conform to the regional growth forecast. Under the current Tulare County Zoning, the Project site is designated as "Exclusive Agriculture (AE-20)."

Under current policies, only after a GPA is approved can housing and employment assumptions be updated to reflect the capacity changes. Since the proposed development does require a GPA and zone change, the existing growth forecast will be modified to reflect these changes. In order to determine whether the forecasted growth for the Project area is sufficient to account for the projected increases in employment, an analysis based on TCAG regional forecast was conducted. Employment and population forecast for the analysis area appear to be sufficient to account for 100 percent of the planned employment growth attributed to the proposed Project. In order to be considered "consistent" and, therefore, in conformance with the AQAP, these increases would need to occur over the same time as the adopted growth forecast. According to TCAG's Air Quality Conformity Analysis there is a projected population increase of 24,865 and an employee increase of 7,300 in Tulare County between 2017 and 2020 (TCAG, 2016).

CONCLUSION

The proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Therefore, this would be a less-than-significant impact.

MITIGATION MEASURE(S)

No mitigation measures are necessary.

3.8 - Hazards and Hazardous Materials

This section describes the hazards and hazardous materials setting of the Project site, and addresses the potential for the Project to create hazards to the public or environment through the transport, use, or disposal of hazardous materials; through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; emitting hazardous emission or handling hazardous materials within 0.25 miles of a school; being located on a known hazardous material site; resulting in a safety hazard within two miles of an Airport Land Use Plan (ALUP) or public airport, or within the vicinity of a private airstrip; impairing implementation of an Emergency Response Plan (ERP); or exposing people or structures involving wildland fires.

3.8.1 - Environmental Setting

History of the Project Site and Its Vicinity

Based on a review of historical information, the Project site consisted of farmland. An old crop duster airport that may have involved activities including aircraft maintenance and cleaning, storage of aircraft and fuel, and pesticide/insecticide/rodenticide storage was formerly located at the southeast corner of the site (Appendix E). The land surrounding the Project site to the east and west has been used as agricultural land, Cartmill Avenue bounds the site to the south. This road has served as a major local east/west transportation route. The western Project boundary is Road 100 (Akers Street) and SR 99.

Project Description

The Project site is located immediately north and adjacent to the City of Tulare, California, and consists of approximately 127 acres of undeveloped land. The Project site is approximately 0.3 miles northeast of fully urbanized residential development, with scattered development of varying uses in between, and within the Sphere of Influence (SOI) of the City of Tulare. The 2035 Tulare General Plan designates the Project site as Regional Commercial. The site is within the Tulare Zoning Ordinance Retail Commercial (C-3) zone district. Road 100 (Akers Street) is an arterial that runs through the Project site.

The site is relatively flat with an elevation of approximately 297 feet above relative mean sea level. The City of Tulare is situated near the eastern boundary of the San Joaquin Valley along a gently western-sloping alluvial plain by the Sierra Nevada to the east and the Coast Ranges to the west. The Tehachapi and San Emigdio Mountains bound the southern edge of the Valley. The Sacramento Valley joins the north end of the San Joaquin Valley.

Adjoining Properties

To the west of the site is SR 99, Cartmill Avenue to the south, and undeveloped land to the north and east. The northwest Project boundary is adjacent to a recreational vehicle dealership and service facility.

Hazardous Materials Transportation

The transport of hazardous materials within California is subject to various federal, State, and local regulations. It is illegal to transport explosives or inhalation hazards on any public highway not designated for that purpose, unless the use of the highway is required to permit delivery or the loading of such materials (California Vehicle Code, Sections 31602(b) and 32104(a)). The California Highway Patrol (CHP) designates through routes to be used for the transport of hazardous materials. The transport of hazardous materials is restricted to these routes, except in cases where travel branching from these routes is required to deliver or receive hazardous materials.

The County coordinates with CHP, the Tulare County Division of Environmental Health, the Tulare County Sheriff's Department, and all other appropriate local, State and federal agencies in hazardous materials route planning, notifications, and incident response to ensure appropriate first response to hazardous material incidents.

The Federal Motor Carrier Safety Administration (FMCSA) has designated SR 99 as the route for the transportation of hazardous materials from the Project site.

Nearby Schools

The closest schools to the Project site are Los Tules Middle School, located approximately one mile to the southwest of the Project site, and Liberty Elementary School, located approximately one mile to the east of the Project site. Mission Valley Elementary and Heritage Elementary are both located approximately 1.3 miles from the Project site to the southeast and southwest, respectively. There are currently no known proposed schools within 0.25 miles of the Project site.

Nearby Airports/Airstrips

The Project site lies approximately six miles north of Mefford Field Airport, and approximately 6.5 miles south of Visalia Municipal Airport. The nearest private airstrip is Salyer Farms Airport, located approximately 15 miles southwest of the Project site. Therefore, the Project site is not within two miles of a public or private airstrip.

Wildland Fire Hazards

According to the California Department of Forestry and Fire Protection (CAL FIRE) Tulare County Fire Hazard Severity Zone (FHSZ) Maps for the Local Responsibility Area, the Project site is located in an "Unzoned" FHSZ (CAL FIRE, 2007). The closest zoned areas to the Project site are located approximately 1,000 meters to the west at Mid-Valley Growers and the southeast corner of the intersection of West Cartmill Avenue and North J Street, which are both designated "Moderate."

3.8.2 - REGULATORY SETTING

Federal

U.S. ENVIRONMENTAL PROTECTION AGENCY

The EPA was established in 1970 to consolidate a variety of federal research, monitoring, standard-setting, and enforcement activities in one agency to ensure environmental protection. The EPA's mission is to protect human health and safeguard the natural environment (i.e., air, water, land) upon which life depends. The EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. The EPA is responsible for researching and setting national standards for a variety of environmental programs and delegates the responsibility for using permits and monitoring and enforcing compliance to states and tribes. Where national standards are not met, the EPA can issue sanctions and take other steps to help states and tribes reach desired levels of environmental quality.

RESOURCE CONSERVATION AND RECOVERY ACT

Under the Resource Conservation and Recovery Act (RCRA) of 1976, individual states may implement their own hazardous waste programs in lieu of RCRA as long as the State program is at least as stringent as federal RCRA requirements. The EPA must approve State programs intended to implement federal regulations. In California, the California Environmental Protection Agency (Cal/EPA) and the Department of Toxic Substances Control (DTSC), a department within Cal/EPA, regulate the generation, transportation, treatment, storage, and disposal of hazardous waste. The EPA approved California's RCRA Program, called the Hazardous Waste Control Law (HWCL), in 1992. The DTSC has primary hazardous material regulatory responsibility but can delegate enforcement responsibilities to local jurisdictions that enter into agreements with the DTSC for the generation, transport, and disposal of hazardous materials under the authority of the HWCL.

The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; prescribe the management of hazardous wastes; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in ordinary landfills. Hazardous waste generators must retain hazardous waste manifests for a minimum of three years. These manifests provide a description of the waste, its intended destination, and regulatory information about the waste. A copy of each manifest must be filed with the State. The generator must match copies of hazardous waste manifests with receipts from treatment, storage, and disposal facilities.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and associated Superfund Amendments provide the EPA with the authority to identify hazardous sites, require site remediation and recover the costs of site remediation from

polluters. California has enacted similar laws intended to supplement the federal program. The DTSC is primarily responsible for implementing California's Superfund Law.

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

The Occupational Safety and Health Administration's (OSHA) mission is to ensure the safety and health of American workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health. OSHA's staff establishes and enforces protective standards and reaches out to employers and employees through technical assistance and consultation programs. OSHA standards are listed in 29 CFR 1910. The Code of Federal Regulation (CFR), Chapter 29, Sections 1910 (General Industry) and 1026 (Construction), promulgates regulations for the preparation of Health and Safety Plans (HASPs). HASPs identify potential hazards associated with a proposed land use and may provide appropriate mitigation measures as required.

FEDERAL AVIATION ADMINISTRATION

The Federal Aviation Administration (FAA) regulates aviation at regional, public, private, and military airports. The FAA regulates objects affecting navigable airspace and structures taller than 200 feet according to Federal Aviation Regulation 49 CFR 77.13. The U.S. Department of Transportation (DOT) and Caltrans require the project proponent to submit FAA Form 7460-1, Notice of Proposed Construction or Alteration. According to 49 CFR 77.17, notification allows the FAA to identify potential aeronautical hazards in advance, thereby preventing or minimizing any adverse impacts on the safe and efficient use of navigable airspace. Any structure that would constitute a hazard to air navigation, as defined in this FAA regulation, would require issuance of a permit from Caltrans' Aeronautics Program. The permit is not required if the FAA aeronautical study determines that the structure would have no impact on air navigation.

State

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Cal/EPA, created in 1991, unified California's environmental authority in a single cabinet-level agency and brought CARB, SWRCB, RWQCB, CalRecycle, DTSC, Office of Environmental Health Hazard Assessment, and the Department of Pesticide Regulation under one agency. These agencies were placed within the Cal/EPA "umbrella" for the protection of human health and the environment to ensure the coordinated deployment of State resources. Their mission is to restore, protect, and enhance the environment and ensure public health, environmental quality, and economic vitality.

DEPARTMENT OF TOXIC SUBSTANCE CONTROL

The DTSC, a department of Cal/EPA, is the primary agency in California for regulating hazardous waste, cleaning up existing contamination, and finding ways to reduce the amount

of hazardous waste produced in California. The DTSC regulates hazardous waste primarily under the authority of the federal RCRA and the California Health and Safety Code (primarily Division 20, Chapters 6.5 through 10.6, and Title 22, Division 4.5). Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

USC 65962.5 (commonly referred to as the Cortese List) includes DTSC-listed hazardous waste facilities and sites, Department of Health Services (DHS) lists of contaminated drinking water wells, sites listed by the SWRCB as having underground storage tank (UST) leaks or a discharge of hazardous wastes or materials into the water or groundwater and lists from local regulatory agencies of sites with a known migration of hazardous waste/material.

CALIFORNIA OFFICE OF EMERGENCY SERVICES

To protect public health and safety as well as the environment, the California Office of Emergency Services (OES) is responsible for establishing and managing statewide standards for business and area plans related to the handling and release, or threatened release, of hazardous materials. The OES requires basic information regarding hazardous materials handled, used, stored, or disposed of (including location, type, quantity, and health risks) to be available to firefighters, public safety officers, and regulatory agencies. Typically, this information should be included in business plans to prevent or mitigate impacts on the environment or the health and safety of individuals from the release, or threatened release, of these materials into the workplace and environment. These regulations are covered under Chapter 6.95 of the California Health and Safety Code, Article 1, Hazardous Materials Release Response and Inventory Program (Sections 25500 to 25520), and Article 2, Hazardous Materials Management (Sections 25531 to 25543.3).

Title 19 of the California Code of Regulation (CCR) (Public Safety; Division 2; Office of Emergency Services; Chapter 4; Hazardous Material Release Reporting, Inventory, and Response Plans; Article 4 [Minimum Standards for Business Plans]) establishes minimum statewide standards for Hazardous Materials Business Plans (HMBP). These HMBP must include the following: 1) a hazardous material inventory in accordance with Sections 2729.2 to 2729.7, 2) emergency response plans and procedures in accordance with Section 2731, and 3) training program information in accordance with Section 2732. The HMBP should contain basic information regarding the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the State. Each business would prepare a HMBP if that business uses, handles, or stores a hazardous material or an extremely hazardous material in quantities greater than or equal to the following:

- 500 pounds of a solid substance;
- 55 gallons of a liquid;
- 200 cubic feet of compressed gas;
- A hazardous compressed gas in any amount; or
- Hazardous waste in any quantity.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety related to the handling and use of chemicals in the workplace. Cal/OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR 337–340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings (8 CCR 5192 outlines standards for the preparation of HASPs).

California Code of Regulations, Title 22, Section 66261.20-24

Soils having concentrations of contaminants higher than certain acceptable levels must be handled and disposed of as hazardous waste when excavated. The California Code of Regulations, Title 22, Section 66261.20-24 contains technical descriptions of characteristics that would cause a soil to be classified as a hazardous waste.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)

In January 1996, the Cal/EPA adopted regulations implementing the Unified Program (UP). UP has six elements: 1) hazardous waste generators and hazardous waste onsite treatment; 2) underground storage tanks; 3) aboveground storage tanks; 4) Hazardous Materials Release Response Plans and Inventories; 5) Risk Management and Prevention Programs; and 6) Uniform Fire Code Hazardous Materials Management Plans and Inventories. UP is implemented at the local level. The local agency that is responsible for the implementation of UP is the Certified Unified Program Agency (CUPA), and the Tulare County Environmental Health Department is the designated CUPA.

The California Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act)

The Business Plan Act requires that any business that handles hazardous materials prepare a business plan, which must include the following:

- Details, including floor plans, of the facility and business conducted at the site;
- An inventory of hazardous materials that are handled or stored onsite;
- An emergency response plan; and
- A safety and emergency response training program for new employees with annual refresher courses.

State Water Resources Control Board Underground Storage Tank Program

The SWRCB established regulations governing prevention of leaks from USTs. There are published standards and requirements for installation, tank construction, tank testing, leak detection, spill containment and overfill protection. California UST laws and regulations give

local agencies (counties, cities, or other local agencies) authority throughout the State to issue permits for tank operation and to enforce tank testing requirements within their jurisdiction. In Tulare County, Tulare County Environmental Health Department (the CUPA) issues permits for the operation of underground storage tanks and oversees the installation, operation and removal.

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS (26 CCR)

The State has also adopted U.S. DOT regulations for the intrastate movement of hazardous materials. State regulations are contained in 26 CCR. In addition, the State regulates the transportation of hazardous waste originating in the State and passing through the State (26 CCR). Both regulatory programs apply in California. The two State agencies with primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies are the CHP and Caltrans.

CALIFORNIA VEHICLE CODE SECTION 32000

Common carriers are licensed by the CHP, pursuant to California Vehicle Code, Section 32000. This section requires the licensing of every motor (common) carrier who transports, for a fee, in excess of 500 pounds of hazardous materials at one time, and every carrier, if not for hire, who carries more than 1,000 pounds of hazardous material of the type requiring placards.

CALIFORNIA ACCIDENTAL RELEASE PREVENTION PROGRAM

The California Accidental Release Prevention Program (CalARP) regulations became effective January 1, 1997, replacing the California Risk Management and Prevention Program. CalARP was created to prevent the accidental release of regulated substances. It covers businesses that store or handle certain volumes of regulated substances at their facilities. A list of regulated substances is found in Section 2770.5 of the CalARP regulations. If a business has more than the listed threshold quantity of a substance, an Accidental Release Prevention Program must be implemented, and a Risk Management Plan (RMP) may be required. The California OES is responsible for implementing the provisions of CalARP.

Local

CITY OF TULARE GENERAL PLAN

The City of Tulare General Plan (City of Tulare, 2014) sets forth the following policies relevant to hazards and hazardous materials.

Safety Element

GOAL

SAF-1 To regulate future development to ensure the protection of public health and safety from hazards and hazardous materials and the adequate provision of emergency services.

POLICIES

SAF-P1.1 Development Constraints. The City shall permit development only in areas where the potential danger to the health and safety of people and property can be mitigated to an acceptable level.

SAF-P1.3 Hazardous Lands. The City shall designate areas with a potential for significant hazardous conditions for open space, agriculture, and other appropriate low intensity uses.

SAF-P1.5 Hazard Awareness and Public Education. The City shall continue to promote awareness and education among residents regarding possible natural hazards, including soil conditions, earthquakes, flooding, fire hazards, and emergency procedures.

SAF-P1.6 Safe Housing and Structures. The City shall continue to seek grant funding for Substandard Housing Abatement Programs to rehabilitate deteriorated and dilapidated structures and shall continue to provide available information regarding housing programs and other public services. These educational programs will be offered in Spanish, English, and Portuguese languages as appropriate and as resources allow.

SAF-P1.7 Site Investigations. The City shall require applicants to conduct site investigations in areas planned for new development to determine susceptibility to landslides, subsidence/settlement, contamination, and/or flooding.

SAF-P1.8 Police and Fire Department Review. The Planning process should continue to seek the input of the Police and Fire Departments in reviewing development plans and permits. Such a coordinated effort should be aimed at reducing property loss and affecting a reduction of injury and loss of life.

SAF-P1.9 Public Education. It is recommended that the City of Tulare through the Fire Department, Police Department, and Planning Department increase their efforts towards encouraging the public through educational means, to reduce risk.

GOAL

SAF-3 To provide adequate emergency services.

POLICIES

SAF-P3.2 Coordinate Emergency Response Services with Government Agencies. The City shall coordinate emergency response with local, State, and federal governmental agencies charged with disaster and emergency preparedness responsibilities.

SAF-P3.3 Maintain Emergency Evacuation Plans. The City shall maintain emergency evacuation plans for areas identified as subject to potential flooding.

SAF-P3.4 Emergency Centers. The City shall require emergency backup systems to enable uninterrupted continuous operations as required by the California Essential Facilities Act.

SAF-P3.5 Joint Exercises. The City shall encourage fire and law enforcement departments to periodically conduct joint training exercises with the goal of developing the best possible coordinated action in the event of a natural or human-made hazard.

SAF-P3.6 Upgrading for Streets and Highways. The City shall evaluate and upgrade vital streets and highways to an acceptable level for emergency services.

GOAL

SAF-5 To protect people from the harmful effects of exposure to hazardous materials.

POLICIES

SAF-P5.1 Designated Routes for Hazardous Materials Transport. The City shall continue to encourage the transportation of hazardous materials within the City to routes that have been designated for such transport.

SAF-P5.2 Hazardous Materials Studies. The City shall ensure that the proponents of new development projects address hazardous materials concerns through the preparation of Phase I or Phase II Hazardous Materials Studies for each identified site as part of the design phase for each project. Recommendations required to satisfy federal or State cleanup standards outlined in the studies will be implemented as part of the construction phase for each project.

SAF-P5.3 Transporting Hazardous Materials. The City shall strive to ensure hazardous materials are used, stored, transported, and disposed of in a safe manner, in compliance with local, State, and federal safety standards.

SAF-P5.4 Establishment of Procedures to Transport Hazardous Wastes. The City shall continue to cooperate with the CHP to establish procedures for the movement of hazardous wastes and explosives within the City.

SAF-P5.5 Incompatible Land Uses. The City shall prevent incompatible land uses near properties that produce or store hazardous waste.

SAF-P5.6 Contamination Prevention. The City shall review new development proposals to protect soils, air quality, surface water and groundwater from hazardous materials contamination.

SAF-P5.7 Household Hazardous Waste. The City shall work to educate the public about household hazardous waste and the proper method of disposal.

SAF-P5.8 Hazardous Waste Facilities. Analysis of alternative sites shall be required for specified hazardous waste facilities where local property values, agricultural production or future anticipated urban development may be negatively affected.

SAF-P5.9 Siting of Small Facilities. Small volume offsite hazardous waste facilities, consisting of transfer, treatment, storage and recycling facilities may be sited without an amendment to the Tulare General Plan, if sufficient separation between residential areas is demonstrated and adequate environmental safeguards are incorporated as conditions of approval.

SAF-P5.10 Prohibited Facilities. Specified hazardous waste disposal facilities (including residual repositories and onsite facilities utilizing incineration methods) are prohibited unless the project site is designated as a "Hazardous Waste Facility" on the land use map of the Tulare General Plan, and it is demonstrated that the facility will produce insignificant levels of emissions without any offsets.

GOAL

SAF-6 Protect people and property from fire risk.

POLICIES

SAF-P6.1 New Building Fire Hazards. The City shall ensure that all building permits for development in urban areas as well as areas with potential for wildland fires are reviewed by the City Fire Chief.

SAF-P6.2 Development in Fire Hazard Zones. The City shall ensure that development in extreme or high fire hazard areas is designed and constructed in a manner that minimizes the risk from fire hazards and meets all applicable State and City fire standards. This shall include promoting the use of fire-resistant materials designed to reduce fire vulnerability within high or extreme fire hazard areas through use of Article 86-A of the 2001 California Fire Code and other

nationally recognized standards, as may be updated periodically. Special consideration shall be given to the use of fire resistant-construction in the underside of eaves, balconies, unenclosed roofs and floors, and other similar horizontal surfaces in areas with steep slopes.

SAF-P6.3 Encourage Cluster Development. The City shall encourage cluster developments in areas identified in areas identified as subject to high or extreme fire hazard, to provide for more localized and effective fire protection measures such as consolidations of fuel building abatement, firebreak maintenance, firefighting equipment access, and water service provision.

SAF-P6.4 Fire Risk Recommendation. The City shall encourage the City Fire Chief to make recommendations to property owners regarding hazards associated with the use of materials, type of structures, location of structures and subdivisions, road widths, location of fire hydrants, water supply and other important considerations regarding fire hazards that may be technically feasible but not included in present ordinances or policies.

SAF-P6.5 Wildlife Fire Management Plans. The City shall require the development of wildland fire management plans for projects adjoining significant areas of open space that may have high fuel loads.

SAF-P6.6 Fire Buffers. The City shall strive to maintain fire buffers along heavily traveled roads within hazard zones by thinning, disking, or controlled burning. Parks, golf courses, utility corridors, roads, and open space areas shall be encouraged to locate so they serve as secondary function as a fuel break.

SAF-P6.7 Weed Abatement. The City shall encourage Weed Abatement Programs throughout the City in order to promote fire safety.

SAF-P6.8 Mutual Aid Agreements. Mutual aid agreements should be encouraged between the City of Tulare's Fire and Police Departments and other municipal police and fire departments, as well as the County Sheriff, the California Division of Forestry, and the California Highway Patrol.

SAF-P6.9 Disaster Preparedness Strategies. The City of Tulare should continue to upgrade preparedness strategies and techniques in all levels so as to be prepared when disaster, either natural or manmade occurs.

SAF-P6.10 Public Education to Reduce Fire Risks. The City of Tulare should seek to coordinate a public education program in order to foster public awareness of fire hazards with the intention of reducing injury and loss of life, damage to property and degradation of the natural environment, particularly in conjunction with the public-school system and critical facility personnel. This education program should be carried out through the public and private schools, the library, Police, and Fire Departments, the news media and the civic

organizations and through various related City departments, such as the Planning Department and Engineering Department. The program should seek to reach all age groups, social and economic classes. It is also recommended that these educational programs be offered in Spanish, English, and Portuguese languages as appropriate.

OPERATIONAL AREA EMERGENCY OPERATIONS PLAN

The Tulare County Emergency Operations Plan (EOP) establishes an emergency management organization and assigns functions and tasks consistent with California's Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS). The EOP provides for the integration and coordination of planning efforts of the County with those of the cities, special districts, and Tule River Tribe comprising the operational area, as well as neighboring jurisdictions and the State.

The content of the EOP is based on guidance provided by the State of California's Governor's Office of Emergency Services, FEMA, and the U.S. Department of Homeland Security. The intent of the EOP is to facilitate coordinated emergency response and post emergency short-term recovery by providing a framework for response to all significant emergencies, regardless of the nature of the event. The EOP, adopted by the Board of Supervisors, implements the California SEMS, and provides organizational structure and functional guidance through the Initial Response, Extended Response, and Recovery phases of operations.

3.8.3 - IMPACT EVALUATION CRITERIA

Methodology

This section uses information found in the Phase 1 Environmental Site Assessment performed at the Project site (Consolidated Testing Laboratories, Inc., 2018; Appendix E of this EIR) The Phase I ESA was prepared consistent with the procedures included in the American Society for Testing and Materials (ASTM) E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. The primary purpose of a Phase I ESA is to identify recognized environmental conditions (RECs) at a site. An REC is defined in ASTM E1527-13 as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to release to the environment; 2) under conditions indicative of a release to the environment; or 3) under conditions that pose a material threat of a future release to the environment." For a Phase I ESA analysis, the term *de minimus* is defined in ASTM E1527-13 as conditions that "are not recognized environmental conditions."

Thresholds of Significance

Consistent with *Appendix G* of the *CEQA Guidelines*, the proposed Project is considered to have a significant impact on the environment if it will:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school;

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code, Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area;

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

The Lead Agency determined in the NOP/IS (see Appendix A) that the following environmental issue areas would result in no impact or a less-than-significant impact and therefore were scoped out of requiring further review in this Draft EIR. Please refer to Appendix A of this Draft EIR for a copy of the NOP/IS and additional information regarding these issue areas.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code, Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area; and

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.

3.8.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.8-a: Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Construction

Project construction would involve routine transport, use, and disposal of hazardous materials such as solvents, paints, oils, and grease consistent with applicable federal, State, and local regulations. Small amounts of these materials would be onsite at any given time and are typical materials used in construction of projects. However, any hazardous waste that is generated during construction of the Project would be collected and transported away from the Project site in compliance with existing regulations. During construction, non-hazardous construction debris would be generated. This debris would be disposed of in local landfills. In addition, sanitary waste would be managed during construction through the use of portable toilets, which would be located at reasonably accessible onsite locations. Additionally, the Project would be required to adhere to all OSHA and Cal/OSHA standards for the protection of workers during the construction period. Therefore, no significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous waste during construction of the Project would occur, and impacts would be less than significant.

Operation

The major structures of the Project include commercial businesses and residential development. Examples of permitted uses in commercially-zoned areas include restaurants, fast food restaurants, retail stores, hotels, and fuel stations. Food service, retail, and hotel facilities typically employ sanitation chemicals that can potentially pose risks to employees and customers. Fuel stations routinely handle hazardous chemicals in under- and above-ground storage tanks and transport these chemicals via underground pipes. All transportation of hazardous chemicals will be engaged according to local, State, and federal regulations.

Federal and State law requires labeling of all such materials, which identifies proper use, storage, and disposal instructions. Additionally, the use of such materials would be regulated by the Tulare County Environmental Health Department, which has been certified by the DTSC as the CUPA to implement the State's Unified Program (UP) in the City of Tulare. UP requires handlers of significant amounts of hazardous materials to prepare Hazardous Materials Management Plans (HMMP), which detail plans for emergency response to a release or threatened release of a hazardous material.

The Project's potential fuel stations could potentially require the transport of large amounts of hazardous materials including gasoline, oil, and other automotive materials. In accordance with California Vehicle Code, Section 32000, licensing is required for every motor (common) carrier who transports, for a fee, in excess of 500 pounds of hazardous materials at one time, and every carrier, if not for hire, who carries more than 1,000 pounds of hazardous material

of the type requiring placards. Transport of hazardous materials as a result of Project operations would also have to adhere to the State's Hazardous Materials Transportation Regulations (CCR 26).

Finally, the USTs that could result from the Project would also be regulated by the SWRCB under the UST Program. In Tulare County, the SWRCB has given the Tulare County Environmental Health Department (the CUPA) the authority to issue permits for the operation of USTs in the County and oversees their installation, operation, and removal. In the absence of mitigation, impacts would be potentially significant.

CONCLUSION

This impact is considered potentially significant.

MITIGATION MEASURE(S)

MM HAZ-1: The Project proponent shall prepare a HMMP and submit it to the Tulare County Environmental Health Department (CUPA) for review and approval. The HMMP shall include, at a minimum, floor plans of the facility and business conducted at the site; an inventory of hazardous materials that are handled or stored onsite; an ERP; and a safety and emergency response training program for new employees with annual refresher courses. A copy of the approved HMMP shall be provided to the City of Tulare Planning Department prior to the issuance of grading permits.

MM HAZ-2: If the Project includes one or more fuel stations, The Project proponent shall obtain the appropriate underground storage tank permit from the Tulare County Environmental Health Department for the installation of such tanks. A copy of the approved underground storage tank permit shall be provided to the City of Tulare Planning Division prior to the issuance of grading permits.

EFFECTIVENESS OF MITIGATION

Implementation of the above mitigation measures would reduce this impact to a ***less-than-significant*** level.

Impact #3.8-b: Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Construction

Construction of the commercial and residential developments could potentially involve the release of hazardous materials into the environment. Small amounts of solvents, paints, oils, and grease materials could be onsite at any given time and are typical materials used in construction of projects. However, any hazardous waste that is generated during construction of the Project would be collected and transported away from the Project site in compliance with existing regulations. During construction, non-hazardous construction

debris would be generated. This debris would be disposed of in local landfills. All handling and disposal of hazardous materials would be conducted in accordance to all applicable local, State, and federal laws.

Operation

As stated above under Impact #3.8-a, the uses proposed for development on the Project site, with the exception of potential fuel stations, would not handle or store any significant hazardous materials other than those used for common cleaning and landscaping purposes.

The Tulare County Environmental Health Division administers the CalARP Program in the City of Tulare. CalARP is intended to prevent accidental releases of regulated substances that have the potential to harm the public and the environment. CalArp would require any potential fuel stations to be evaluated to determine the potential for and impacts of accidental releases. Furthermore, CalArp would require the Project proponent to submit a HMMP to the Tulare County Environmental Health Department for review and approval (see Mitigation Measure MM HAZ-1). In the absence of mitigation, Project construction would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

CONCLUSION

This impact is considered potentially significant.

MITIGATION MEASURE(S)

MM HAZ-3: The Project proponent shall comply with CalARP in the City of Tulare and prepare an Accidental Release Prevention Program for review and approval by the Tulare County Environmental Health Division. A copy of the approved program shall be provided to the City of Tulare Planning Division Prior to the issuance of grading permits.

EFFECTIVENESS OF MITIGATION

Implementation of the above mitigation measure would reduce this impact to a ***less-than-significant*** level.

Impact #3.8-c: Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

The closest schools to the Project site are Los Tules Middle School, located approximately one mile to the southwest of the Project site, and Liberty Elementary School, and located approximately one mile to the east of the Project site. Mission Valley Elementary and Heritage Elementary are both located approximately 1.3 miles from the Project site to the southeast and southwest, respectively. There are currently no known proposed schools within 0.25 miles of the Project site. Therefore, the Project would not emit hazardous

emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school, and impacts would be less than significant.

CONCLUSION

This impact is considered less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.8-g: Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The Project does not include any characteristics (e.g., permanent road closures) that would physically impair or otherwise interfere with emergency response or evacuation in the Project vicinity. In addition, during construction activities, the Project would be required to comply with the current Tulare County Operational Area EOP. The EOP identifies responsibilities and coordinates emergency response at the local level in the event of a hazardous materials incident.

CONCLUSION

This impact is considered less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.8-h: Would the Project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

According to the CAL FIRE's Tulare County FHSZ maps for the local responsibility area, the Project site is located in an "Un-zoned" FHSZ (CAL FIRE, 2007). The closest zoned areas to the Project site are located approximately 1,000 meters to the west at Mid-Valley Growers and the southeast corner of the intersection of West Cartmill Avenue and North J Street, which are both designated "Moderate." Therefore, the Project site is not located near any wildland areas that are susceptible to fires.

The City of Tulare Fire Department currently has three fire stations located throughout the City and an average response time of 3.59 minutes (City of Tulare, 2013). The firefighting facility closest to the Project site is Tulare Fire Station located at 2900 M Street, approximately 0.25 miles southeast of the Project site. Given that the Project is not surrounded by wildland areas and is in proximity to existing fire services, the Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires.

CONCLUSION

This impact is considered less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

3.9 - Hydrology and Water Quality

This section describes the hydrology and water quality setting of the Project site, and examines the potential impacts associated with the Project related to surface and groundwater resources.

3.9.1 - Environmental Setting

Climate

Tulare is located in the southern portion of the Central Valley of California, marked by rainy winters and dry summers that are characteristic of a Mediterranean climate. The Central Valley has greater temperature extremes than coastal areas because it is less affected by the moderating influence of the Pacific Ocean.

The Western Regional Climate Center (WRCC) provides climate data derived from stationary weather sources throughout the Western United States. The WRCC has developed a data set for monthly climate for the Tulare area (1928 to 2015) based on readings taken from stationary weather stations in Visalia and Corcoran (WRCC, 2016). Table 3.9-1 details the average maximum and minimum temperature [degrees Fahrenheit (^{o}F)] and average total precipitation (inches) for the Tulare area.

Typical of a hot semi-arid climate in California, most of the rainfall in the Tulare area occurs in the winter months as the Gulf Stream shifts southward from northern latitudes in the wintertime. This shift creates a quasi-permanent low-pressure zone over the area and feeds moisture originating over the Pacific Ocean into the region. This southern shift creates the precipitation regime characteristic of the area.

However, because of the inland location and "rainshadow effect" caused by the Coastal Ranges, the Tulare area typically gets less rainfall during the winter than coastal areas to the west. The rainshadow effect refers to a reduction of precipitation commonly found on the leeward side of a mountain. Infrequent summer thunderstorms and showers from tropical depressions account for the remaining rainfall in the summer months. Average precipitation is about nine inches. By comparison, Monterey to the west and on the other side of the Coastal Ranges receives an annual rainfall average of about 20 inches (WRCC, 2016).

Surface Water Resources

San Joaquin Valley Air Basin

The Project site is located in the Central Valley's San Joaquin Valley Air Basin (SJVAB). The SJVAB covers 17,050 square miles and includes all of Kings and Tulare Counties and most of Fresno and Kern Counties. The southern portion of the San Joaquin Valley is subdivided into two separate basins, the San Joaquin and the Tulare.

Table 3.9-1
Average Monthly Temperature and Precipitation for the Tulare Area (1895 to 2016)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Visalia (1895-2016)													
Average Max. Temperature (F)	56.3	62.6	68.0	74.6	82.6	91.1	97.5	96.2	90.1	80.2	67.3	56.8	76.9
Average Min. Temperature (F)	36.9	40.8	43.7	47.5	53.1	59.0	63.5	61.6	57.3	50.2	41.6	36.8	48.9
Average Total Precipitation (in.)	1.97	1.83	1.72	0.98	0.36	0.09	0.01	0.01	0.13	0.48	0.98	1.57	10.15
Corcoran (1948-2016)													
Average Max. Temperature (F)	54.6	61.8	68.2	76.6	85.3	93.1	98.9	97.1	91.5	80.9	66.0	54.9	77.4
Average Min. Temperature (F)	36.5	39.7	42.7	46.5	52.8	58.7	63.4	61.9	57.5	49.3	40.6	35.8	48.8
Average Total Precipitation (in.)	1.47	1.31	1.15	0.67	0.23	0.06	0.01	0.01	0.15	0.32	0.74	1.03	7.14

Source: WRCC, 2016

KAWEAH SUBBASIN

The Project site is located within the Kaweah Subbasin, which encompasses about 696 square miles, the Kings Groundwater Subbasin on the north, the Tule Groundwater Subbasin on the south, crystalline bedrock of the Sierra Nevada foothills on the east, and the Kings River Conservation District on the west. The Kaweah Subbasin generally comprises lands in the Kaweah Delta Water Conservation District (KDWCD). Major rivers and streams in the Kaweah Subbasin include the Kaweah and St. Johns Rivers. The Kaweah River is the primary source of recharge to the area. Average annual precipitation is seven to 13 inches, increasing eastward (California Department of Water Resources, 2003).

LOCAL SURFACE WATER

A blue-line water feature is a stream or watercourse that flows for most or all of the year and is marked by either a solid or dashed blue line on USGS maps. The nearest blue-line surface water feature to the Project site is Tule River, whose north fork is located approximately nine miles south of the Project site. The three forks of the Tule River drain the high mountain tops of the Great Western Divide to form Lake Success, a reservoir managed by the USACE located five miles east of Porterville. Blue-line water features are illustrated in Figure 3.9-1 below.

The topography of the Project site is flat, and the majority of the ground surface is an earth and gravel mixture with patches of low grassy areas. The topography of the site coupled with relatively low precipitation levels (on average about nine inches/year) results in very little offsite stormwater drainage. Average precipitation would likely cause standing water that largely stays onsite and percolates to ground.

Groundwater Resources

REGIONAL GROUNDWATER BASIN

Unless otherwise cited, the following description of regional groundwater resources is based largely on the Department of Water Resources (DWR) California's Groundwater Bulletin 118 (California Department of Water Resources, 2003). This bulletin provides a description of the groundwater basin and its supply, water quality, and use.

The Project site is located in the San Joaquin Valley Groundwater Basin (SJVGB), Kaweah Subbasin (Groundwater Basin No. 5-22.13). The SJVGB is divided into nine subbasins that include 3.73 million acres (5,830 square miles). The SJVGB is heavily reliant upon groundwater and 30 percent of the annual supply used for agricultural and urban purposes is derived from groundwater. The aquifers in the SJVGB are generally quite thick and consist of unconsolidated alluvium and consolidated rocks with unconfined and confined groundwater conditions. Alluvium is a deposit of clay, silt, sand, and gravel left by flowing streams in a river, valley or delta, typically producing fertile soil. The San Joaquin Valley is a structural trough up to 200 miles long and 70 miles wide filled with up to 32,000 feet of marine and continental sediments deposited during periodic inundation by the Pacific Ocean and by erosion of the surrounding mountains.

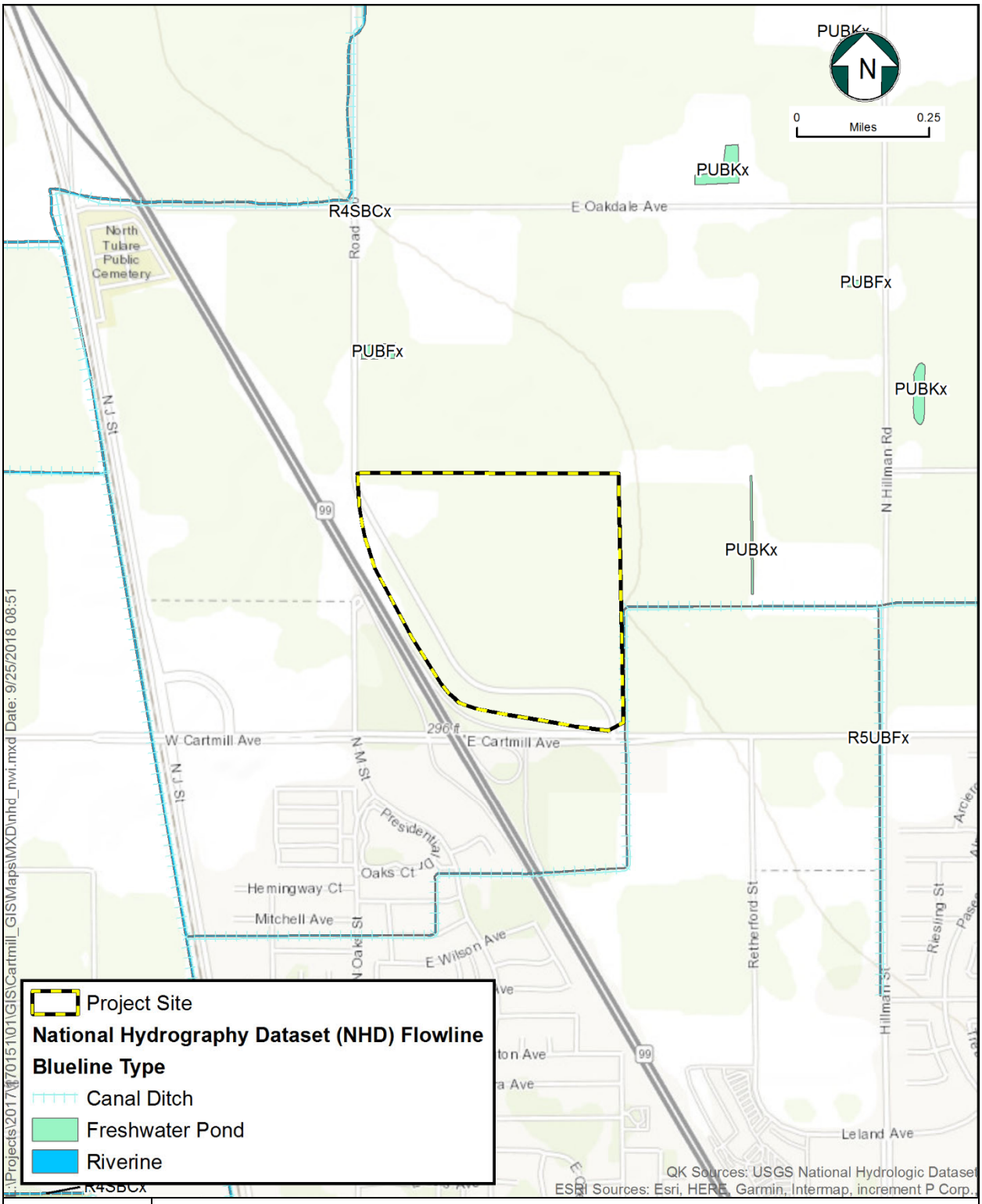


Figure 3.9-1
NHD Blueline Types

The Kaweah Subbasin comprises 446,000 acres (696 square miles). The Kaweah Subbasin consists of unconsolidated deposits of Pliocene, Pleistocene, and Holocene age. On the east side of the Kaweah Subbasin, these deposits consist of arkosic material derived from the Sierra Nevada and are divided into three stratigraphic units: continental deposits, older alluvium and younger alluvium. In the western portion of the Kaweah Subbasin, near Tulare Lake bed, unconsolidated deposits consisting of flood-subbasin and lacustrine and marsh deposits interfinger with east side deposits. The continental deposits of Pliocene and Pleistocene age are divided into oxidized and reduced deposits based on depositional environment. The oxidized deposits, which crop out along the eastern margin of the Valley, consist of deeply weathered, poorly permeable, reddish-brown sandy silt and clay with well-developed soil profiles. The reduced deposits are moderately permeable and consist of micaceous sand, silt, and clay that extend across the trough in the subsurface to the west side of the Valley (DWR, 2004). The groundwater in the Kaweah Subbasin is generally of a calcium bicarbonate type, with sodium bicarbonate waters near the western margin. Total dissolved solids (TDS) values range from 35 to 1,000 mg/L, with a typical range of 300 to 600 mg/L. The DHS, which monitors Title 22 water quality standards, reports TDS values in 153 wells ranging from 35 to 580 mg/L, with an average value of 189 mg/L (California Department of Water Resources, 2003).

EXTRACTION AND RECHARGE

The Kaweah Subbasin, like the SJVGB, has been in a state of overdraft for several decades. The Kaweah Subbasin is considered to be "critically overdrafted" by California Department of Water Resources (DWR, 2015). The decline in groundwater levels is estimated as an average of 12 feet between 1970 and 2000 in the Kaweah Subbasin.

Table 3.9-2 provides the annual amount of groundwater pumped from 2003 to 2006 from the Kaweah Subbasin by the City. The City currently uses groundwater pumped from the Kaweah Subbasin to meet all of its water demand (Carollo Engineers, 2009).

Table 3.9-2
City of Tulare Groundwater Production (2003 – 2006)

Historical Groundwater Pumped (million gallons per day)			
2003	2004	2005	2006
14.6	15.9	15.5	16.7

Source: Carollo Engineers, 2009

The City, in partnership with the City of Visalia and Tulare Irrigation District, developed an Urban Water Management Plan (UWMP) (City of Tulare, 2015). As part of the UWMP, the UWMP partners have developed demand management measures for reducing consumption of water supply. These strategies include, but are not limited to:

- Expanding public information campaign;

- Increasing water waste patrols;
- Reducing system water loss;
- Implement or modify drought rate structure or surcharge; and/or
- Decreasing line flushing.

The actual depth to groundwater at the Project site is currently unknown. In 2015, the depth to water in the Project area was estimated between 140 and 160 feet below land surface (KDWCD, 2016). Groundwater in the vicinity of the site is estimated at between 130 to 150 feet above mean sea level (KDWCD, 2016).

FLOODPLAIN

The Project site is characterized by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) as zone X, which FEMA defined as "areas determined to be outside the 0.2 percent annual chance of floodplain." Figure 3.9-2 shows the floodplain areas in the Project's vicinity. As shown in the figure, the Project site is outside of the 100-year floodplain.

SITE EROSION POTENTIAL

The Project site's soils consist of Colpien loam, Nord fine sandy loam, and Tagus loam. The Colpien series consists of very deep, moderately well drained soils on terraces in alluvium derived mainly from granitic rocks. The Nord series consists of very deep, well drained soils that formed in mixed alluvium dominantly from granitic and sedimentary rocks. The Tagus series consists of very deep, well drained soils formed in alluvium derived from granitic rock sources (USDA, 2015).

For Colpien loam, Nord fine sandy loam, and Tagus loam, low slope angle results in characteristically slow runoff and slight water erosion potential. **Chapter 3, Section 3.2, Agricultural and Forestry Resources**, includes Figure 3.2-1 which shows where these soil types are located at on the site.

3.9.2 - REGULATORY SETTING

Federal

CLEAN WATER ACT

The CWA (33 USC 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the Waters of the United States (WOTUS). The CWA requires individual states to set standards to protect, maintain, and restore water quality through the regulation of point-source and certain nonpoint-source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA, Section 402). In California, NPDES permitting authority is delegated to, and

administered by, the nine RWQCBs. The Project site is within the jurisdiction of the Central Valley RWQCB.

Section 401 of the CWA requires that any activity, including river or stream crossings during road, pipeline, or transmission line construction that may result in discharges into a state water body, must be certified by the applicable RWQCB(s). This certification ensures that the proposed activity does not violate State and/or federal water quality standards.

The CWA is based on the concept that all discharges into the nation's waters are unlawful unless specifically authorized by permit. The 1972 amendments to the Federal Water Pollution Control Act established the NPDES permit program to control discharges of pollutants from point sources (Section 402). The 1987 amendments to the CWA created a new section of the Act devoted to stormwater permitting (Section 402(p)). The EPA has granted the State's primacy in administering and enforcing the provisions of the CWA and the NPDES permit program. The NPDES permit program is the primary federal program that regulates point-source and nonpoint-source discharges to WOTUS. The SWRCB issues both general and individual permits for certain activities.

Industrial and municipal dischargers (point-source discharges) must obtain NPDES permits from the Central Valley RWQCB. The existing NPDES stormwater program (Phase I) requires municipalities with more than one million persons to obtain an NPDES stormwater permit for any construction project that would disturb more than five acres. Proposed NPDES stormwater regulations (Phase II) expand the existing national program to include smaller municipalities with more than 10,000 persons and construction sites that disturb more than one acre. For other discharges, such as those that affect groundwater or nonpoint-source discharges, a report of waste discharge must be filed with the RWQCB. In specified situations, some permits may be waived, and some discharge activities may be handled through an existing general permit.

While the EPA has two permitting options to meet NPDES requirements (individual permits and general permits), the SWRCB has elected to adopt one statewide General Permit for California that applies to all construction-related stormwater discharges, except for those on tribal lands, in the Lake Tahoe Hydrologic Unit, or under the control of the California DOT. In September 2009, the SWRCB adopted NPDES General Permit for the Stormwater Discharges Associated with Construction and Land Disturbance Activities (No. 2009-0009-DWQ as amended by Order Nos. 2010-0014-DWQ and 2012-0006-DWQ) that, among other things, requires compliance with certain numeric effluent limitations. Construction activities that are subject to this General Permit include clearing, grading, stockpiling, and excavation that results in soil disturbances to at least one acre of the total land area. Construction activities that disturb less than one acre are still subject to this General Permit if the activities are part of a large common plan of development or if significant water quality impairment would result from the activities.

The General Permit requires all dischargers whose construction activities would disturb one acre or more to:

- Develop and implement a SWPPP that specifies BMPs to prevent construction pollutants from contacting stormwater, with the intent of keeping all products of erosion from moving offsite and into receiving waters;
- Eliminate or reduce non-stormwater discharges to storm sewer systems and other WOTUS; and
- Inspect all BMPs.

To ensure that construction activities are covered under General Permit 2009-0009-DWQ (amended by 2010-0014-DWQ and 2012-0006-DWQ), projects in California must prepare a SWPPP. The SWPPP should contain a site map that shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the Project site. The SWPPP must list BMPs that the discharger would use to protect stormwater runoff and the placement of BMPs. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for non-visible pollutants to be implemented (if there is a failure of BMPs), and a sediment monitoring plan if the site discharges directly to a water body. The BMPs and overall SWPPP is reviewed by the RWQCB as part of the NPDES permitting process. If a single project traverses more than one RWQCB jurisdiction, a complete notice of intent package (notice of intent, site map, and fee) and notice of termination (upon completion of each section) must be filed for each RWQCB.

In addition, the EPA published Effluent Limitation Guidelines (ELGs) and New Source Performance Standards (NSPS) to control the discharge of pollutants from construction sites, effective February 1, 2010. After this date, all permits issued by the EPA or individual states must incorporate the final rule requirements. All construction sites required to obtain EPA permit coverage must implement a range of erosion and sediment controls and pollution prevention measures.

Phase I of the EPA stormwater program was promulgated in 1990 under the CWA. Phase I relies on NPDES permit coverage to address stormwater runoff from: 1) "medium" and "large" municipal separate storm drain systems (MS4s) generally serving populations of 100,000 or greater, 2) construction activity disturbing five acres of land or greater, and 3) 10 categories of industrial activity.

On December 8, 1999, the EPA promulgated regulations known as the Stormwater Phase II Final Rule. The Phase II program expanded the Phase I program by requiring additional operators of MS4s in urbanized areas serving populations greater than 25,000 and fewer than 100,000 and operators of small construction sites disturbing one acre or more, through the use of NPDES permits, to implement programs and practices to control polluted stormwater runoff.

The EPA delegated to SWRCB the authority to administer and enforce the Phase II NPDES program within the State of California. In 2003, the SWRCB adopted a General Permit for Stormwater Discharges from Regulated Small MS4s. An "MS4" is defined as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): 1) designed or used for

collecting and/or conveying stormwater; 2) which is not a combined sewer; and (3) which is not part of a publicly owned treatment works (POTW). The City is included in this definition, along with certain urbanized areas in the County.

Operational compliance with NPDES would be regulated by the City of Tulare Storm Water Management Plan (see below). The NPDES requirements for a project's operational period are met in Tulare through implementation of the City's Technical Specifications and Public Improvement Standards (see below) to be verified during the City Engineer's site plan review.

Impaired Water Bodies

Section 303(d) of the CWA (33 USC 1250 et seq., at 1313(d)) requires states to identify impaired water bodies as those that do not meet water quality standards. States are required to compile this information in a list and submit the list to the EPA for review and approval. As part of this process, states are required to prioritize waters and watersheds for future development of total maximum daily load (TMDL) requirements. The SWRCB and RWQCBs have ongoing efforts to monitor and assess water quality, to prepare the Section 303(d) list, and to develop TMDL requirements.

NATIONAL FLOOD INSURANCE ACT

FEMA is responsible for managing the National Flood Insurance Program (NFIP), which makes federally-backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. The NFIP, established in 1968 under the National Flood Insurance Act, requires that participating communities adopt certain minimum floodplain management standards, including restrictions on new development in designated floodways, a requirement that new structures in the 100-year flood zone be elevated to or above the 100-year flood level (known as base flood), and a requirement that subdivisions be designed to minimize exposure to flood hazards. To help identify areas with flood potential, FEMA has developed FIRMs that can be used for planning purposes, including floodplain management, flood insurance, and enforcing mandatory flood insurance purchase requirements.

State

PORTER COLOGNE WATER QUALITY CONTROL ACT

The Porter Cologne Act, passed in 1969, acts in concert with the CWA. The Porter Cologne Act established the SWRCB and divided the State into nine regions, each overseen by a RWQCB. The SWRCB is the primary State agency responsible for protecting the quality of California's surface and groundwater supplies; however, much of its daily implementation authority is delegated to the nine RWQCBs.

The Porter Cologne Act provides for the development and periodic review of Water Quality Control Plans (Basin Plans) that designate beneficial uses of California's major rivers and

groundwater basins and establish narrative and numerical water quality objectives for those waters. Basin Plans are primarily implemented by using the NPDES permitting system to regulate waste discharges so that water quality objectives are met. Basin Plans, updated every three years, provide the technical basis for determining waste discharge requirements, taking enforcement actions, and evaluating clean water grant proposals. The proposed Project falls within the Water Quality Control Plan for the California RWQCB Central Valley Region, the San Joaquin Valley Groundwater Basin and Kaweah River Basin (California Department of Water Resources, 2019). The Porter Cologne Act also assigns responsibility for implementing CWA, Sections 401, 402, and 303(d) to the SWRCB and RWQCBs.

Local

CITY OF TULARE GENERAL PLAN

The City of Tulare General Plan (City of Tulare, 2014) sets forth the following goals and policies relevant to hydrology and water quality:

Land Use Element

GOAL

LU-11 To provide optimal municipal facilities and services, consistent with available resources, that are adequate to meet the needs of desired future growth.

POLICIES

LU-P11.3 System Expansion. The City shall require new development be responsible for expansion of existing facilities such as water systems, sewer systems, storm drainage systems, parks and other capital facilities made necessary to serve the new development.

LU-P11.4 Water Supply System. The City shall require that water supply systems be adequate to serve the size and configuration of land developments. Standards as set forth in the subdivision ordinance shall be maintained and improved as necessary.

LU-P11.5 Water Supply for New Development. For all new development, prior to the approval of any subdivision applications, the developers shall assure that there is sufficient available water supply to meet projected buildout.

LU-P11.6 Adequate System Maintenance. The City shall require maintenance funding for streets, storm drainage, and ponding basins for new development.

LU-P11.7 Adequate Infrastructure Capacity. The City shall only approve new development when it can be demonstrated by the applicant that adequate system capacity in the service area is or will be available to handle increases related to the project.

LU-P11.12 Drainage Systems. The City shall expand existing storm drainage systems as necessary to serve existing and future development.

LU-P11.13 Adequate Storm Drainage Facilities. The City shall provide storm drainage facilities with sufficient capacity to protect the public and private property from stormwater damage. The facilities will also be implemented in a manner that reduces public safety and/or environmental impacts associated with the construction, operation, or maintenance of any required drainage improvements (i.e., drainage basins, etc.).

LU-P11.14 Improvement of Stormwater Infrastructure. The City shall seek permanent funding sources to correct and improve deficient stormwater infrastructure.

LU-P11.15 Maintenance of Stormwater Infrastructure. The City shall seek permanent funding sources for maintenance of stormwater infrastructure.

LU-P11.16 Detention Facilities. The City shall utilize stormwater detention facilities to mitigate drainage impacts and reduce storm drainage system costs. To the extent practical, stormwater detention facilities should be designed for multiple purposes, including recreational and/or stormwater quality improvement.

LU-P11.17 Fair Share Improvements. The City shall ensure new development is required to participate on a fair-share basis in the completion of improvements to the existing sewer system, and/or the construction of new sewer trunk lines as described in the City's adopted Sewer Master Plan.

Conservation and Open Space Element

GOAL

COS-1 To preserve and enhance surface waterways and aquifers.

POLICIES

COS-P1.1 Regional Groundwater Protection. The City shall work with Tulare County and special districts to help protect groundwater resources from overdraft by promoting water conservation and groundwater recharge efforts.

COS-P1.2 Groundwater Recharge Area Protection. When considering new development, the City shall protect existing open spaces, natural habitat, floodplains, and wetland areas that serve as groundwater recharge areas.

COS-P1.3 Continued Recharge of Groundwater Basin. In known or identified groundwater recharge areas, the predominant land use and resource activities should be designed to promote recharge of the groundwater basin and protection of groundwater quality at a level superior to standard development

practices. When appropriate to the land use designation, clustered development should be encouraged to promote open space and continue infiltration.

COS-P1.4 Groundwater Wells. The City shall protect and monitor its groundwater wells to ensure a sufficient groundwater supply.

COS-P1.5 Elk Bayou Protection. The City shall cooperate with the appropriate regional agencies to protect Elk Bayou by protecting its water quality and open space.

COS-P1.6 Elk Bayou Runoff Controls. The City shall require runoff controls in conjunction with development projects and agriculture production near the Elk Bayou to limit toxins and nutrients from entering waterways.

COS-P1.7 Water Source. The City shall cooperate with other jurisdictions to jointly study the potential for using surface water sources to help protect the groundwater supply.

COS-P1.8 Water Conservation. The City shall promote efficient water use and reduced water demand by:

- Requiring water-conserving design and equipment in new construction;
- Encouraging water-conserving landscaping and other conservation measures; and
- Encourage retrofitting existing development with water-conserving devices;
- Providing public education programs;
- Distributing outdoor lawn watering guidelines;
- Promoting water audit and leak detection programs; and
- Enforcing water conservation programs.

COS-P1.9 Maintain Appropriate Water Rates. The City shall maintain a water rate structure that fully recovers the costs of providing water, including the costs of water conservation programs.

COS-P1.10 Reclaimed Wastewater. The City shall continue the use of reclaimed wastewater for agricultural use. Such programs may include dual water systems for potable and non-potable water; reuse of grey water in homes or businesses for irrigation; and reuse of sewage effluent for irrigation of crops, golf courses, or City irrigation.

COS-P1.11 Water for Irrigation. Whenever possible, the City shall require new development to use recycled or non-potable water for irrigation in landscaped areas.

COS-P1.12 Urban Runoff. To the maximum extent practicable, the City shall adopt and enforce regulations and engage in educational efforts to reduce pollution from urban runoff.

COS-P1.13 Pollution from Runoff. New projects (excluding residential parcel maps) will be required to provide onsite detention facilities designed to retain the first inch of runoff from a site.

GOAL

COS-2 To preserve and protect sensitive significant habitats, enhance biodiversity, and promote healthy ecosystems throughout the Urban Development Boundary (UDB).

POLICIES

COS-P2.2 Protection of Natural Areas. The City shall support preservation, maintenance, restoration, and enhancement of natural systems, waterways, and open space.

COS-P2.5 Open Space Buffers. The City shall require buffer areas between development projects and significant watercourses, riparian vegetation, wetlands, and other sensitive habitats and natural communities.

COS-P2.8 Wetlands Dedication. The City shall require all preserved wetlands be dedicated to the City or a non-profit organization approved by the City and preserved through perpetual covenants enforceable by the City or other appropriate agencies.

COS-P2.9 Wetlands Management. The City shall support the management of wetland and riparian plant communities for passive recreation, groundwater recharge, and wildlife habitats. Such communities shall be restored or expanded, where possible and as appropriate. Any project that proposes to restore or enhance riparian habitat shall require a Streambed Alteration Agreement in compliance with California Fish and Game Code, Sections 1600-1616. Any project that proposes to restore, enhance, or otherwise affect a jurisdictional wetland shall require consultation with the U.S. Army Corps of Engineers and compliance with the Clean Water Act.

COS-P2.10 Stream Buffer. The City shall require a conservation easement or setback of a minimum of 100 feet from the edge of the Elk Bayou riparian zone to avoid the stream channel and the surrounding riparian vegetation. The riparian zone should encompass the edge of the bayou bank (minimally) to the edge of the riparian vegetation bordering the stream (maximally).

Safety Element

GOAL

SAF-2 Protect people and property from flood risk.

POLICIES

SAF-P2.1 Development in Floodplain Zones. The City shall regulate development in the 100-year floodplain zones, as designated on maps prepared by FEMA in accordance with the following:

- Critical facilities (those facilities which should be open and accessible during emergencies) shall not be permitted.
- Passive recreational activities (those requiring non-intensive development, such as hiking, horseback riding, picnicking) are permissible.
- New development and divisions of land, especially residential subdivisions, shall be developed to minimize flood risk to structures, infrastructure, and ensure safe access and evacuation during flood conditions.

GOAL

SAF-5 To protect people from the harmful effects of exposure to hazardous materials.

POLICIES

SAF-P5.6 Contamination Prevention. The City shall review new development proposals to protect soils, air quality, surface water and groundwater from hazardous materials contamination.

City of Tulare Stormwater Management Plan

The purpose of the City's Storm Water Management Program (SWMP) (City of Tulare, 2009) is intended to outline and direct the City's stormwater related priorities and activities for the years 2009-2013. A new SWMP has not been developed since this publication. This SWMP is subject to revision and evolving over time as BMPs are monitored and adapted to accommodate more effective measures.

The BMPs are grouped under the following six "Minimum Control Measures," which are required under the Phase II regulations:

- Public Education and Outreach on Stormwater Impacts;
- Public Involvement/Participation;
- Illicit Discharge Detection and Elimination;
- Construction Site Stormwater Runoff Control;

- Post Construction Stormwater Management in New Development and Redevelopment; and
- Pollution Prevention /Good Housekeeping for Municipal Operations.

City of Tulare Technical Specifications and Public Improvement Standards

The City of Tulare has developed Technical Specifications and Public Improvement Standards that are used to provide guidance and consistency for all new development in Tulare. The Technical Specifications provide the City Engineer-approved engineering standards that set out an explicit set of requirements to be satisfied by a development's design. The standard drawings provide standardized drawings of common development components that have been approved by the City Engineer.

The standards applicable to hydrology and water quality include but are not necessarily limited to Sections D and E, Storm Drainage and Water, respectively.

The entire list of Technical Specifications and Public Improvement Standards are included in the Engineering Department of Development Services on the City of Tulare's website.

3.9.3 - IMPACT EVALUATION CRITERIA

Consistent with *Appendix G* of the *CEQA Guidelines*, the proposed Project is considered to have a significant impact on the environment if it will:

a) Violate any water quality standards or waste discharge requirements;

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or off site;

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite;

e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

f) Otherwise substantially degrade water quality;

g) Place housing within a 100-year flood hazard area as mapped on a federal flood hazard boundary or flood insurance rate map or other flood hazard delineation map;

h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows;

i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or

j) Contribute to inundation by seiche, tsunami, or mudflow.

The Lead Agency determined in the NOP/IS (see Appendix A) that the following environmental issue areas would result in no impact or a less-than-significant impact and therefore were scoped out of requiring further review in this Draft EIR. Please refer to Appendix A of this Draft EIR for a copy of the NOP/IS and additional information regarding these issue areas.

g) Place housing within a 100-year flood hazard area as mapped on a federal flood hazard boundary or flood insurance rate map or other flood hazard delineation map;

h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows; and

j) Contribute to inundation by seiche, tsunami, or mudflow.

3.9.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.9-a: Would the Project violate any water quality standards or waste discharge requirements?

Development and use of the Project would result in a significant impact to hydrology and water quality if associated construction and operation activities would result in the violation of any water quality or waste discharge standards. Such violations could occur through the creation of erosion, sedimentation, and/or polluted runoff, or through the accidental release of potentially hazardous materials during construction or operational activities. Applicable water quality standards and regulations are presented in **Subsection 3.9.2, Regulatory Setting**. Potential impacts associated with water quality or waste discharge violations are described below.

Construction

Primary construction-related soil-disturbing activities would include grading prior to the construction of approximately 120 acres of residential and commercial development.

Disturbance of onsite and offsite soils during construction could result in soil erosion and subsequent water quality degradation through increased turbidity and sediment deposition

into local waterways. No drainages are present onsite or affected areas offsite, thereby avoiding the potential for intrusion by sediments; however, exposed and/or eroding soil could be transported by stormwater flows or runoff to nearby water bodies.

Potential impacts on water quality arising from erosion and sedimentation are expected to be localized and temporary during construction. Construction-related erosion and sedimentation impacts as a result of soil disturbance would be less than significant following implementation of a SWMP.

Additionally, construction-related activities would involve the use of materials such as vehicle fuels, lubricating fluids, solvents, and other materials that could result in polluted runoff; however, the potential consequences of any spill or release of these types of materials are generally small due to the localized, short-term nature of such releases. The volume of any spills would likely be relatively small because the volume in any single vehicle or container would generally be anticipated to be less than 50 gallons. Furthermore, implementation of the SWMP would identify measures regarding the handling of these types of materials and the protocols for actions taken if a spill or release does occur.

Operation

Nonpoint-source pollution is caused by surface runoff that picks up and carries away natural and human-made pollutants, depositing them into lakes, rivers, wetlands, and groundwater. Surface parking areas especially contribute to nonpoint-source pollution (e.g., oil, grease, radiator fluid, pesticides, and excess fertilizer from landscape maintenance activities), which can wash into stormwater conveyance structures during rain events. As a result, urban development can result in pollution of offsite drainages and aquifers. The City's SWMP regulates Project compliance with the General Permit for the Discharge of Stormwater from Small MS4s (Water Quality Order No. 2003-0005-DWQ), of which the City is one of the permittees. The Project would be subject to the requirements of the SWMP, which are met by applying the City's Technical Specifications and Public Improvement Standards for stormwater-related Project facilities.

The Project's stormwater drainage system would be designed and implemented to comply with applicable Technical Specifications and Public Improvement Standards, as well as methods described in Section E.12.e.ii.c of the SWRCB Phase II Small MS4, General Permit (Order No. 2013-0001-DWQ). The adequacy of operational BMPs designed for the Project would be assured by the City Engineer. In the absence of mitigation, water quality impacts would be potentially significant.

Conclusion

This impact is considered potentially significant.

MITIGATION MEASURE(S)

MM HYD-1: Prior to issuance of grading permits, the Project proponent shall submit a NOI and SWPPP to the RWQCB to obtain coverage under the General Permit for Discharges of Stormwater Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ amended by 2010-0014-DWQ and 2012-0006-DWQ). The SWPPP shall specify and require the implementation BMPs, with the intent of keeping all products of erosion from moving offsite and into receiving waters during construction. The requirements of the SWPPP shall be incorporated into design specifications and construction contracts. Recommended BMPs for the construction phase shall include, but are not limited to, the following:

- Stockpiling and disposing of demolition debris, concrete, and soil properly;
- Protecting existing storm drain inlets and stabilizing disturbed areas;
- Implementing erosion controls;
- Properly managing construction materials; and
- Managing waste, aggressively controlling litter, and implementing sediment controls.

The developer shall provide the City of Tulare Engineering Division with evidence of an approved SWPPP prior to issuance of grading permits.

MM HYD-2: Prior to issuance of grading permits, the Project proponent shall prepare a drainage plan for the Project for approval by the City Engineer that identifies post-construction treatment, control, and design measures that minimize surface water runoff, erosion, siltation, and pollution. The drainage plan shall be prepared in accordance with the City's SWMP and California Stormwater Quality Association's Storm Water Best Management Practices Handbook as well as the City Engineer's Technical Specifications and Public Improvement Standards. During final design of the Project, the Project proponent shall implement a suite of post-construction stormwater treatment and control BMPs designed to address the most likely sources of stormwater pollutants resulting from operation and maintenance of the Project. These measures shall account for the proposed 68.6 acres of commercial development and 37.7 acres of residential development at the Project site. Stormwater infrastructure will be designed adhering to methods and standards described in Section E.12.e.ii.c of the SWRCB Phase II Small MS4, General Permit (Order No. 2013-0001-DWQ).

The City Engineer may also require other necessary BMPs and design features. Incorporation of City Engineer-approved BMPs and design features into the Project design and construction documents shall ensure that operational water quality exceeds applicable water quality standards. The Project proponent shall also prepare and submit an Operations and Maintenance Agreement to the City of Tulare for its approval identifying appropriate procedures to ensure that stormwater quality control measures work properly during operations.

EFFECTIVENESS OF MITIGATION

Implementation of the above mitigation measures would reduce this impact to a ***less-than-significant*** level.

Impact #3.9-b: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

Construction

The City currently uses groundwater pumped from the Kaweah Subbasin to meet all of its water demand. Like any activity in Tulare, groundwater would be used for construction. Water would be used for purposes of dust control during grading and construction as well as for minor activities such as washing of construction equipment and vehicles. Water demands generated by the Project during the construction phase would be temporary and not substantial. It is anticipated that groundwater supplies would be adequate to meet construction water demands generated by the Project without depleting the underlying aquifer or lowering the local groundwater table. Therefore, Project construction would not deplete groundwater supplies and impacts would be less than significant.

Project construction would not substantially prevent or inhibit incidental groundwater recharge onsite during precipitation events. As the Project is constructed, portions of the site would remain pervious and would allow infiltration that presently occurs during precipitation events to continue to occur. Therefore, Project construction would not result in a substantial depletion of area groundwater supplies or interfere substantially with groundwater recharge, and impacts would be less than significant.

Operation

The City currently uses groundwater pumped from the Kaweah Subbasin to meet its water demand. The 2017 Water Quality Report shows that the annual production of groundwater by the City has been estimated at 6 billion gallons. The California DWR drafted a list of critically overdrafted basins in 2015, which includes 11 subbasins in the San Joaquin Basin area including the Kaweah Subbasin. The City of Tulare Water System Master Plan includes projected water demand per land use designation in gallons per day per acre. Based on this information and the land use designations for the Project site found in **Chapter 2, Project Description** of this EIR, the proposed Project is expected to use approximately 120,000 gallons per day (gpd) for the residential development and 90,000 gpd for the commercial development (Carollo Engineers, 2009). As discussed in **Section 3.10, Land Use and Planning**, the Project is consistent with the General Plan designation and zoning classification of the site and, with approval of requested Conditional Use Permit, the Project is an allowable use at the Project site. This Project's almost exactly equal groundwater usage has already been accounted for, and the Project would not change the baseline condition of groundwater

water supplies in the Kaweah Subbasin beyond the baseline condition already analyzed in the most current General Plan EIR.

The Project would result in nearly full development of the site, converting 120 acres onsite (or 95 percent of the site) from pervious (i.e., porous) surfaces to impervious (i.e., not allowing water to pass through) surfaces. However, the Project proponent has committed to implementing volumetric treatment criteria and/or flow-based treatment criteria in accordance with Section E.12.e.ii.c of the SWRCB Phase II Small MS4, General Permit (Order No. 2013-0001-DWQ). During large storm events, onsite stormwater would be directed towards a retention basin/pond at the park located on the northeastern portion of the Project site. Mitigation Measure MM HYD-1 ensures that the Project proponent complies with a commitment to the implementation of BMPs. Therefore, Project operation would not interfere substantially with groundwater recharge.

CONCLUSION

This impact is less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.9-c: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?

The rate and amount of surface runoff is determined by multiple factors, including the following: topography, the amount and intensity of precipitation, the amount of evaporation that occurs in the watershed, and the amount of precipitation and water that infiltrates to the groundwater. The Project would alter the existing drainage pattern of the site, which would have the potential to result in erosion or siltation on or offsite. The disturbance of soils onsite during construction could cause erosion, resulting in temporary construction impacts. In addition, the placement of permanent structures onsite could affect drainage in the long-term. Impacts from construction and operation are discussed below.

As discussed in Impact #3.9-a, potential impacts on water quality arising from erosion and sedimentation are expected to be localized and temporary during construction. Construction-related erosion and sedimentation impacts as a result of soil disturbance would be less than significant after implementation of a SWPPP (see Mitigation Measure MM HYD-1). No drainages or other water bodies are present on the Project site and therefore, the Project would not change the course of any such drainage. However, erosion may occur onsite during rain events or high winds.

Grading activities would occur across the Project site to construct building foundations and to improve associated infrastructure systems (e.g. water and wastewater systems, site access). Such activities have the potential to result in erosion or sedimentation and/or

discharge of construction debris from the site. The Project would not require grading on steep slopes, which are typically prone to erosion, as the Project site is flat. However, other earthmoving activities (e.g., excavation, creating building pads, grading for the road realignment, etc.) would have the potential to loosen soil, and the removal of any onsite vegetation could contribute to future soil loss and erosion by wind and stormwater runoff. The clearing of vegetation and grading activities, for example, could lead to exposed or stockpiled soils, which are susceptible to peak stormwater runoff flows and wind forces. In addition, the presence of large amounts of raw materials for construction may lead to stormwater runoff contamination.

The Project proponent would be required to request coverage under the NPDES General Permit, Order No. 2009-0009-DWQ, because the proposed Project would result in one or more acres of land disturbance. To conform to the requirements of the NPDES General Permit, a SWPPP would need to be prepared (see Mitigation Measure MM HYD-1). The SWPPP would specify BMPs to prevent construction pollutants, including eroded soils (such as topsoil), from moving offsite. Implementation of the General Permit and BMP requirements would mitigate the potential for erosion of soils or siltation during construction activities. With implementation of this mitigation measure, construction impacts would be reduced to less than significant.

As discussed in Impact #3.9-a, the Project proponent would be required to prepare drainage plans for the site (see Mitigation Measure MM HYD-2) to ensure that existing drainage patterns are maintained during operation, and that operation of the Project would not result in substantial erosion or loss of topsoil. With implementation of this mitigation measure, impacts with regard to erosion during the operational phase would be less than significant.

CONCLUSION

This impact is considered potentially significant.

MITIGATION MEASURE(S)

Implement Mitigation Measures MM HYD-1 and MM HYD-2.

EFFECTIVENESS OF MITIGATION

Implementation of the above mitigation measures would reduce this impact to a ***less-than-significant*** level.

Impact #3.9-d: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?

No drainages or other water bodies are present on the Project site and therefore, development of the site would not change the course of any such drainages that may potentially result in onsite or offsite flooding. Water would be used during the temporary

construction phase of the proposed Project (e.g., for dust suppression). However, any water used for dust control would be mechanically and precisely applied and would generally infiltrate or evaporate prior to running off.

The Project site is flat and proposed grading would not substantially alter the overall topography of the Project site. Although the amount of surface runoff on the Project site would not substantially increase with construction of the Project, runoff patterns and concentrations could be altered by grading activities associated with the Project. Improper design of the access road or building pads could result in an alteration of drainage patterns that would cause flooding onsite or offsite. The potential for construction of the proposed Project to alter existing drainage patterns would be minimized through compliance with preparation of a SWPPP (Mitigation Measure MM HYD-1). With implementation of such measures, the Project would not substantially increase the amount of runoff in a manner that would result in flooding onsite or offsite. Impacts would be reduced to less than significant.

Because onsite drainage patterns would be altered, and new impermeable surfaces would be added with the Project, the rate and volume of runoff from the site could change, thereby resulting in flooding offsite. The Project proponent would be required to prepare a drainage plan (see Mitigation Measure MM HYD-2) to ensure that operational runoff from the site is not significantly increased, potentially resulting in onsite or offsite flooding. Therefore, long-term effects on drainage patterns across the Project site, which could result in flooding onsite or offsite, would be less than significant with implementation of this mitigation measure.

CONCLUSION

This impact is considered potentially significant.

MITIGATION MEASURE(S)

Implement Mitigation Measures MM HYD-1 and MM HYD-2.

EFFECTIVENESS OF MITIGATION

Implementation of the above hydrology and water quality mitigation measures would reduce this impact to a ***less-than-significant*** level.

Impact #3.9-e: Would the Project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Construction

Currently, there are no existing stormwater drainage systems on the Project site. Stormwater at the Project site likely percolates to ground or runs off along existing roads (such as Akers Road) and does not rely on constructed stormwater drainage systems. Based on the existing conditions at the site (i.e., predominantly bare ground), any polluted runoff

currently generated by the site would primarily consist of silt and soil conveyed in surface stormwater flow.

As stated previously, the Project proponent would be required to request coverage under the NPDES General Permit Order No. 2009-0009-DWQ because the Project would result in one or more acres of land disturbance. To conform to the requirements of the NPDES General Permit, a SWPPP would need to be prepared (see Mitigation Measure MM HYD-1). This would specify BMPs to prevent construction pollutants, including eroded soils (such as topsoil), from moving offsite. Implementation of the General Permit and BMP requirements would mitigate erosion of soils during construction activities, and impacts would be less than significant.

Operation

As stated above, the Project site is drained by sheet flow and does not rely on constructed stormwater drainage systems. Development of the Project site would introduce additional impervious surfaces and would have the potential to increase the amount of stormwater runoff either onsite or offsite. Surface runoff velocities, volumes, and peak flow rates would therefore have the potential to increase.

As discussed in Impact #3.9-a, the Project proponent would be required to prepare drainage plans for the site (see Mitigation Measure MM HYD-2) to ensure that planned stormwater drainage system would not be exceeded, and that polluted runoff would not occur in significant quantities. With implementation of this mitigation measure, impacts with regard to stormwater drainage systems during the operational phase would be less than significant.

CONCLUSION

This impact is considered potentially significant.

MITIGATION MEASURE(S)

Implement Mitigation Measures MM HYD-1 and MM HYD-2.

EFFECTIVENESS OF MITIGATION

Implementation of the above mitigation measures would reduce this impact to a ***less-than-significant*** level.

Impact #3.9-f: Would the Project otherwise substantially degrade water quality?

Construction

Construction activities could potentially degrade water quality through the occurrence of erosion or siltation at the Project site. Construction could also potentially result in the use of harmful and hazardous materials required to operate vehicles and equipment. The transport

of disturbed soils or the accidental release of potentially hazardous materials could result in water quality degradation.

Operation

Accidental release of potentially harmful materials such as sanitation chemicals, engine oil, diesel fuel, or other substances used in operation of the facilities could potentially degrade water quality onsite.

Mitigation Measures MM HYD-1 and MM HYD-2 require the preparation of a SWPPP and drainage plan that will identify and implement Best Management Practices in preventing the contamination of stormwater as a result of the Project site.

CONCLUSION

This impact is considered potentially significant.

MITIGATION MEASURE(S)

Implement Mitigation Measures MM HYD-1 and MM HYD-2.

EFFECTIVENESS OF MITIGATION

Implementation of the above mitigation measures would reduce this impact to a ***less-than-significant*** level.

Impact #3.9-i: Would the Project expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

As shown in Figure 3.9-2, the Project site is not located within the 100-year floodplain and there do not appear to be any significant levees that, if they were to fail, could potentially affect people or structures. The Project site is located approximately 23 miles southwest of Terminus Dam, which is managed by the USACE and creates Lake Kaweah. The Project site is not located in the dam inundation area and would therefore not expose people or structures to risk as a result of dam or levee failure. There would be no impact.

CONCLUSION

No impact has been identified.

MITIGATION MEASURE(S)

No mitigation measures are required.

3.10 - Land Use and Planning

This section provides an analysis of the potential land use and planning impacts that may be caused by implementation of the proposed Project, such as impacts related to physically dividing a community (roads, bridges, walls, etc.). Impacts may include conflicts with local regulation, introducing population growth, or displacing housing or people.

3.10.1 - Environmental Setting

Current Land Uses

Figure 3.10-1 shows the proposed Project site, which encompasses 127 acres. The site is located in an area that has been historically used for agriculture. It has been recently disked or is currently cultivated with pistachio or almond orchards. An irrigation water canal exists on the eastern boundary and a water pump and piping exist on the northeast boundary. Active agricultural cultivation is adjacent to the Project site to the north and east. A paved frontage road to SR 99 is located to the west. Cartmill Road and the City of Tulare are located to the south.

As proposed, the Project would consist of five different land use designations: Regional Commercial, Low-density Residential, Medium-density Residential, and Parks and Recreation by the City of Tulare General Plan. The site is currently in the SOI and UDB of the City of Tulare but has not been annexed into the City yet. A pre-zone is needed in concurrence with the annexation of the site into the City. The pre-zoning for the site will be consistent with the following General Plan land use designations: Retail Commercial (C-3), Single-family Residential (R-1-6), Multiple-family Residential 3,000 square feet per unit (R-M-2), Multiple-family Residential 1,500 square feet per unit (R-M-4), and Public Lands (P-L).

The proposed Project will consist of approximately 68.6 acres of commercial businesses on both sides of Akers Street, developed in accordance with the permitted uses of the C-3 zone district. Examples of permitted uses include restaurants, fast food restaurants, retail stores, hotels, and fuel stations. The northeastern portion of the Project site will consist of approximately 30 acres of low-density, single-family residential homes with lots no smaller than 6,000 square feet. West of the low-density residential development will be approximately 4.4 acres of medium-density, residential development, which will likely consist of fourplex residences. Southeast of the medium-density area will be approximately 7.7 acres of high-density, multi-family development, which will likely consist of an apartment complex. Northeast of the multi-family development will be a seven-acre park.

3.10.2 - Regulatory Setting

Land use planning and zoning authority of local jurisdictions in California are set forth in the State's planning laws. The Project site is located in Tulare and will be subject to the City's regulation for a tentative subdivision map (TSM) for the subdivision of land and uses being proposed. For this reason, the analysis of the regulatory setting focuses on the relevant policies of the City of Tulare.

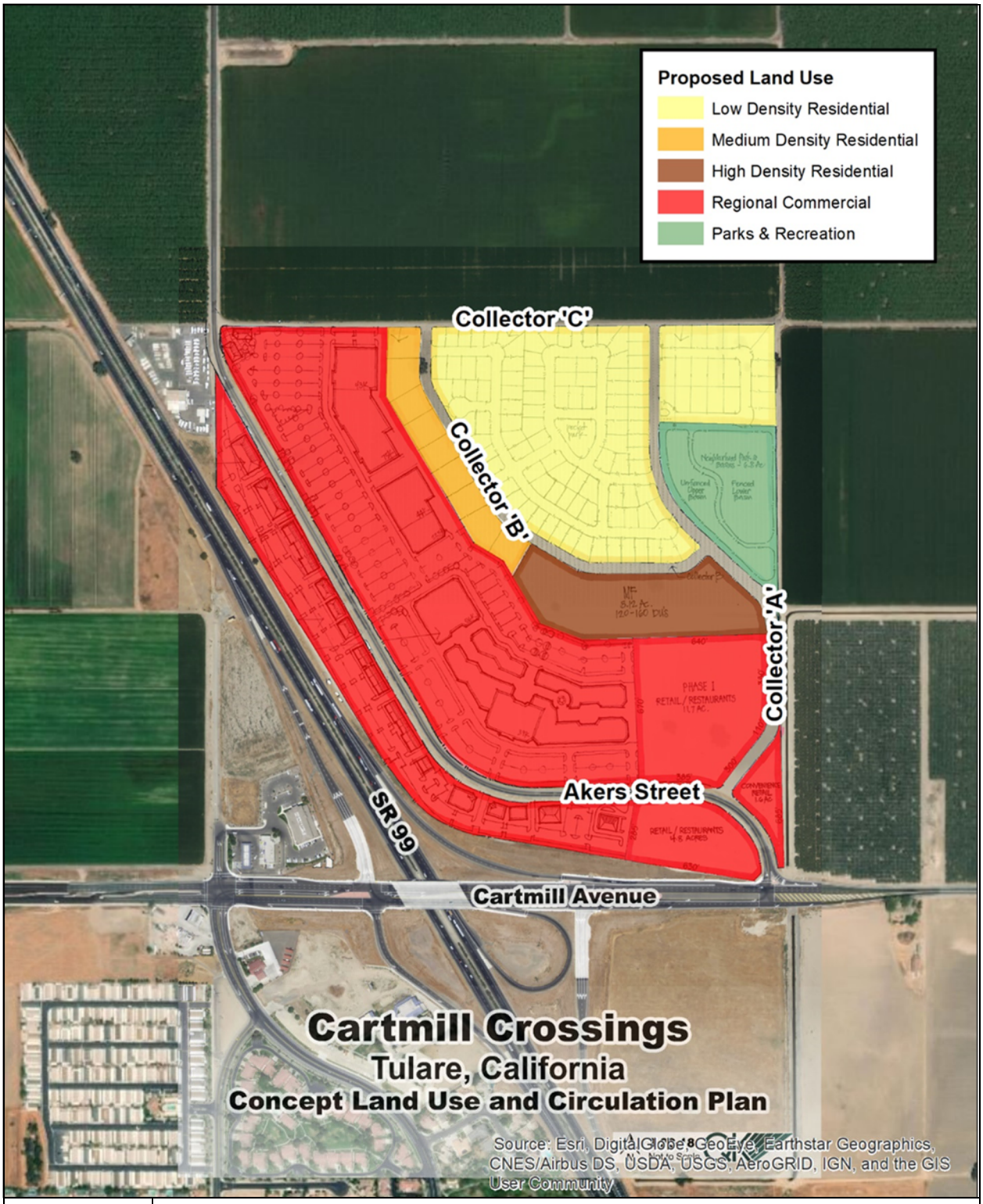


Figure 3.10-1
Conceptual Land Use and Circulation Plan

Federal

There are no applicable federal regulations pertaining to land use and planning.

State

GENERAL PLANS

California Government Code, Section 65300, et seq., establishes the obligation of cities and counties to adopt and implement general plans. The general plan is a comprehensive, long-term, and general document that describes plans for the physical development of a city or county and of any land outside its boundaries that, in the city's or county's judgment, bears relation to its planning. A broad range of topics is addressed in the general plan, including, at a minimum, land use, circulation, housing, conservation, open space, noise, and safety. In addressing these topics, the general plan identifies the goals, objectives, policies, principles, standards, and plan proposals that support the city's or county's vision for the area. The general plan is a long-range document that typically addresses the physical character of an area over a 20-year period. Although the general plan serves as a blueprint for future development and identifies the overall vision for the planning area, it remains general enough to allow for flexibility in the approach taken to achieve the plan's goals.

SUBDIVISION MAP ACT

Pursuant to Title 7, Division 2, Section 66411, regulation and control of the design and improvement of subdivisions are vested in the legislative bodies of local agencies. Each local agency shall, by ordinance, regulate and control the initial design and improvement of common interest developments as defined in Section 1351 of the Civil Code and subdivisions for which this division requires a tentative and final or parcel map. In the development, adoption, revision, and application of such ordinance, the local agency shall comply with the provisions of Section 65913.2. The ordinance shall specifically provide for proper grading and erosion control, including the prevention of sedimentation or damage to offsite property. Each local agency may by ordinance regulate and control other subdivisions, provided that the regulations are not more restrictive than the regulations for those subdivisions for which a tentative and final or parcel map are required by this division, and provided further that the regulations shall not be applied to short-term leases (terminable by either party on not more than 30 days' notice in writing) of a portion of the operating right-of-way of a railroad corporation as defined by Section 230 of the Public Utilities Code (PUC) unless a showing is made in individual cases, under substantial evidence, that public policy necessitates the application of the regulations to those short-term leases in individual cases.

CORTESE-KNOX-HERTZBERG LOCAL GOVERNMENT REORGANIZATION ACT

The Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (Act) consolidates several existing California statutes. The Act establishes procedures for local

government changes of organization, including city incorporations, annexations to a city or special district and city and special district consolidations, according to the Local Area Formation Commission's (LAFCO) adopted guidelines and the Act.

CALIFORNIA AIR RESOURCES BOARD

The California Air Resources Board (CARB) adopted the Air Quality and Land Use Handbook: A Community Health Perspective (Land Use Handbook) in 2005. The Land Use Handbook provides information and guidance on siting sensitive receptors in relation to sources of toxic air contaminants (TACs). The sources of TACs identified in the Land Use Handbook are high-traffic freeways and roads, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and large gasoline dispensing facilities. If the Project involves siting a sensitive receptor or source of TACs discussed in the Land Use Handbook, siting mitigation may be added to avoid potential land use conflicts, thereby reducing the potential for health impacts to the sensitive receptors.

Local

CITY OF TULARE GENERAL PLAN

Planning for the City is typically done through the Land Use Element (LUE) of the City of Tulare General Plan. The LUE establishes goals, policies, and implementation measures for residential, commercial, industrial, and other land uses in the City. The Project site is designated by the City of Tulare General Plan Map as Regional Commercial (Figure 3.10-2). The City of Tulare General Plan sets forth the following goals and policies relevant to land use and planning:

GOAL

LU-1 To ensure that Tulare's future growth will proceed in an orderly manner, provide for an appropriate mix of land use opportunities, encourage and provide incentives for infill development, prevent urban sprawl, and promote the efficient and equitable provision of public services to all neighborhoods.

POLICIES

LU-P1.1 Land Use Diagram. The City shall utilize and maintain the Land Use Diagram to designate the location and extent of each land use designation within the UDB.

LU-P1.2 Land Use Designations. The City will utilize the land use designations presented on the following pages for regulating future growth within the UDB.

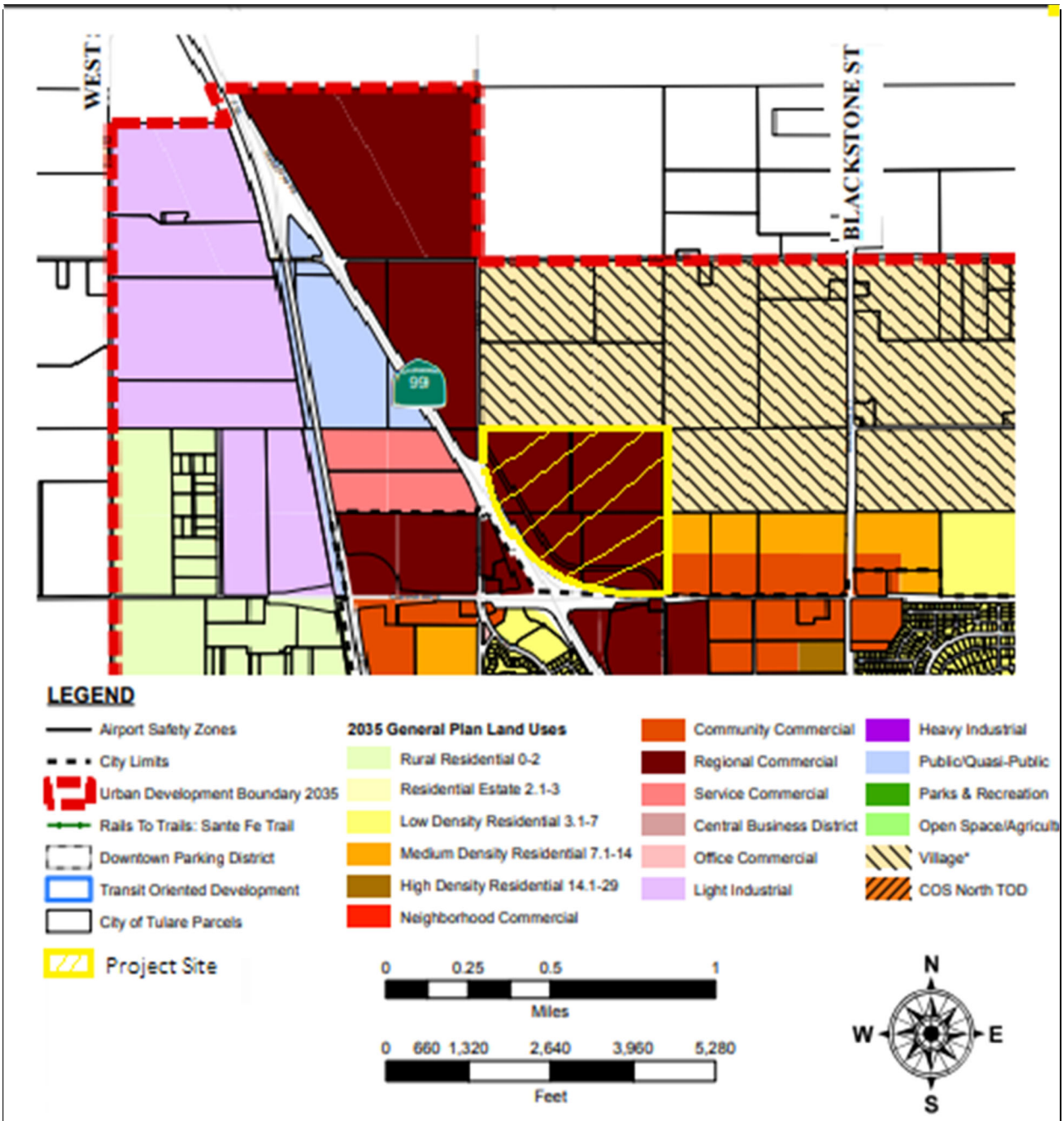


Figure 3.10-2
Tulare 2035 General Map

The following are the land use designations and descriptions of the LUE that will be used in this Project.

Residential Designations:

- Low-density Residential. This designation establishes areas for single-family residences in a suburban configuration. Uses typically allowed include detached single-family homes, secondary dwellings, and residential support uses such as churches, schools, and other necessary public utilities and safety facilities.
  - Density Range: 3.1-7.0 dwelling units per acre (DU/ac)
  - Minimum Lot Size: 4,000 square feet
- Medium-density Residential. This land designation establishes areas for single-family and low-density, multi-family dwellings located near neighborhood serving uses such as, grocery stores, schools, parks, and other public services. Uses typically allowed include single-family dwellings, second units, town homes, duplexes, triplexes, and mobile home parks.
  - Density Range: 7.1-14.0 DU/ac
  - Minimum Lot Size: 6,000 square feet
- High-density Residential. This designation establishes areas for multi-family dwellings in urbanized areas with access to public transportation and residential-service uses (i.e. grocers and drug stores). Uses typically allowed include duplexes, triplexes, townhomes, and apartments near schools, parks, and other public services.
  - Density Range: 14.1-29.0 DU/ac
  - Minimum Lot Size: 1,500 square feet commercial designations

Commercial Designations:

- Regional Commercial. This designation establishes areas for regional retail centers capable of drawing consumers from outside the UDB. Uses typically allowed include regional malls and outlet centers that contain department stores, comparison, and specialty retail uses with direct and visual arterial and highway access. Developments in this designation typically contain 500,000 or more square feet of commercial space on approximately 20 to 50 acres, although larger sites are possible depending on the uses proposed.
  - Maximum Intensity: 0.27 floor to area ratio (FAR)
  - Minimum Development Size: 20 acres

Other Designations:

- Parks and Recreation. This designation provides for agriculture and agriculture-related uses with a 10-acre minimum lot size and is generally

applied only to those lands outside of the City's UDB. Although this territory is not under the direct control of the City of Tulare, this designation expresses Tulare's preference that these areas remain in agricultural use and production during the timeline of the current General Plan or until development to urban uses is appropriate.

- Maximum Density: 1 DU/Lot
- Minimum Lot Size: 10 Acres

CITY OF TULARE ZONING ORDINANCE

Regulatory compliance with the City of Tulare Municipal Code is required for all projects in the City. The site is shown on the City of Tulare Zoning Map as Regional Commercial within the County and within the City's UDB but has not been annexed into the City yet. A pre-zone is needed in concurrence with the annexation of the site into the City (Figure 3.10-3). The pre-zoning for the site will be consistent with the following Tulare Municipal Code zone districts: Retail Commercial (C-3), Single-family Residential (R-1-6), Multiple-family Residential 3,000 square feet per unit (R-M-2), Multiple-family Residential 1,500 square feet per unit (R-M-4), and Public Lands (P-L).

3.10.3 - IMPACT EVALUATION CRITERIA

Consistent with *Appendix G* of the *CEQA Guidelines*, the proposed Project is considered to have a significant impact on the environment if it will:

a) Physically divide an established community;

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigation an environmental effect; or

c) Conflict with any applicable habitat conservation plan or natural community conservation plan.

The Lead Agency determined in the NOP/IS (see Appendix A) that the following environmental issue areas would result in no impact or a less-than-significant impact and therefore were scoped out of requiring further review in this Draft EIR. Please refer to Appendix A of this Draft EIR for a copy of the NOP/IS and additional information regarding these issue areas.

a) Physically divide an established community; and

c) Conflict with any applicable habitat conservation plan or natural community conservation plan.



Figure 3.10-3
Vicinity Map

3.10.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.10-b: Would the Project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigation an environmental effect?

The pre-zoning for the Project site will be consistent with the following Tulare Municipal Code zone districts: Retail Commercial (C-3), Single-family Residential (R-1-6), Multiple-family Residential 3,000 square-feet per unit (R-M-2), Multiple-family Residential 1,500 square-feet per unit (R-M-4), and Public Lands (P-L). All development will comply with permitted uses included in the Tulare Zoning Ordinance. In addition, the Project will not conflict with the goals and policies listed in the City of Tulare General Plan. Section 10.120 of the Municipal Code requires the Project to undergo site plan review, which ensures that the Project is consistent with all applicable development standards and General Plan policies. Subdivision of the property will comply with Section 8.24 of the Municipal Code, subdivision regulations.

CONCLUSION

This impact is less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

3.11 - Noise

This section describes the affected environment and regulatory setting for noise. It also describes the noise-related impacts that would result from implementation of the proposed Project, as well as potential offsite construction activities, and the mitigation measures that would reduce these impacts.

3.11.1 - Environmental Setting

Acoustical Terminology

Sound is defined as a vibratory disturbance created by a moving or vibrating source in the pressure and density of a gaseous or liquid medium or in the elastic strain of a solid that is capable of being detected by the hearing organs. Sound may be thought of as the mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. The medium of primary concern is air. In absence of any other qualifying statements, sound is considered airborne sound, as opposed to structure or earthborne sound, for example.

Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. It therefore may be classified as a more specific group of sounds. Although the terms sound and noise are often used synonymously, perceptions of sound and noise are highly subjective. Interference effects of environmental noise refer to those effects that interrupt daily activities and include interference with human communication activities (e.g., normal conversations, watching television, telephone conversations) and interference with sleep. Sleep interference effects can include both awakening from sleep and arousal to a lesser state of sleep. Noise can come from two types of sources, mobile and stationary. Mobile source noises are generally associated with transportation such as cars, trains, and aircraft. Stationary sounds can be pinpointed and do not move. Examples of stationary noise sources include outdoor machinery (heating/cooling systems found in residential, industrial and commercial development), race tracks, airports, etc.

The three components of sound are source, path, and receiver. All three components must be present for sound to exist. Without a source, no sound pressure waves would be produced. Similarly, without a medium, sound pressure waves would not be transmitted. Finally, sound must be received – a hearing organ, sensor, or other object must be present to perceive, register, or be affected by sound. In most situations, there are many different sound sources, paths, and receivers.

Existing Noise Environment in the Project Vicinity

The proposed Project site is located immediately east of SR 99 and north of Cartmill Avenue in Tulare, California. The nearest noise sensitive receptor is a church located approximately 1,000 feet to the southwest of the Project site. The nearest residence to the Project site is located approximately 1,200 feet to the south of the Project site.

Motor vehicle traffic is the major contributor to the existing noise environment in the proposed Project vicinity. Vehicular noise occurs primarily along SR 99 and Cartmill Avenue. The existing noise environment in the Project vicinity is defined primarily by noise from existing vehicular traffic, including heavy trucks, SR 99, and roadway traffic on Cartmill Avenue.

3.11.2 - REGULATORY SETTING

Federal

There are no federal noise requirements or regulations that bear directly on local actions of the City of Tulare. The Noise Control Act of 1972 directed the EPA to develop noise guidelines that would protect the population from the adverse effects of environmental noise. The EPA published a guideline, entitled EPA Levels Document, Report No. 556/9-74-664, containing recommendations for noise levels affecting residential land use of 55 day-night sound level (Ldn) A-weighted decibel (dBA) for outdoors and 45 Ldn dBA for indoors. The EPA is careful to stress that the recommendations contain a factor of safety and do not consider technical or economic feasibility issues, and therefore, should not be construed as standards or regulations.

The U.S. Department of Housing and Urban Development (HUD) standards (24 CFR Part 51, subpart B) define the 65 Ldn dBA as an acceptable outdoor noise level for residential uses. If outdoor noise levels exceed 75 Ldn dBA, the interior noise level in residential homes could exceed 45 dBA; however, with proper insulation and other construction techniques, the interior noise level can be reduced to the 45-dBA level.

FEDERAL HIGHWAY ADMINISTRATION

Highway traffic noise for highway projects requires abatement through the Code of Federal Regulations (23 CFR Part 772).

FEDERAL TRANSIT ADMINISTRATION AND FEDERAL RAILROAD ADMINISTRATION

Thorough noise and vibration assessments for mass transit or high-speed railroad projects passing by residential areas is recommended by the Federal Transit Administration (FTA) and Federal Railroad Administration (FRA).

State

The California Department of Health Services (DHS) developed guidelines for acceptable community noise levels, which are frequently adopted by local agencies. Selected relevant noise levels are as follows:

- Community Noise Equivalent Level (CNEL) below 60 dBA - normally acceptable for low-density residential use;
- CNEL of 55 to 70 dBA - conditionally acceptable for low-density residential use;

- CNEL below 65 dBA - normally acceptable for high-density residential, transient lodging, churches, educational and medical facilities; and
- CNEL below 70 dBA - normally acceptable for playgrounds, neighborhood parks.

"Normally acceptable" is defined as satisfactory for the specified land use, assuming that conventional construction is used in buildings. "Conditionally acceptable" may require some additional noise attenuation or study. Under most of these land use categories, overlapping ranges of acceptability and unacceptability are presented, leaving some ambiguity in areas where noise levels fall in within the overlapping range.

California additionally regulates the noise emission levels of licensed motor vehicles traveling on public thoroughfares, sets noise emission limits for certain off-road vehicles and watercraft, and sets required sound levels for light rail transit vehicle's warning signals. The extensive State regulations pertaining to worker noise exposure are for the most part only applicable to the construction phase of any project.

California encourages each local jurisdiction to perform noise studies and implement a noise element as part of its general plan. The Governor's Office of Planning and Research (OPR) (in conjunction with the DHS) has published guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The DHS guidelines indicate that residential land uses and other noise-sensitive uses would generally be acceptable without special noise insulation requirements in areas where exterior ambient noise levels do not exceed approximately 60 dBA (day-night noise levels, Ldn or CNEL). Residential uses in areas with Ldn between 60 and 65 dBA would generally be acceptable with noise reduction measures or insulation, and residential uses should generally be discouraged in areas where noise levels are above 65 dBA Ldn.

Local

CITY OF TULARE GENERAL PLAN

The City of Tulare's noise standards are expressed in terms of the Ldn descriptor, as well as hourly performance standards. In addition to applying the City's noise standards to this proposed Project, CEQA also requires that impacts be assessed relative to ambient noise levels which are present without the proposed Project. As a result, ambient noise surveys were conducted as part of this analysis, and comparisons of project to no-project noise levels were used to assess noise impacts (in addition to comparison to the City of Tulare noise standards). Specifically, individual maximum noise levels (Lmax) and hourly average noise levels (Leq), both with and without the proposed Project, were compared so that the assessment of noise impacts was not based solely on an assessment of Project-generated noise in terms of 24-hour averages (Ldn), but also on short-term fluctuations in the ambient noise environment (California DOT, 2013).

Noise impacts are addressed through policies that are mandated in the City of Tulare General Plan's Noise Element. The City of Tulare General Plan sets forth the following goals and policies relevant to noise.

Land Use Element

GOAL

LU-3 To designate, protect, and provide land to ensure sufficient residential development capacity and variety to meet community needs and projected population growth.

POLICIES

LU-P3.7 Neighborhood Noise Abatement. The City shall require the abatement of significant noise intrusion into existing and proposed new residential developments from the freeway, major arterials, the railroad, the airport, and other significant noise sources. The burden for mitigation shall be on the new user.

LU-P3.8 Incompatible Uses. The City shall protect existing residential neighborhoods from the encroachment of incompatible activities and land uses (i.e. traffic, noise, odors, or fumes) and environmental hazards (i.e. flood, soil instability).

Transportation and Circulation Element

GOAL

TR-2 To maintain an efficient, affordable, and safe roadway system throughout Tulare in a way that is economically sustainable and fits within the projected budgeted resources.

POLICIES

TR-P2.24 Traffic Noise. The City shall ensure that circulation systems minimize excessive noise impacts on sensitive land uses. The City shall require new development to mitigate traffic noise impacts where warranted (e.g., by constructing sound walls or berms or increasing setback distances).

TR-P2.30 Environmental Impacts of Roadway Design. The City shall ensure that construction of new roadways and expansion of existing streets mitigate, to the extent feasible, impacts on air quality, noise, and sensitive biological areas.

Noise Element

GOAL

NOI-1 Protect the citizens of Tulare County from the harmful effects of exposure to excessive noise.

POLICIES

NOI-P1.1 Noise-Impacted Areas. Areas within Tulare County shall be designated as noise-impacted if exposed to existing or projected future noise levels at the exterior of buildings which exceed 60 dB Ldn (or CNEL). Maps which indicate areas exposed to existing or projected future noise levels exceeding 60 dB Ldn (or CNEL) for the major noise sources identified in Figure 7-1 are included in Appendix B of the Policy Document.

NOI-P1.2 Sound Attenuation Features. The City shall require sound attenuation features such as walls, berming, heavy landscaping, and setbacks between commercial, industrial, and residential uses to reduce noise and vibration impacts.

NOI-P1.3 Noise Buffering. The City shall require noise buffering or insulation in new development along major streets, highways, and railroad tracks.

NOI-P1.4 Coordinate with Caltrans. Actively coordinate with Caltrans, neighboring jurisdictions, and other transportation providers during the planning and design phases of proposed roadway projects so that noise impacts are minimized and appropriate noise mitigation measures are provided.

NOI-P1.5 Construction Noise. Reduce noise associated with construction activities by requiring properly maintained mufflers on construction vehicles, requiring the placement of stationary construction equipment as far as possible from developed areas, and requiring temporary acoustical barriers/shielding to minimize construction noise impacts at adjacent receptors. Special attention should be paid to noise-sensitive receptors (including residential, hospital, school, and religious land uses).

NOI-P1.6 Limiting Construction Activities. The City shall limit construction activities to the hours of 6:00 a.m. to 10:00 p.m., Monday through Saturday.

NOI-P1.7 Truck Noise. Maintain, and enforce designated truck routes within the City to reduce noise from truck traffic near residential areas.

NOI-P1.8 Public Transit Noise. Coordinate with transit service providers in the planning and design of proposed transportation projects to incorporate noise-reduction technologies and operations processes both on a system-wide and vehicle-specific basis. Technologies and processes should minimize noise impacts from public transportation systems, including existing and future bus service(s) and the proposed Visalia Light Rail System.

NOI-P1.9 Railroad Noise. Actively coordinate with Union Pacific, neighboring jurisdictions, and other transportation service providers during the planning and design of proposed rail-related projects so that noise impacts to the community are minimized and appropriate mitigation measures are provided.

NOI-P1.10 Aviation Noise. Actively coordinate with operators at Tulare Municipal Airport – Mefford Field (KTLR), and all local heliports so that takeoff and landing procedures are prepared and implemented in a manner that minimizes noise impacts to the Tulare community.

NOI-P1.11 Domestic Noise. Reduce the negative effects of domestic noise sources, such as residential maintenance activities (e.g., leaf blowers or automobile repair), car alarms, barking dogs, and loud music through the establishment and enforcement of municipal codes. The enforcement provisions should ensure that response(s) to resident noise complaints are prompt and effective so as to maintain a quiet and peaceful environment within the City.

NOI-P1.12 Noise Ordinance. Maintain, enforce, and update as necessary the City of Tulare Noise Ordinance to prevent transmission of excessive noise between properties.

NOI-P1.13 Noise Ordinance – Limits on Hours of Operation. Amend the Noise Ordinance to include limits on the intensity and hours of use for selected noise sources such as construction equipment, manufacturing equipment, motors, delivery trucks, and parking lot vacuum equipment. Limits on hours of operation should be consistent with and achieve the goals of the Land Use Compatibility Standards.

NOI-P1.14 Railroad Quiet Zones. Explore the feasibility of creating railroad "Quiet Zones" in existing and planned residential areas along the UP right-of-way per Federal Rail Administration rules and procedures.

NOI-P1.15 Motor Vehicle Code Enforcement. Request that the California Highway Patrol actively enforce the California Vehicle Code sections relating to adequate vehicle mufflers and modified exhaust systems to limit vehicle noise emissions. Likewise, the City of Tulare Police Department should be trained and equipped to properly enforce all local and State ordinances related to excessive vehicle noise emissions.

NOI-P1.16 Street Resurfacing to Reduce Noise. Strive to conduct regular maintenance and resurfacing of City streets to reduce road noise due to potholes, grade irregularities, and uneven surfaces. Additionally, explore the feasibility of using 'quiet' paving materials or techniques to reduce road noise at the tire-surface interface.

NOI-P1.17 Reducing Noise from City Operations. Periodically review City operations procedures and timing to ensure that noise from refuse collection, street sweeping, outdoor recreational programs, and other activities has been reduced to the lowest practical level.

NOI-P1.18 Construction-related Vibration. Evaluate individual projects that use vibration-intensive construction activities, such as pile drivers, jack hammers, and vibratory rollers, near sensitive receptors for potential vibration impacts. If construction-related vibration is determined to be perceptible at vibration-sensitive uses (i.e., exceed the Federal Transit Administrations vibration annoyance criterion shown on Table 4.10-6), additional requirements, such as use of less-vibration-intensive equipment or construction techniques, should be implemented during construction (e.g., drilled piles to eliminate use of vibration-intensive pile driver).

NOI-P1.19 Pavement Conditions. Strive to keep pavement on City roadways in a state of good repair in order to prevent increases to noise and vibration generated by vehicles. Consider use of "quiet" pavement types, where feasible and appropriate.

GOAL

NOI-2 Protect the economic base of Tulare County by preventing the encroachment of incompatible land uses near known noise-producing industries, railroads, airports, and other sources.

POLICIES

NOI-P2.1 New development of residential or other noise-sensitive land uses which require discretionary approval under the Tulare County Zoning Ordinance or the Tulare County Subdivision Ordinance (e.g. use permits, zone changes, subdivision maps, parcel maps) will not be permitted in noise-impacted areas unless effective mitigation measures are incorporated into the specific design of such projects to reduce noise levels to 60 dB Ldn (or CNEL) or less within outdoor activity areas and 45 dB Ldn (or CNEL) or less within interior living spaces. No noise-sensitive land uses which require approval under the Tulare County Zoning Ordinance or the Tulare County Subdivision Ordinance shall be permitted within the 60 CNEL contour of the public use airports identified in this Plan. Where it is not possible to reduce exterior noise levels within outdoor activity areas to 60 dB Ldn (or CNEL) or less after the practical application of the best available noise reduction technology, an exterior noise level of up to 65 dB Ldn (or CNEL) will be allowed. Under no circumstances will an interior noise level exceeding 45 dB Ldn be allowed with the windows and doors closed. It should be noted that in instances where the windows and doors must remain closed to achieve the required acoustical isolation, mechanical ventilation or air conditioning must be provided.

NOI-P2.2 Land Use Planning and Noise Compatibility. Use the noise compatibility guidelines in Figure 7-3 and the future-conditions noise contour map in Figure 7-4 to plan for appropriate land uses near existing uses that generate noise. Noise mitigation should be included to ensure that new residential areas and

other noise-sensitive uses are appropriately buffered from significant noise sources.

NOI-P2.3 Noise Compatibility Strategies. Where land use noise compatibility conflicts currently exist, explore the need for mitigation measures on noise sources that may be adjacent to sensitive receptors. In planning for future developments, promote the use of buffer zones, barrier/shielding measures, and/or sound insulation building techniques to preclude noise impacts to noise-sensitive land uses.

NOI-P2.4 Reducing Exposure to Operational Noise. In new residential and mixed-use developments, require that stationary equipment (such as air conditioning units and condensers) be placed in separate spaces, rooftops, or other areas such that noise impacts to interior living areas will be reduced. Similarly, potentially noisy common spaces, such as trash collection areas and loading zones, should be located away from residential units or other noise-sensitive spaces.

NOI-P2.5 Railway Vibration. As part of discretionary review for development that would place sensitive land uses, such as residential, schools, or hospitals, within 200 feet of an active railway, require a vibration analysis to determine potential vibration impacts to occupants of the planned developments and demonstrate that adopted mitigations would be sufficient to bring vibration impacts to a less-than-significant level.

GOAL

NOI-3 Amended policies from resolution 3432.

POLICIES

NOI-P3.1 Areas within the City of Tulare shall be designated as noise-impacted if exposed to existing or projected future noise levels at the exterior of buildings which exceed 60 dB Ldn (or CNEL). Maps which indicate areas exposed to existing or projected future noise levels exceed 60 dB Ldn (or CNEL) for the major noise sources identified in Figure 7-1 are included in Appendix B of the Policy Document.

NOI-P3.2 New development of residential or other noise-sensitive land uses may not be permitted in noise-impacted areas unless effective mitigation measures are incorporated into the specific design of such projects to reduce noise levels to 60 dB Ldn (or CNEL) or less within outdoor activity areas and 45 dB Ldn (or CNEL) or less within indoor living areas. Where it is not possible to reduce exterior noise levels within outdoor activity areas to 60 dB Ldn (or CNEL) or less after the practical application of the best available noise reduction

technology, an exterior noise level of up to 65 dB Ldn (or CNEL) may be allowed.

NOI-P3.3 New development of industrial, commercial, or other noise-generating land uses (including roadways, railroads, and airports) may not be permitted if resulting noise levels will exceed 60 dB Ldn (or CNEL) at the boundary of areas containing or planned and zoned for residential or other noise-sensitive land uses, unless it can be shown through acoustical analysis that the noise generated would be mitigated to levels compatible with the adjacent sensitive uses.

NOI-P3.4 Noise level criteria applied to land uses other than residential or other noise-sensitive uses shall be consistent with the recommendations of the State of California General Plan Guidelines.

NOI-P3.5 Tulare County and its incorporated cities shall enforce the State Noise Insulation Standards (California Administrative Code, Title 24) and Chapter 35 of the Uniform Building Code (UBC). Title 24 requires that interior noise levels not exceed 45 dB Ldn (or CNEL) with the windows and doors closed within new developments of multi-family dwellings, condominiums, hotels or motels. UBC Chapter 35 requires that common wall and floor/ceiling assemblies within multi-family dwellings comply with minimum standards concerning the transmission of airborne sound and structure-borne impact noise. Title 24 requires that conformance with the above-described standards be documented by the submission of an acoustical analysis whenever new multi-family dwellings, condominiums, hotels or motels are proposed for areas within the 60 dB Ldn (or CNEL) contour of a major noise source as determined by the local jurisdiction.

NOI-P3.6 Acoustical Study Requirement. Require acoustical studies for new developments in areas where the noise levels exceed the 'normally acceptable' levels for the proposed land use; based on Table EH-2. For residential uses, the analysis should include mitigation measures to limit the noise exposure in interior living spaces to 45 dB Ldn, consistent with California Title 24.

NOI-P3.7 New equipment and vehicles purchased by the City of Tulare shall comply with Noise Level Performance Standards consistent with the best available noise reduction technology.

NOI-P3.8 New development of industrial, commercial, or other noise generating land uses will not be permitted if resulting noise levels will exceed 60 dB Ldn (or CNEL) at the boundary of areas planned and zoned for residential or other noise-sensitive land uses, unless determined to be necessary to promote the public health, safety, and welfare of the County.

NOI-P3.9 For areas designated by Tulare County as being within Foothill and Mountain Planning Areas and outside Foothill Drive Development Corridors, the hourly Leq resulting from the development of new noise-sensitive land uses or new noise-generating sources shall not exceed 50 dBA during the day (7:00 a.m. – 10:00 p.m.) or 40 dBA during the night (10:00 p.m. – 7:00 a.m.) when measured at the boundary of areas containing or planned and zoned for residential or other noise-sensitive land uses. For these same areas and under the same circumstances, the maximum A-weighted noise level (Lmax) shall not exceed 70 dBA during the day or 60 dBA during the night.

NOI-P3.10 Noise level criteria applied to land uses other than residential or other noise sensitive uses shall be consistent with the recommendations of the California Office of Noise Control (Figure 7-3).

NOI-P3.11 When purchasing new equipment and vehicles, Tulare County shall strive to purchase equipment which complies with Noise Level Performance Standards set forth in this Noise Element.

City of Tulare Municipal Code

The City of Tulare Municipal Code, Title VI, Chapter 6.40 provides regulation for noise. The proposed Project may be subject to the following regulation:

SECTION 6-40.030 – SPECIAL RESTRICTIONS

Between the hours of 10:00 p.m. of one day and 6:00 a.m. of the following day, it shall be unlawful for any person to create, cause to be created or maintained sources of noise which shall cause annoyance or discomfort to a reasonable person of normal sensitivity in the neighborhood. The sources shall include, but not be limited to, the following:

- Excessively loud noises caused by the use or operation of radios, musical instruments and drums, phonographs, television sets or other machines or devices for the production, reproduction or amplification of sound;
- Operation of equipment or performance of any outside construction or repair work on buildings, structures or projects, or operation of construction type devices, except that contractors may apply for a permit from the Planning and Building Department to allow construction where extreme heat requires work to occur between 10:00 p.m. and 6:00 a.m.;
- Excessively loud sounds, cries or behavioral noise caused by the keeping or maintenance of animals or fowls;
- Excessively loud noise caused by the operation of any machinery, equipment, device, pump, fan, compressor, air conditioning apparatus or similar mechanical device;
- Operation of chimes, bells or other devices for the purpose of advertising or inviting the patronage of any person or persons to any business enterprise;
- Repairing, rebuilding or testing of motor vehicles or operating of any motor driven vehicle off public streets or highways; and

- Excessively loud noise caused by calling, shouting, laughing or crying.

SECTION 6-40.040 – SENSITIVE RECEPTORS

Prohibits the generation of noise in the vicinity of a school, institution of learning, churches, or hospitals if such noise would disturb occupants or disrupt activities taking place inside, and if sufficiently conspicuous signage is in place to indicate the presence of such use(s).

3.11.3 - IMPACT EVALUATION CRITERIA

Methodology

CEQA requires a determination of the significance of noise impacts associated with proposed projects. The process of assessing the significance of noise impacts associated with a project involves establishing thresholds at which significant impacts on noise-sensitive uses may occur. Noise levels associated with activities related to the proposed Project were predicted and compared with the significance thresholds. Where a noise level is predicted to exceed a threshold, the impact is considered significant, and mitigation measures are proposed as applicable.

OFFSITE TRAFFIC NOISE IMPACT ASSESSMENT METHODOLOGY

To assess noise impacts due to Project-related traffic increases on the local roadway network, traffic noise levels are predicted at a representative distance for existing, and future, project and no-project conditions for the proposed Project.

To predict noise levels due to traffic, the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. Direct inputs to the model include traffic volumes provided by the traffic consultant, as well as information on automobile and truck mix percentages.

CONSTRUCTION NOISE AND VIBRATION IMPACT METHODOLOGY

Construction noise and vibration impacts were analyzed using data compiled by Caltrans, and the FHWA.

The potential increase in traffic noise from the Project is a factor in determining significance. Research into the human perception of changes in sound level indicates the following:

- A 3-decibel (dB) change is barely perceptible;
- A 5-dB change is clearly perceptible; and
- A 10-dB change is perceived as being twice or half as loud.

CRITERIA FOR ACCEPTABLE VIBRATION

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure

waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 3.11-1, which was developed by Caltrans, shows the vibration levels which would normally be required to result in damage to structures. The vibration levels are presented in terms of peak particle velocity in inches per second.

Table 3.11-1 indicates that the threshold for architectural damage to structures is 0.20 in/sec peak particle velocity (PPV) and continuous vibrations of 0.10 in/sec PPV, or greater, would likely cause annoyance to sensitive receptors.

Table 3.11-1
Effects of Various Vibration Levels on People and Buildings

Vibration Level (Peak Particle Velocity) *			
mm/s	in/sec	Human Reaction	Effect on Buildings
0.15-0.30	0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings

Vibration Level (Peak Particle Velocity) *			
mm/s	in/sec	Human Reaction	Effect on Buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10-15	0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: Transportation Related Earthborne Vibrations, Caltrans Experiences. Technical Advisory: TAV-02-01-R9601. February 20, 2002

Thresholds of Significance

Consistent with *Appendix G* of the *CEQA Guidelines*, the proposed Project is considered to have a significant impact on the environment if it will result in:

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;*

The Lead Agency determined in the NOP/IS (see Appendix A) that the following environmental issue areas would result in no impact or a less-than-significant impact and therefore were scoped out of requiring further review in this Draft EIR. Please refer to

Appendix A of this Draft EIR for a copy of the NOP/IS and additional information regarding these issue areas.

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 area to excessive noise levels; or

f) For a project within the vicinity of a private airstrip, exposure of people residing or working in the plan area to excessive noise levels.

Analysis in this section is based on available data and the Noise Impact Assessment prepared for the Sequoia Gateway Commerce Park Specific Plan certified EIR (Appendix I) (County of Tulare, 2018).

3.11.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.11-a: Would the Project cause 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?

Construction

Construction of the proposed Project would occur in phases through the year 2039. Groundborne noise and other types of construction-related noise impacts would predominantly occur during excavation activities of residential and commercial construction. Additional temporary noise would be generated during the construction offsite improvements, including water and wastewater facilities expansions; however, these impacts have already been analyzed in the 2035 City of Tulare General Plan and will therefore not be further analyzed in this report. During the construction phases of the Project, noise from construction activities would add to the noise environment in the immediate Project vicinity. Activities involved in construction would generate maximum noise levels, as indicated in Table 3.11-2, ranging from 76 to 88 dB at a distance of 50 feet. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours. Chapter 6 of the Tulare Municipal Code restricts construction activities between the hours of 6:00 a.m. and 10:00 p.m.

The nearest sensitive receivers are located approximately 1,000 feet from the proposed Project site, the predicted maximum noise levels from construction would range between 55 dB and 68 dB, which is considerably less than the existing measured background noise levels. Heavy truck traffic associated with the Project construction would not be any louder than the existing significant number of heavy trucks which currently operate along SR 99 and Cartmill Avenue.

Table 3.11-2
Construction Equipment Noise

Type of Equipment	Predicted Noise Levels, Lmax dB				Distances to Noise Contours (feet)	
	Noise Level at 50'	Noise Level at 100'	Noise Level at 200'	Noise Level at 400'	70 dB Lmax contour	65 dB Lmax contour
Backhoe	78	72	66	60	126	223
Compactor	83	77	71	65	223	397
Compressor (air)	78	72	66	60	126	223
Concrete Saw	90	84	78	72	500	889
Dozer	82	76	70	64	199	354
Dump Truck	76	70	64	58	100	177
Excavator	81	75	69	63	177	315
Generator	81	75	69	63	177	315
Jackhammer	89	83	77	71	446	792
Pneumatic Tools	85	79	73	67	281	500

Source: County of Tulare, 2018

Construction of the proposed Project could temporarily increase noise levels during construction. However, the increases in noise levels are not expected to affect any noise-sensitive uses. Due to the distance of approximately 1,000 feet from the areas where construction would occur, noise and vibration levels are not considered to be significant or would cause damage to structures.

Operations

Once operational, the proposed Project could expose existing or new receptors to noise levels due to onsite operations that may exceed the applicable stationary noise standards. The proposed Project consists of several sensitive receptors, including single-family and multi-family residential units and potentially hotels, based on the configuration of the Project. The multi-family and single-family uses would be shielded from traffic related noise generated from SR 99 and Cartmill Avenue. Block walls separating the multi-family units from the onsite commercial would further reduce noise from these sources.

However, the proposed hotels would be located in closer proximity to these noise-generating sources. The primary transportation noise source that may affect the hotel includes traffic on SR 99. Sleeping areas facing the SR 99 and Cartmill Avenue could be exposed to noise levels greater than 65 dB Ldn. A typical facade construction will provide an exterior to interior noise level reduction of 25 dB. Therefore, as a means of reducing noise levels to meet the 45 dB Ldn interior noise level criterion, Mitigation Measure MM NSE-2 is proposed. This measure would require windows of sleeping areas of the proposed hotels that face to the west to have a Sound Transmission Class (STC) rating of 40.

CONCLUSION

This impact is considered to be potentially significant.

MITIGATION MEASURE(S)

MM NSE-1: The following shall be implemented by the Project proponent for the duration of Project construction:

- The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors;
- The construction contractor shall locate the pile driver such that the rear of the vibratory pile driver faces toward the noise sensitive receptors when the machine is being utilized;
- The construction contractor shall locate equipment staging in areas that will create the greatest possible distance between construction-related noise sources and noise sensitive receptors during all Project construction;
- The construction contractor shall ensure that all construction equipment is equipped with manufacturer-approved mufflers and baffles; and
- Project construction hours shall comply with all City of Tulare standards.

MM NSE-2: Prior to issuance of building permits for the Project's proposed hotels, the Project proponent shall demonstrate to the satisfaction of the City of Tulare that the Project complies with the following:

- Hotel windows of sleeping areas of the proposed hotel that face to the west shall have a STC rating of 40.

EFFECTIVENESS OF MEASURE

Implementation of Mitigation Measures MM NSE-1 and MM NSE-2 would reduce this impact to a *less-than-significant* level.

Impact #3.11-b: Would the Project cause exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural. Table 3.11-3, below, shows the typical vibration levels produced by construction equipment.

Table 3.11-3
Vibration Levels for Various Construction Equipment

Type of Equipment	Peak Particle Velocity @ 25 feet (inches/second)	Peak Particle Velocity @ 100 feet (inches/second)
Large Bulldozer	0.089	0.011
Loaded Trucks	0.076	0.010
Pile Driving (Impact)	1.518	0.190
Pile Driving (Sonic)	0.734	0.092
Small Bulldozer	0.003	0.000
Auger/drill Rigs	0.089	0.011
Jackhammer	0.035	0.004
Vibratory Hammer	0.070	0.009
Vibratory Compactor/roller	0.210	0.026

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2017

The primary vibration-generating activities associated with the Project would occur when the infrastructure such as grading, utilities, and foundations are constructed. Operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be due to random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). These estimations of noise levels take into account the distance to the receptor, attenuation from molecular absorption and anomalous excess attenuation.

The most significant source of groundborne vibrations during the Project construction would occur from the use of vibratory compactors. Vibratory compactors would generate typical vibration levels of 0.210 in/sec at a distance of 25 feet. Table 3.11-1, above, indicates that the threshold for architectural damage to buildings is 0.20 in/sec. The closest residential buildings to the Project site are located south of the Project site at a distance of approximately 1,000 feet. Table 3.11-3 data also indicates vibratory compactors would not generate vibration levels exceeding safe levels at these distances; therefore, this would be considered a less-than-significant impact.

CONCLUSION

This impact is considered to be less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.11-c: Would the Project cause a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?

The Project site is currently under agricultural production. The proposed commercial and residential uses, along with their associated increased traffic would permanently increase ambient noise levels in the Project vicinity. However, as stated above, the nearest existing sensitive receptors are located 1,000 feet from the Project site. Once fully constructed, noise from the proposed Project would not impact those uses.

CONCLUSION

This impact is considered to be less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.11-d: Would the Project cause a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?

The proposed Project would result in temporary increases in noise levels during construction. Impact #3.11-a, above, discusses the temporary increase in noise anticipated to occur during construction of the proposed Project.

The closest sensitive receivers are located approximately 1,000 feet from the Project site. The predicted maximum noise levels from construction would range between 55 dB and 68 dB, which are considerably less than the existing measured background noise levels. Heavy truck traffic associated with the Project construction would not be any louder than the existing significant number of heavy trucks that currently operate along the major arterial streets. Activities involved in construction would generate maximum noise levels, as indicated in Table 3.11-2, ranging from 76 to 88 dB at a distance of 50 feet. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours. Due to the distance of approximately 1,000 feet from the areas where construction would occur, noise and vibration levels are not considered to be significant or would cause damage to structures. Chapter 6 of the City of Tulare Municipal Code restricts construction activities between the hours of 6:00 a.m. and 10:00 p.m. Construction activities would adhere to these restrictions, and therefore impacts would be considered less than significant.

CONCLUSION

This impact is considered to be less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

3.12 - Population and Housing

This section describes the affected environment and regulatory setting for population and housing. It also describes the housing-related impacts that would result from implementation of the proposed Project.

3.12.1 - ENVIRONMENTAL SETTING

This section describes existing population and housing conditions in the City of Tulare. This section is based on data from the 2010 U.S. Census and the projections of TCAG.

TCAG Projections

The TCAG Draft Forecast projections provide estimates for future population and households in the City of Tulare, assuming an annual average growth rate of 1.7 percent between 2010 and 2035, as shown in the Table 3.12-1 below.

Table 3.12-1
Future Population and Households

Year	Population	Households
2010	59,278	17,720
2015	64,445	19,132
2020	70,063	20,657
2025	76,170	22,304
2030	82,810	24,082
2035	90,028	26,001

Source: TCAG, 2013

Tulare Population

The 2010 U.S. Census reported a population of 59,278 for the City of Tulare. This marks an approximately 34.7 percent increase from the 2000 Census. The California Department of Finance (DOF) releases annual estimates, benchmarked to the U.S. Census and relying on data from local, State, and federal agencies. These estimates provide information on the number of households and residents in cities, counties, and statewide. The City of Tulare was estimated to have a population of 62,296 (US Census, 2019).

Tulare Housing

In 2012, the DOF estimated 19,141 housing units in the City of Tulare. The average household size was 3.356. Single-family detached units account for approximately 78 percent of Tulare's housing stock. The 2010 Census reported a homeowner vacancy rate of approximately 2.8 percent and a rental vacancy rate of approximately 5.5 percent. The median home value in the City of Tulare is $189,500, compared to Tulare County at $200,000. TCAG's Draft Regional Projections predict future population growth. According to TCAG's

Draft Forecast, Tulare's population is expected to grow from 59,278 in 2010 to 90,028 in 2035, an approximately 34 percent increase. The Regional Housing Needs Allocation (RHNA) for the City of Tulare for the 2014 to 2023 planning period included a total of 3,594 units. These units are separated into five different categories by income level. Table 3.12-2 shows the number of units in demand for each income level.

Table 3.12-2
Units in Demand

Total RHNA Allocation	Very Low Income	Low Income	Moderate Income	Above Moderate Income
3,594	920	609	613	1,452

Source - "2014-2023 Final RHNA Allocations by Income Category," Final Regional Housing Needs Plan for Tulare County 2014 -2023. Page 19 (TCAG, 2014)

3.12.2 - REGULATORY SETTING

Federal

There are no federal regulations related to population and housing that apply to the proposed Project.

State

REGIONAL HOUSING NEEDS ALLOCATION

The California Department of Housing and Community Development (HCD) identifies the supply of housing necessary to meet the existing and projected growth in population and households in the State and passes a portion along to each of the State's 38 COGs. As the local COG, TCAG receives a RHNA from the HCD that specifies the number of units, by affordability level, that need to be accommodated within Tulare County during the Housing Element planning period, or cycle. TCAG is then responsible for calculating specific RHNAs for Tulare and other jurisdictions, with input from the jurisdictions.

Local

TULARE COUNTY REGIONAL BLUEPRINT 2009

This Blueprint includes the following preferred growth scenario principals:

- Increase densities County-wide by 25 percent over the status quo densities;
- Establish light rail between cities;
- Extend Highway 65 north to Fresno County;
- Expand transit throughout the County;
- Maintain urban separators around cities; and

- Growth would be directed toward incorporated cities and communities where urban development exists and where comprehensive services and infrastructure are or will be provided.

CITY OF TULARE GENERAL PLAN

Population and housing impacts are addressed through policies that are mandated in the Housing Element of the City of Tulare General Plan. The City of Tulare General Plan Housing Element sets forth the following goals relevant to population and housing.

GOAL

A Provide opportunities for a broad range of housing types to meet the needs of all Tulare residents.

B Protect existing sources of affordable housing and facilitate new affordable housing opportunities.

C Provide a range of housing and services for Tulare residents with special needs.

D Improve energy efficiency and water conservation in new and existing housing.

E Ensure equal opportunity to secure, safe, sanitary, and affordable housing for everyone in the community.

F Minimize the impact of potential government constraints on the maintenance, improvement, and development of housing.

G Preserve and enhance the quality and livability of existing housing and residential neighborhoods.

CITY OF TULARE MUNICIPAL CODE

The Land Use and Development Code, Title 10 of the Municipal Code, applies zoning districts to properties within the City of Tulare. The purpose of the zoning districts is to implement the land use designations established by the Draft General Plan. For each Draft General Plan land use designation, there is, at a minimum, one zoning district. Zoning establishes allowable density of development and population intensity.

3.12.3 - IMPACT EVALUATION CRITERIA

Thresholds of Significance

Consistent with *Appendix G* of the *CEQA Guidelines*, the proposed Project is considered to have a significant impact on the environment if it will result in:

a) *Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure;*

b) *Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere;*

c) *Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.*

The Lead Agency determined in the NOP/IS (see Appendix A) that the following environmental issue areas would result in no impact or a less-than-significant impact and therefore were scoped out of requiring further review in this Draft EIR. Please refer to Appendix A of this Draft EIR for a copy of the NOP/IS and additional information regarding these issue areas.

b) *Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; and*

c) *Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.*

3.12.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.12-a: Would the Project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure?

The Project is directly inducing population growth in an area by proposing new commercial and residential development. However, the population of the City is expected to grow by more than 34 percent over the next 20 years, furthering the need for additional dwelling units, both single-family and multi-family. The RHNA states the City of Tulare will need to provide an additional 3,594 dwelling units by the year 2023. The proposed Project will provide an estimated additional 132 single-family and 210 multi-family units, for a total of 342 units. The Project will help the City of Tulare work towards attaining sufficient housing supply for its residents.

CONCLUSION

This impact is considered to be less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

3.13 - Public Services, Utilities and Service Systems

This section provides an evaluation of the potential impacts to public services, utilities, and service systems that may be caused by implementation of the proposed Project, such as impacts resulting in the need for additional infrastructure (water, sewer, stormwater) or public services (fire or police).

3.13.1 - Environmental Setting

Fire Protection

Fire protection and emergency medical services available to the proposed Project site will be provided by the Tulare City Fire Department.

The Tulare City Fire Department provides emergency services via four in-service fire companies from three fire stations within the City. Three of the fire companies are staffed with three personnel (captain, engineer, and firefighter/paramedic) and one patrol unit is staged with two personnel (captain and engineer/paramedic). A Division Chief is on duty each day to perform as an incident commander, supervise fire suppression activities, and provide personnel supervision. The nearest station to the Project site is Station 63, located approximately 0.25 miles southwest, at 2900 North M Street.

The duties of fire personnel include fire prevention and suppression, emergency medical assistance, identification and containment of hazardous materials, performance of special rescue operations, engine company fire prevention inspections and fire cause/origin determination.

In 2014, the Tulare City Fire Department responded to 5,193 calls for service. Station 63 responded to 36 fire and 810 rescue and emergency medical incidents.

Police Enforcement

The City of Tulare Police Department will provide law enforcement services to the proposed Project site. The Department's headquarters are located approximately 2.5 miles south at 260 M Street. According to the City's website, the Department has approximately 100 employees and consists of three divisions: patrol, investigation, and administration. The Patrol Division responds to all 911 calls and is comprised of four patrol shifts led by a Police Lieutenant. The Investigation Division consists of one Sergeant, seven detectives and two evidence technicians. The Administration Division consists of the Public Safety Dispatcher, whose staff consists of 12 technicians fielding emergency and non-emergency calls to police. The Police Department handled 97,705 calls in 2017.

Emergency Medical Services

The nearest medical facility to the Project site is Kaweah Delta Medical Center, located approximately 6.5 miles north at 400 West Mineral King Avenue in Visalia. Services at this location include but are not limited to: Emergency Department, inpatient and outpatient

surgical services, cardiac care, lab services, radiology services, Family Birthing Center, and Sleep Disorders Center. The Emergency Department provides 24-hour emergency services to over 90,000 patients each year from Tulare, Kings, and surrounding counties.

Water Supply

The City of Tulare's water system services residential and non-residential lands within the City limits. This service area includes:

- 10,400 acres of developed lands inside the City limits; and
- 1,881 acres of undeveloped lands inside the City limits.

At ultimate development of the General Plan, the City's water system is anticipated to service approximately 5,056 acres of Residential land use, 1,598 acres of Commercial, 1,781 acres of Industrial, 340 acres of Parks and Recreation, and 1,625 acres of Public Facilities.

WATER QUANTITY

According to the Annual Water Quality Report (City of Tulare, 2017), the City currently receives potable water supplies exclusively from groundwater through 25 City-owned and operated wells. These wells pump from the critically overdrafted Kaweah Subbasin directly into the distribution system to meet all of the City's demands. The City does not currently use surface or imported water to meet system demands. Groundwater production figures for the Tulare Lake Basin from 2010 to 2015 are provided in Table 3.13-1.

Table 3.13-1
Tulare Lake Basin Groundwater Production (2011-2015)

Annual Production (million gallons)				
2011	2012	2013	2014	2015
5,693.7	6,000.8	6,362.0	5,875.6	5,824.9

Source: City of Tulare, 2017

The 2015 Urban Water Management Plan provides projections of the City's potable water consumption by land use type in 2030 (Table 3.13-2). It is projected that total water consumption in Tulare will increase by 149 percent between 2015 and 2040.

Table 3.13-2
Projected Water Use (2030)

Land Use (subtotal)	2030 Average Day Demand (gpd)
Residential	18,158,000
Commercial	3,732,800
Industrial	11,410,500
Community Facilities	1,845,000
Reserve Designations	4,242,300
Total	**39,388,600**

Source: City of Tulare, 2017

Population and water demand in Tulare both grew steadily from 1990 to 2005. This aligns with the City's per capita consumption, which has also steadily increased over the 15-year period. Conservation and efficiency measures are expected to lower per capita water usage when compared with historical rates. Despite these per capital reductions, additional wells may need to be developed to accommodate the growth contemplated by the City of Tulare General Plan.

The City of Tulare 2009 Water System Master Plan evaluated the water system infrastructure requirements to service the City at buildout of the General Plan and identifies improvements that should be made in order to accommodate future demand. The highest priority improvements include: supply wells (W-1 through W-13), the construction of four new wells to maintain a supply capacity that is sufficient to reliably meet existing demand with the two largest wells serving as standby; storage tank (T-1), the construction of an elevated storage tank in the industrial region of the City; pipelines P-1, P-2, P-7, and P-27, the creation of a large diameter water main loop on Bardsley Avenue, West Street, Inyo Avenue, and E Street.

Additional information regarding the regional water table is contained in **Section 3.9, Hydrology and Water Quality**.

WATER QUALITY

Groundwater is mainly of a calcium bicarbonate type throughout most of the subbasin, with sodium bicarbonate waters near the western margin. There are localized areas of high nitrate pollution on the eastern side of the basin. There is also high salinity water between Lindsay and Exeter. The Department of Health (DOH) reports an average TDS value of 189 mg/L.

According to the 2009 City of Tulare Water System Master Plan, Tulare's water system met State and federal guidelines for regulation of contaminants and monitoring requirements. Water quality tests for City wells did not reveal contaminant levels in excess of federally-established maximum contaminant levels (MCLs).

According to the 2015 City of Tulare Water Quality Report, a concentration of 11 parts per trillion (ppt) of 1,2,3-Trichloropropane (TCP) was detected in the municipal water supply, which exceeds the Public Health Goal of 5 ppt. Public Health Goals are established by the EPA and are the levels of a contaminant in drinking water below which there is no known or expected risk to public health. According to City of Tulare staff, planning is underway to install carbon filtration to reduce levels of TCP to the below threshold levels.

Water Conservation Standards

On January 17, 2014, Governor Brown declared a State of Emergency and directed officials to take all necessary actions to prepare for drought conditions in California. The City has adopted City of Tulare Municipal Code, Section 1, Title 7, Chapter 7.32 (Outdoor Water Use-Water Conservation Standards) by Ordinance. This comprehensive water conservation regulation provides for water conservation in five progressively more restrictive stages.

The City of Tulare is currently enforcing Stage 3 of the Water Conservation Ordinance which includes the following regulations:

- No outdoor irrigation in December and January
- Daily Watering Guidelines
  - Even addresses water on Wednesday, Friday, and Sunday
  - Odd addresses water on Tuesday, Thursday, and Saturday
  - No watering on Mondays
  - No watering between 4:00 a.m. to 9:00 a.m. and from 11:00 a.m. to 10:00 p.m. on any watering day
- Car Washing Guidelines
  - Washing of cars, trucks, trailers, boats etc. is only allowed using a positive shut-off nozzle
  - No fundraising car washes
- Hosing Down
  - Hosing down of sidewalks, driveways, parking areas, courts, patios, paved areas, etc. is not allowed, unless necessary for public health and safety

Wastewater

Sewer systems throughout the City are maintained by the Public Works Department. Approximately 234 miles of sanitary trunk lines and 15 sewer lift stations and are maintained throughout the City. Wastewater is transported to the City of Tulare Water Pollution Control Facility (TWPCF) for treatment and disposal via a system of interconnected manholes and two trunk sewers.

The TWPCF is located at 1875 South West Street, approximately 4.5 miles southwest of the Project site and beyond areas of urban expansion. The plant is composed of two separate facilities: a residential and an industrial treatment plant. The residential plant currently has a capacity of 6.0 mgd of influent flow, while the industrial plant has a capacity of 4.4 mgd. An expansion of facilities in 2006 added an anoxic basin to help in the removal of nitrogen to meet the City's total nitrogen requirements.

Storm Drainage

Stormwater runoff is a natural hydrologic process that occurs when precipitation collects on the surface of the Earth and gravity forces the stormwater toward lower elevations. As the stormwater moves along the surface of the Earth, pollutants such as sediment, nutrients, bacteria, oil and grease, heavy metals, toxic chemicals, and debris are carried along with the stormwater. The stormwater and pollutants eventually enter streams, lakes, and oceans. Pollutant levels can increase in water to the point that it becomes harmful to the organisms that live in these water bodies, or to the people that use the water as a municipal source of water. Stormwater discharges are regulated under the CWA.

In creating the 2009 Storm Drainage Master Plan, the City of Tulare divided its planning area into 32 distinct subbasins, each consisting of a system of conveyance facilities to collect and

dispose runoff. Depending on the subbasin, stormwater runoff is either conveyed to retention or detention basins or is discharged directly into Tulare Irrigation District (TID) owned facilities at Town Ditch, Railroad Ditch, Kaweah Ditch/Pipeline, and Main Canal.

The City's existing stormwater conveyance facilities consist of storm drainage pipes varying in size from eight to 42 inches. Runoff discharges by gravity or is pumped into various irrigation canals. The City currently maintains 28 retention and 18 detention basins that are located throughout Tulare and operates 25 stormwater pump stations.

Solid Waste

Solid waste disposal for Tulare is managed by the City of Tulare Solid Waste/Street Sweeping Division. The City provides all waste collection and transport services within the City limits. Services include general waste pickup, green waste pickup, and recycling pickup. Disposal volumes for different uses on a per-employee basis are shown in Table 3.13-3.

Table 3.13-3
Industry Group Summary: Waste Generation

Industry Group	Waste Generation (pounds/ employee/ year)
Food Stores	16,578
Retail, Big Box Stores	7,798
Non-durable Wholesale Distributors	6,931
Retail, Other Stores	3,714
Durable Wholesale Distributors	4,719
Anchor Stores at Shopping Malls (*pounds per 1,000 sq. ft.*)	3,520
Fast-Food Restaurants	6,528
Full-Service Restaurants	6,437
Building Material & Gardening, Big Box Stores	9,031
Public Venues & Events (*pounds per 100 visitors*)	244
Building Material & Gardening, Other Stores	4,599
Large Hotels	5,049
Shopping Malls (*pounds per 1,000 sq. ft.*)	2,499
Large Office Buildings (*pounds per 1,000 sq. ft.*)	1,998

SITE SOLID WASTE

Visalia Landfill is located approximately 10 miles north of the Project site at 8614 Avenue 328 in Visalia. This landfill has a 48,630,666 cubic yard capacity. In 2016, the landfill's waste in place was 5,743,201 tons, and its expected closure year is 2049 (CalRecycle, 2019).

Solid Waste Reduction Program

The City of Tulare currently implements a blue bin program that offers two, three, four, and six-yard bins to accommodate commercial recycling needs and does not charge a fee for the hauling of recyclable material. There is also a free bin located at the Corporation Yard at 3981 South K Street in Tulare for commercial landscapers and residents to use for disposing their landscaping debris. The City also implements special residential recycling services including but not limited to e-waste disposal, food scrap collection (compost), household battery disposal, and sharps disposal.

Electric and Gas

Electrical power is supplied to the City of Tulare by Southern California Edison. Gas is provided to the City by Southern California Gas Company.

Schools

The Project area is served by the Tulare City School District for students in kindergarten through eighth grade and by the Tulare Joint Union High School District for students in high school. The estimated 342 homes would generate approximately 171 students based on an average of 0.5 students per dwelling unit. The additional students would contribute to the need for additional school facilities. The property taxes from new residents would provide increased funding for these school districts to help support future facility growth. In addition, the bonding capacity for the districts will increase, improving the ability of the districts to pursue bonds for school construction.

SCHOOL FUNDING

Since 1976, three basic methods have been used to finance the construction of schools in California. The first is the Leroy F. Greene State School Building Lease-Purchase Law of 1976, whereby the State provides money, obtained through the sale of State bonds, to local school districts for the construction of schools.

The second is through the local provision of money either through school bonds or financing districts organized under the Mello-Roos Community Facilities Act of 1982, which allows the creation of financing districts that impose taxes to raise the money needed to pay bondholders. Finally, financing for new school construction has been provided through the imposition of fees on new development by means of the School Facilities Act of 1977, which allows cities and counties, at the request of school boards, to require new development to provide interim school facilities for up to five years (the maximum amount of the fee that is allowed under the 1986 legislation is discussed below), and the present system whereby local school districts may levy fees on new development projects to help finance construction or reconstruction of school facilities as established in 1986 by AB 2926. SB 50 and Proposition 1a (both of which passed in 1998) provided a comprehensive school facilities financing and reform program. The provisions of SB 50 prohibit local agencies from denying either legislative or adjudicative land use approvals on the basis that school facilities are

inadequate and reinstate the school facility fee cap for legislative actions (e.g., general plan amendments, specific plan adoption, zoning plan amendments) as was allowed under the Mira, Hart, and Murrieta court cases. According to Government Code, Section 65996, the development fees authorized by SB 50 are deemed "full and complete school facilities mitigation." These provisions are in effect and will remain in place as long as subsequent State bonds are approved and available. SB 50 established three levels of developer fees that may be imposed upon new development by the governing board of a school district depending upon certain conditions. These three levels include:

Level 1 - Level 1 fees are the base statutory fees. As of January 24, 2018, Level 1 fees are $3.79 per square foot for new residential development and $0.61 per square foot of chargeable, covered, and enclosed floor space for new commercial/industrial development. These amounts represent the maximum that can currently be legally imposed upon new development projects by a school district unless the district qualifies for a higher level of funding. Payment of these fees is deemed to constitute full, complete, and adequate mitigation of project impacts on school facilities.

Level 2 - Level 2 fees allow the school district to impose developer fees above the statutory levels, up to 50 percent of certain costs under designated circumstances. The State would match the 50 percent funding if funds are available.

Level 3 - Level 3 fees apply if the State runs out of bond funds after 2006, allowing the school district to impose 100 percent of the cost of the school facility or mitigation minus any local dedicated school moneys. To accommodate students from new development projects, school districts may alternatively finance new schools through special school construction funding resolutions and/or agreements between developers, the affected school districts and, occasionally, other local governmental agencies. These special resolutions and agreements often allow school districts to realize school mitigation funds in excess of the developer fees allowed under SB 50.

Parks and Recreation

The Project area is within the boundaries of the City of Tulare Parks and Recreation District. The closest parks in proximity to the site are: Blain Park and Prosperity Sports Park, located approximately 1,000 feet and 4,000 feet from the Project site, respectively. The majority of park and recreation sites are required through dedication of land by residential developers or in-lieu fees pursuant to provisions of the Quimby Act.

Libraries

The Tulare Public Library is located at 475 North M Street and is administered by the City of Tulare. Materials for use at the library include books, government documents, computers, CDs, and other informational media. The Tulare Public Library is the location of the Tulare City Council Chambers.

3.13.2 - REGULATORY SETTING

Federal

UNIFORM FIRE CODE

Standards for fire protection are published in the Uniform Fire Code (UFC) by National Fire Protection Association (NFPA). The nationally recognized standards require that fire departments "have the capability to deploy an initial full alarm assignment within eight-minute response time to 90 percent of the incidents."

CLEAN WATER ACT

The CWA is the principal federal law that addresses water quality. The primary objectives include the regulation of pollutant discharges to surface water, financial assistance for public wastewater treatment systems, technology development, and nonpoint-source pollution prevention programs. The CWA also requires that states adopt water quality standards to protect public health and welfare and enhance the quality of water.

SAFE DRINKING WATER ACT

The Safe Drinking Water Act (SDWA), administered by the EPA in coordination with the states, is the main federal law that ensures the quality of drinking water. Under the SDWA, the EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. The Department of Public Health administers the regulations contained in the SDWA in the State of California.

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)

Section 402(p) of the CWA establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES Permit Program. To implement Section 402(p), the SWRCB has adopted a statewide General Permit for all Stormwater Discharges Associated with Construction Activities. The General Permit for Construction Activities applies to all dischargers where construction activity disturbs one acre or more. Construction affecting more than one acre within the Project site will require compliance with the SWRCB's General Permit for Construction Activities.

ENVIRONMENTAL PROTECTION AGENCY LOW IMPACT DEVELOPMENT DESIGN PRINCIPLES

The EPA's Low Impact Development (LID) design strategies are expected to be integrated into stormwater design and conveyance systems in conjunction with NPDES permit applications. LID emphasizes conservation and use of onsite natural features to protect water quality. This approach implements engineered small-scale hydrologic controls to replicate the pre-development hydrologic regime of watersheds through infiltrating, filtering, storing, evaporating, and detaining runoff close to its source.

State

CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

In accordance with California Code of Regulations, Title 8, Sections 1270 "Fire Prevention" and 6773 "Fire Protection and Fire Equipment," Cal/OSHA has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance and use of all firefighting and emergency medical equipment.

EMERGENCY RESPONSE/EVACUATION PLANS

State law authorizes the Office of Emergency Services (OES) to prepare a Standardized Emergency Management System (SEMS) Program, which sets forth measures by which a jurisdiction should handle emergency disasters. Non-compliance with SEMS could result in the State withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster. The preservation of life, property, and the environment is an inherent responsibility of local, State, and federal government. The OES coordinates the responses of other agencies including the CHP and the City of Tulare Police and Fire Departments.

FIRE HAZARD SEVERITY

California has enacted statewide laws aimed at reducing wildfire hazards in wildland-urban interface areas. These regulations, described in the Fire Hazard Zoning Field Guide, cover topics such as fire prevention, vegetation management, notification and penalties, fire hazard severity zones, defensible space, setbacks, and exemptions. For the complete text of the Fire Hazard Zoning Field Guide, the reader is referred to the Office of the State Fire Marshal's fire safety planning website.

CALIFORNIA PUBLIC RESOURCES CODE

The Public Resources Code includes the following laws related to fire safety.

Vegetation Management Program

CAL FIRE has a fuel reduction program called the Vegetation Management Program (VEM). Limited funding is available to conduct fuel management activities primarily by burning on parcels or aggregates of parcels of 100 acres or more. The objective of the VEM is to prevent high-intensity wildfire through fuel modification. If brush can be kept at the medium-fuel load level, then the intensity of fire can be reduced substantially.

California Fire Plan

The California Board of Forestry and CAL FIRE have developed the California Fire Plan in an effort to reduce the overall costs and losses from wildfire in California. According to the California Fire Plan, the primary purpose of wildland fire protection in California is to protect

human health and safety together with the wide range of assets found on California wildlands. These assets include timber, range, recreation, water and watersheds, plants, air quality, cultural and historic resources, unique scenic areas, buildings, and wildlife, plants, and ecosystem health.

The California Fire Plan defines a standard for measuring the level of fire protection service provided in an area, considers assets at risk, incorporates the cooperative interdependent relationships of wildland fire protection providers, provides for public stakeholder involvement, and creates a fiscal framework for policy analysis. A key product of the California Fire Plan is the development of wildfire safety zones to reduce the risks to residents and firefighters from future large wildfires. The California Fire Plan defines an assessment process for measuring the level of service provided by the fire protection system for wildland fire. This measure can be used to assess the Department's ability to provide an equal level of protection to sites with similar land types, as required by Pubic Resources Code (PRC), Section 4130. This measure is the percentage of fires that are successfully controlled before unacceptable costs are incurred. Knowledge of level of service will help define the risk to wildfire damage faced by public and private assets in wildlands.

SB 610 – WATER SUPPLY ASSESSMENT

Senate Bill 610 (Chapter 643, Statutes of 2001) amended State law, effective January 1, 2002, to improve the link between information on water supply availability and land use decisions made by cities and counties. The statue requires detailed information regarding water availability to be provided to city and county decision-makers prior to approval of specified large development projects which are subject to CEQA (the California Environmental Quality Act) approval. The statute also requires this detailed information to be included in the administrative record that serves as the evidentiary basis for an entitlement action by the city or county on such projects. The statute-required water supply assessment (WSA) must examine the availability and sufficiency of an identified water supply under normal year, single dry year, and multiple dry year conditions over a 20-year projection, accounting for the projected water demand of the Project in addition to other existing and planned future uses of the identified water supply.

The State Department of Water Resources "Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001" (Guidebook) and the sample format presented in the Guidebook were used as guides in preparing this WSA. The full text of Chapter 643, Statutes of 2001 (SB 610) is included in Appendix A of the Water Supply Assessment prepared for this Project.

AB 939 – CALIFORNIA INTEGRATED WASTE MANAGEMENT ACT

To minimize the amount of solid waste that must be disposed of by transformation and land disposal, the State Legislature passed Assembly Bill 939, the California Integrated Waste Management Act of 1989 (AB 939), effective January 1990. According to AB 939, all cities and counties in California are required to divert 25 percent of all solid waste from landfill or transformation facilities by January 1, 1995, and 50 percent by January 1, 2000.

Solid Waste Plans are prepared by each jurisdiction to explain how each city's AB 939 Plan is integrated with their respective county plan. The Solid Waste Plans must promote in order of priority: source reduction, recycling and composting, and finally, environmentally safe transformation, and land disposal.

TITLE 24 – CALIFORNIA BUILDING STANDARDS CODE

Title 24 of the CCR, known as the California Building Standards Code or just "Title 24," contains the regulations that govern the construction of buildings (both residential and non-residential) in California. Title 24 is composed of 12 "parts." Part 9, the California Fire Code, contains fire-safety-related building standards referenced in other parts of Title 24. This Code is preassembled with the 2000 Uniform Fire Code of the Western Fire Chiefs Association with necessary California amendments.

CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT

The Urban Water Management Planning Act (Section 10610-10656 of the California Water Code) requires that all urban water suppliers prepare Urban Water Management Plans and update them every five years.

AB 1327 CALIFORNIA SOLID WASTE REUSE AND RECYCLING ACCESS ACT

The Solid Waste Reuse and Recycling Access Act of 1991 requires each jurisdiction to adopt an ordinance by September 1, 1994 requiring each development project to provide an adequate storage area for collection and removal of recyclable materials.

CALIFORNIA PUBLIC UTILITIES COMMISSION

The California Public Utilities Commission (CPUC) regulates privately owned telecommunication, electric, natural gas, water, railroad, rail transit, and passenger transportation companies. It is the responsibility of the CPUC to assure California utility customers' safe, reliable utility service at reasonable rates; protect utility customers from fraud; and promote a healthy California economy. The Public Utilities Code, adopted by the legislature, defines the jurisdiction of the CPUC.

GOVERNOR'S EXECUTIVE ORDER B-29-15

In April 2015, Governor Brown proclaimed a Continued State of Emergency to exist throughout California due to the ongoing drought. Executive Order B-29-15, issued pursuant to Government Code, Section 8567 and 8571, became effectively immediately. The Executive Order B-29-15 directed the SWRCB to implement mandatory water reductions in cities and towns across California to reduce water usage by 25 percent. Executive Order B-29-15 includes several measures which will be directed by the SWRQB and other State agencies to save water, increase enforcement against water waste, invest in new technologies, and streamline State government response to the drought.

Local

CITY OF TULARE GENERAL PLAN

Planning for City services and infrastructure is typically accomplished through the Land Use Element, Transportation and Circulation Element, Conservation and Open Space Element, and Safety Element of the City of Tulare General Plan. The City of Tulare General Plan sets forth the following goals and policies relevant to public services and utilities.

Land Use Element

GOAL

LU-11 To provide optimal municipal facilities and services, consistent with available resources, that are adequate to meet the needs of desired future growth.

POLICIES

LU-P11.1 Adequate Municipal Services. The City shall approve development only when adequate municipal services are available or can be efficiently provided.

LU-P11.2 Efficient Provision of Municipal Services. The City shall maintain a development pattern that allows for efficient provision of municipal services.

LU-P11.3 System Expansion. The City shall require new development be responsible for expansion of existing facilities such as water systems, sewer systems, storm drainage systems, parks and other capital facilities made necessary to serve the new development.

LU-P11.4 Water Supply System. The City shall require that water supply systems be adequate to serve the size and configuration of land developments. Standards as set forth in the subdivision ordinance shall be maintained and improved as necessary.

LU-P11.5 Water Supply for New Development. For all new development, prior to the approval of any subdivision applications, the developers shall assure that there is sufficient available water supply to meet projected buildout.

LU-P11.6 Adequate System Maintenance. The City shall require maintenance funding for streets, storm drainage, and ponding basins for new development.

LU-P11.7 Adequate Infrastructure Capacity. The City shall only approve new development when it can be demonstrated by the applicant that adequate system capacity in the service area is or will be available to handle increases related to the project.

LU-P11.8 Conditions of Approval. During the development review process, the City shall not approve new development unless the following conditions are met:

- The applicant can demonstrate that all necessary infrastructures to serve the project will be installed or adequately financed;
- Infrastructure improvements are consistent with City infrastructure plans; and
- Infrastructure improvements incorporate a range of feasible measures that can be implemented to reduce public safety and/or environmental impacts associated with the construction, operation, or maintenance of any required improvement.

LU-P11.9 Adequate City Service Capacity. The City shall only approve new development when it can be demonstrated by the applicant that adequate public service capacity in the area is or will be available to handle increases related to the project. School capacity will be discussed in the review of each development, and the City will ensure early coordination with the school districts serving the site. School capacity will be addressed as allowed under State law.

LU-P11.10 Sewer Capacity. The City shall provide adequate additional City sewer system capacity through the improvement of existing collection system lines and the construction of new trunk lines as proposed in the Sewer Master Plan.

LU-P11.12 Drainage Systems. The City shall expand existing storm drainage systems as necessary to serve existing and future development.

LU-P11.13 Adequate Storm Drainage Facilities. The City shall provide storm drainage facilities with sufficient capacity to protect the public and private property from stormwater damage. The facilities will also be implemented in a manner that reduces public safety and/or environmental impacts associated with the construction, operation, or maintenance of any required drainage improvements (i.e., drainage basins, etc.).

LU-P11.14 Improvement of Stormwater Infrastructure. The City shall seek permanent funding sources to correct and improve deficient stormwater infrastructure.

LU-P11.15 Maintenance of Stormwater Infrastructure. The City shall seek permanent funding sources for maintenance of stormwater infrastructure.

LU-P11.16 Detention Facilities. The City shall utilize stormwater detention facilities to mitigate drainage impacts and reduce storm drainage system costs. To the extent practical, stormwater detention facilities should be designed for multiple purposes, including recreational and/or stormwater quality improvement.

LU-P11.17 Fair Share Improvements. The City shall ensure new development is required to participate on a fair-share basis in the completion of improvements to the existing sewer system, and/or the construction of new sewer trunk lines as described in the City's adopted Sewer Master Plan.

LU-P11.18 Solid Waste. The City shall promote maximum use of solid waste source reduction, recycling, composting, and environmentally-safe transformation of wastes.

LU-P11.19 Recycling of Hazardous Materials. The City shall require the proper disposal and recycling of hazardous materials.

LU-P11.20 City Usage of Recycled Materials and Products. The City should use recycled materials and products where economically feasible.

LU-P11.21 Private Usage of Recycled Products. The City shall work with recycling contractors to encourage businesses to use recycled products in their manufacturing processes and encourage consumers to purchase recycled products.

LU-P11.22 Dedicated Sites. The City shall negotiate with proponents of future development projects to secure the dedication of adequate sites for future fire and police stations.

LU-P11.23 School Site Dedication. The City shall negotiate with proponents of future development projects to secure the dedication of adequate sites for future school construction to meet anticipated future elementary, junior high, and high school expansion needs.

LU-P11.24 Co-Location of Facilities. The City shall encourage community facilities (such as community centers, schools, parks, libraries, fire stations with community rooms), when proposed in the same area, to be co-located to form a stronger activity node within the neighborhood.

LU-P11.25 Expand Library Services. The City shall continue to expand library facilities and services as necessary to meet the needed growth and will endeavor to provide facilities at a square foot per capita of 0.4 square foot of library space per resident.

LU-P11.26 Evaluate Fiscal Impacts. The City shall evaluate the fiscal impacts of new development and encourage a pattern of development that allows the City to provide and maintain a high level of urban services (including, but not limited to, water, sewer, transportation, fire stations, police stations, libraries, administrative, and parks), and community facilities, and utility infrastructure, as well as attract targeted businesses and a stable labor force.

LU-P11.27 Urban Development Boundary. The City shall evaluate the UDB every five years to ensure there is adequate utility, City service, and infrastructure capacity to accommodate anticipated growth.

LU-P11.28 Infrastructure Assessment Districts. When annexing unincorporated county parcels, the City shall establish assessment districts or identify other equally effective funding sources to bring existing infrastructure in these areas up to City standards.

Conservation and Open Space Element

GOAL

COS-6 To encourage energy conservation in new and existing developments throughout the City.

POLICIES

COS-P6.2 Landscape Improvements for Energy Conservation. The City shall encourage the planting of shade trees along all City streets and as part of new development to reduce radiation heating.

COS-P6.6 Solar Energy. The City shall work with developers to encourage the incorporation of passive and active solar devices such as solar collectors, solar cells, and solar heating systems into the design of local buildings. Additionally, the City shall work with developers to ensure that building and site design take into account the solar orientation of buildings during design and construction.

Safety Element

GOAL

SAF-1 To regulate future development to ensure the protection of public health and safety from hazards and hazardous materials and the adequate provision of emergency services.

POLICIES

SAF-P1.1 Development Constraints. The City shall permit development only in areas where the potential danger to the health and safety of people and property can be mitigated to an acceptable level.

SAF-P1.2 Development Compliance with Federal, State, and Local Regulations. The City shall ensure that all development within the designated floodway or floodplain zones conforms to Federal Emergency Management Administration (FEMA) regulations.

SAF-P1.3 Hazardous Lands. The City shall designate areas with a potential for significant hazardous conditions for open space, agriculture, and other appropriate low intensity uses.

SAF-P1.4 Building and Codes. Except as otherwise allowed by State law, the City shall ensure that all new buildings intended for human habitation are designed in compliance with the latest edition of the California Building Code, California Fire Code, and other adopted standards based on risk (e.g., seismic hazards, flooding), type of occupancy, and location (e.g., floodplain, fault).

SAF-P1.5 Hazard Awareness and Public Education. The City shall continue to promote awareness and education among residents regarding possible natural hazards, including soil conditions, earthquakes, flooding, fire hazards, and emergency procedures.

SAF-P1.6 Safe Housing and Structures. The City shall continue to seek grant funding for substandard housing abatement program to rehabilitate deteriorated and dilapidated structures and shall continue to provide available information regarding housing programs and other public services. These educational programs will be offered in Spanish, English, and Portuguese languages as appropriate and as resources allow.

SAF-P1.7 Site Investigations. The City shall require applicants to conduct site investigations in areas planned for new development to determine susceptibility to landslides, subsidence/settlement, contamination, and/or flooding.

SAF-P1.8 Police and Fire Department Review. The planning process should continue to seek the input of the Police and Fire Departments in reviewing development plans and permits. Such a coordinated effort should be aimed at reducing property loss and affecting a reduction of injury and loss of life.

SAF-P1.9 Public Education. It is recommended that the City of Tulare through the Fire Department, Police Department, and Planning Department increase their efforts towards encouraging the public through educational means, to reduce risk.

SAF-P1.10 Flood Protection Upgrades. Within the City limits, where storm and flood prevention improvements have not been installed, a program to upgrade should be initiated in accordance with the Master Drainage Control Plan for the area. Priorities should be conditioned upon locations where flood and sheet flow hazards are greatest.

GOAL

SAF-3 To provide adequate emergency services.

POLICIES

SAF-P3.1 Emergency Services Near Assisted Living Housing. In approving new facilities, such as nursing homes, housing for the elderly, and other housing for the mentally and physically infirm, to the extent possible the City shall seek to ensure that such facilities are located within reasonable distance of fire and law enforcement stations.

SAF-P3.2 Coordinate Emergency Response Services with Government Agencies. The City shall coordinate emergency response with local, State, and federal governmental agencies charged with disaster and emergency preparedness responsibilities.

SAF-P3.3 Maintain Emergency Evacuation Plans. The City shall maintain Emergency Evacuation Plans for areas identified as subject to potential flooding.

SAF-P3.4 Emergency Centers. The City shall require emergency backup systems to enable uninterrupted continuous operations as required by the California Essential Facilities Act.

SAF-P3.5 Joint Exercises. The City shall encourage Fire and Law Enforcement Departments to periodically conduct joint training exercises with the goal of developing the best possible coordinated action in the event of a natural or human-made hazard.

SAF-P3.6 Upgrading for Streets and Highways. The City shall evaluate and upgrade vital streets and highways to an acceptable level for emergency services.

City of Tulare Storm Water Quality Management Program

The City's Storm Water Quality Management Program (SWQMP), adopted January 2009, is intended to implement and enforce a series of BMPs designed to reduce the discharge of pollutants from the municipal separate storm drain systems to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the CWA. These BMPs include public participation/involvement, public education and outreach, construction site runoff control, illicit discharge detection and elimination, pollution prevention/good housekeeping, and post-construction runoff control. The program also provides a series of measurable goals which are used to gauge the objectives of the SWQMP.

The City's SWQMP provides a NPDES permit for the area within Tulare's legal boundaries except in areas that are covered under existing, separate permits. These areas include SR 99, SR 63, and SR 137, which are included in Caltrans permitting; as well as school districts and colleges, which are each required to prepare a separate SWQMP; and Mefford Field Airport.

3.13.3 - IMPACT EVALUATION CRITERIA

Consistent with *Appendix G* of the *CEQA Guidelines*, the proposed Project is considered to have a significant impact on the environment if it will:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services including fire protection, police protection, schools, parks, and other public facilities;

b) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

c) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

d) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

e) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed;

f) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;

g) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; or

h) Comply with federal, State, and local statutes and regulations related to solid waste.

Analysis in this section is based on available data, as well as a Water Supply Assessment prepared for the Project (Appendix F).

3.13.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.13-a: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services including fire protection, police protection, schools, parks, and other public facilities?

Fire Protection

The proposed Project will comply with Title 24 of the California Building Code. All of the commercial and residential buildings will have automatic fire alarms and sprinkler systems. Prior to recordation of any subdivision map, the applicant will be required to enter into an agreement with the City to contribute towards necessary fire protection equipment and/or facilities as determined through negotiations between the City and the applicant.

Police Protection

Expanded police coverage may be required for crime prevention and response to calls. According to the City of Tulare Police Department, the department consists of a total of approximately 100 employees and responded to 97,705 calls in 2017. According to the Tulare Municipal Service Review Update, the Tulare Police Department currently has a deficit of 37 sworn officers, 22 non-sworn officers, 28 vehicles, and 8,645 square feet of police station space when compared against the City standard. The Project proposes additional residential and commercial development in a previously undeveloped location, which will increase the need for police services. The Project could potentially require additional crime prevention and response services due to the existing workload of the Tulare Police Department. The Project will pay appropriate development fees based on the County's adopted fee calculations. While payment of appropriate development fees could result in the construction of new or altered fire protection services, no projects have been identified at this time. Any future projects will be required to fully comply with CEQA, and any impacts will be mitigated.

Schools

The Project area is served by the Tulare City School District for students in kindergarten through eighth grade and by the Tulare Joint Union High School District for high school. The property taxes from the new residents will provide increased funding for the school districts to help support future facility growth. In addition, the bonding capacity for the districts will increase, improving the ability of the districts to pursue bonds for school construction. The increased population generated by the proposed Project would increase the number of students attending local schools and could result in significant impacts to these facilities by requiring new facilities. The applicant would be required to pay development fees under SB 50 that would reduce potential impacts to less-than-significant levels. According to Government Code, Section 65996, the development fees authorized by SB 50 are deemed "full and complete school facilities mitigation."

Parks

As mentioned above, the Project is within the boundaries of the City of Tulare Parks and Recreation District. The closest parks in proximity to the site are: Blain Park and Prosperity Sports Park, located approximately 1,000 feet and 4,000 feet from the Project site, respectively. The proposed Project includes the development of a seven-acre park. In-lieu

dedication of the park facility will mitigate any impacts to additional facilities in the City. See further description of impacts in **Section 3.13, Recreation**.

Other Public Facilities

As mentioned above, the Tulare Public Library is located at 475 North M Street and is administered by the City of Tulare. It is not reasonably foreseeable that the estimated increased population would result in a direct need for a new library, because the library is within reasonable driving distance from the Project site.

CONCLUSION

This impact is less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.13-b: Would the Project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

The proposed project would be designed to be fully compliant with existing wastewater treatment requirements of the Central Valley Regional Water Quality Control Board. The proposed project would be connected to the sanitary sewer system, and wastewater would be removed by domestic sewer systems that would be installed as part of the project.

CONCLUSION

This impact is less than significant

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.13-c: Would the Project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Wastewater is collected throughout Tulare via a network of sanitary sewer collection pipelines ranging from six to 42 inches in diameter. With the aid of 15 sewer lift stations, the effluent is gravity-fed to the TWPCF located approximately 4.5 miles southwest of the Project site. There are approximately 18,500 residential connections, each typically with a six-inch sewer service connecting to the main. The current average daily wastewater volume according to the City's website is estimated to be approximately 12.0 mgd. The TWPCF provides primary and secondary treatment with a capacity of 18.0 mgd. The plant has eight storage/percolation ponds with a total capacity of 2881 acre-feet. (City of Tulare n.d.).

The Cartmill Avenue expansion project (construction starting 2019) will include the construction of additional wastewater infrastructure that will sufficiently serve the Project site.

The following Table (3.13-4) shows the amount of estimated wastewater that will be generated by the proposed Project. Based on the Table, a total of 102,290 Gallons per Day (gpd) of wastewater is estimated for the Project. This equates to approximately 0.10 mgd. As noted previously, the City TWPCF has an estimated capacity of 6.0 mgd. The proposed Project would contribute to less than 1.7% of the total remaining capacity of the TWPCF.

Table 3.13-4
Projected Sewer Flows Based on Land Use

Land Use Designation	Acreage	Adjusted Flow Coefficient (gpd/acre)	Total Flow (gpd)
Regional Commercial (Phase 1)	15.0	500	7,500
Regional Commercial (Phase 4)	53.6	500	26,800
Low-density Residential (Phase 2)	30.3	1,300	39,390
Medium-density Residential (Phase 3)	4.4	1,600	7,040
High-density Residential (Phase 3)	7.7	2,800	21560
Parks & Recreation (pond-Phase 1, park-Phase 2)	7.0	0	0
Arterial and Collector Right of Way	8.8	0	0
Total			**102,290**

gpd = Gallons per Day
*Based on calculations from City of Tulare – Sewer System Master Plan - Table 3.7
**Estimated units based on 22 units per acre

CONCLUSION

This impact is less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.13-d: Would the Project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Stormwater runoff will generally be directed, where feasible, to low-lying landscaped areas used as vegetated swales, or bioretention areas. The landscaped areas will likely store approximately six inches of water prior to overflowing into the storm drain system. The Project will capture and infiltrate 80 percent of the annual storm runoff according to California Stormwater Quality Association's Stormwater Best Management Practices Handbook.

The Project includes the construction of a seven-acre recreation area that features a stormwater retention basin. This basin will assist in managing the stormwater runoff on the Project site by naturally improving water quality and increasing groundwater penetration rates. The stormwater retention basin will allow for new wildlife habitats to be created and can also be used for recreational purposes.

CONCLUSION

This impact is less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.13-e: Would the Project have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?

The Project's water demands at buildout, are summarized in Table 3.13-5.

Table 3.13-5
Water Usage

Project Component	Description	Annual	
		Acre Feet	Million Gallons
Regional Commercial	68.6 acres	123.5	40.2
Low-density Residential	30 acres (132 units)	70.3	22.9
Medium-density Residential	4.4 acres (40 units)	12.9	4.2
High-density Residential	7.7 acres (170 units)	54.0	17.6
Parks and Recreation	7 acres	14.7	4.8
	Total	**275.4**	**89.7**

The basis for the estimated water usages depicted in Table 3.13-5 are:

- The City's 2015 Urban Water Management Plan, extending the City General Plan Update figures, estimates a population of 121,391 in 2040.

  It estimates total water demand as 10,284.9 million gallons in that year (31,563-acre feet). Extrapolating from Table 4.2 in that document, percentages of water usage by land use were projected to be:

Table 3.13-6
Projected Percentage of Water Usage by Land Use, 2040

Land Use	Percent of Total Water Usage
Single-family	49.6
Multi-family	7.2
Other (Commercia, Institutional, Government)	16.6
Industrial	23.4
Landscape	3.2

These land use percentages are similar to those estimated for the existing land uses in the City's 2010 Urban Water Master Plan:

Table 3.13-7
Estimated Percentage of Water Usage, 2010

Land Use	Percentage
Single-family	55
Multi-family	7
Other (Commercia, Institutional, Government)	16
Industrial	16
Landscape	6

Utilizing the more conservative of the two estimates (the 2015 UWMP percentages, reflect a lower usage for industrial purposes), Tulare's single-family residential water usage and multi-family water usages in 2040 would be approximately 50 and seven percent, respectively, of the total projected water usage of 10,284 million gallons in 2040, 5,142 million gallons and 720 million gallons annually.

With respect, then, to Project residential water usage, average per capita usage for single-family residents would be, based on a projected 2040 population of 121,391, with 81 percent in single-family residences,[1] the water usage per capita would be 143 gallons per day and 85 gallons per day, usage per unit would be 474 and 295 gallons per day, respectively.

In the 2010 Urban Water Master Plan, there were, 1,589 developed commercial/institutional land acres being utilized.

The 2006 total annual water usage was 5,788 million gallons. The Master Plans concluded that commercial/institutional water usage was, in 2010, approximately 16 percent of total usage. The annual usage per acre was thus [(.16 x 5,788)/1,589], .58 million gallons per year, 1.8-acre feet per acre per year.

[1] City of Tulare Planning Department, March 12, 2019; percentage of housing units in the City

Without more precise definition of the usages proposed for the commercial land use area of the Project it is difficult to estimate water usage. An analysis recently performed for a project containing described commercial and institutional land uses (Appendix B of the WSA for the Project) illustrates that difficulty. Land uses similar to those which might be developed for this Project were estimated to have water demands ranging from .9 (general commercial) to 3.4 (hotels) acre feet per year.

In the absence of more certainty as to this Project's "commercial development" land uses, the 1.8-acre feet per year acre derived from past Tulare data will be utilized, 1.8-acre feet per acre per year.

Based on prior City of Tulare park/pond water usage, the proposed seven-acre park/pond will require approximately 2.1-acre feet per acre and (7 x 2.1), 14.7-acre feet per year.

It is important to note that the water usage for the General Plan-designated land uses for the Project site water usage was considered as an effect of General Plan implementation in the adopted General Plan EIR. Such water usage is approximately the same as that required for Project implementation.

Water usage for construction and development is minimal to that required for occupancy of constructed land uses. Water usage for construction dust control, trench and roadway soils compaction, landscaping and related activities and usage is sporadic rather than long-term. Even on a short-term basis such usage does not require the water volumes required for human occupancy of residences and other structures, for waste disposal and for year-round landscaping. Its quantification for analysis is difficult but it clearly does not approximate or approach long-term water demand.

Implementation of the Project will result in an increased demand for municipal water and potentially require an extension of the existing City water system.

According to the WSA prepared for this Project, the total estimated Project water usage is approximately .00027 percent of total estimated water demand for the City.

The City has verbally confirmed their intentions to widen Cartmill Avenue to four lanes between the freeway interchange and Hillman Street (designated as Road 108 in the County). This project would include extending water and sewer lines in Cartmill Avenue to the intersection of Cartmill and Akers at the south side of the Project site. Staff expects this project to be completed prior to the completion of the proposed Project.

CONCLUSION

Based upon the Project description, its projected water usage, analyses of normal year, dry year and multiple dry year water demand and supply, and infrastructure availability and requirements, it is concluded that the proposed water supply for the Project will be, in all climate years, sufficient to meet Project water demands. Therefore, the impact is less than significant.

CONCLUSION

This impact is less than significant

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.13-f: Would the Project result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?

See Impact #3.13-c, above.

CONCLUSION

The proposed Project will result in an increase of wastewater to the TWPCF. However, the Cartmill Avenue expansion project would accommodate the additional demand resulting from this Project. Therefore, the impact is less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.13-g: Would the Project be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?

Based on the solid waste generation figures contained in Table 3.13-3 and the projected land uses of the site at full buildout, the expected generation of solid waste is not expected to adversely impact the waste infrastructure of the City. The Visalia Landfill still has approximately 40 million cubic yards available and the Project would not significantly contribute to any exceedance of capacity.

CONCLUSION

This impact is less than significant

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.13-h: Would the Project comply with federal, State, and local statutes and regulations related to solid waste?

Once operational, the proposed project would generate solid waste. All collection, transportation, and disposal of any solid waste generated by the proposed project would comply with all applicable federal, state, and local statutes and regulations. Prior to entering

into a landfill facility, solid waste collection service providers would be required to comply with federal, state, and local statutes and regulations related to solid waste. Therefore, no impact would occur.

CONCLUSION

No impact has been identified.

MITIGATION MEASURE(S)

No mitigation measures are required.

3.14 - Recreation

This section describes the affected environment and regulatory setting for parks and recreation. It also describes the recreation-related impacts that would result from implementation of the proposed Project.

3.14.1 - Environmental Setting

This section describes the existing setting regarding parks and recreation in the City of Tulare.

County of Tulare Parks

The County of Tulare owns and manages approximately 560 acres of parklands. Mooney Grove Park is the closest county park to the City of Tulare, approximately three miles northeast of the Project site. Mooney Grove Park encompasses approximately 139 acres and includes a variety of amenities including playgrounds, baseball fields, row-boats, disc golf, and picnic areas.

City Parks and Facilities

The City's inventory of parks and recreation facilities ranges from a rose garden to softball and baseball fields to community centers. Park facilities are classified into three categories: neighborhood parks, community parks, and city parks. Recreational facilities span from picnic shelters to sports fields. Tulare has 19 parks and maintains a total 363 acres of land within its Parks Division, including 295.65 acres of parkland, 35 acres of Landscape and Lighting Districts, and approximately 32 acres of green belts, medians, tree-lined streets, and building landscapes. Additionally, there are a number of elementary schools within Tulare which provide public open space during non-school hours (Pilegard, 2013).

3.14.2 - Regulatory Setting

Federal

There are no federal regulations related to parks and recreation that apply to the proposed Project.

State

Public Resources Code (PRC), Section 5400–5409, as codified in the Public Park Preservation Act of 1971, states that "No city, city and county, county, public district, or agency of the state, including any division department or agency of the state government, or public utility, shall acquire any real property, which property is in use as a public park at the time of such acquisition, for the purposes of utilizing such property for any non-park purpose, unless the acquiring entity pays or transfers to the legislative body of the entity operating the park sufficient compensation or land, or both."

Local

CITY OF TULARE GENERAL PLAN

The General Plan contains a goal directing the City to provide parks and recreational facilities to adequately meet the existing and future needs of residents and defined the City's parkland provision standard as four acres per 1,000 persons (City of Tulare, 2014). The policies included in the City of Tulare General Plan that relate to recreation are listed below.

Conservation and Open Space Element

GOAL

COS-4 To provide parks and recreation facilities and services that adequately meet the existing and future needs of all Tulare residents.

POLICIES

COS-P4.1 Parkland/Open Space Standards. The City's goal is to provide four acres of developed parkland per 1,000 residents. New residential or mixed-use developments containing a residential component may be required to provide parkland, or pay in-lieu fees, in this ratio as directed by the City.

COS-P4.2 Recreation and Cultural Opportunities. The City will encourage a variety of enjoyable leisure, recreation, and cultural opportunities that are accessible, physically attractive, safe, and uncrowded. The City shall provide an adequate balance of recreational opportunities including facilities to serve the varying needs and interests of the Tulare population.

COS-P4.3 Adequate Sites. The City shall provide adequate and convenient park sites to meet the City's existing and anticipated future park and recreation needs.

COS-P4.4 Park Upgrades. The City shall upgrade existing parks to meet the unmet needs of the residents as determined by the Parks Department.

COS-P4.5 Fair Share Responsibilities. The City shall ensure all future residential development is responsible for its fair share of the City's cumulative park and recreational service and facilities maintenance needs.

COS-P4.6 Land Dedication. The City shall continue its practice of requiring the dedication of community and neighborhood parklands as a condition of approval for large residential development projects (50 or more lots), if applicable.

COS-P4.7 Fees In Lieu of Parkland Dedication. The City shall allow the payment of fees in lieu of parkland dedication, especially in areas where dedication is not feasible, as provided under the Quimby Act.

COS-P4.8 Pocket Parks. The City will promote the utilization of pocket parks (approximately 0.25 to 0.50 acres) to establish a passive recreational and social gathering area in neighborhoods where it is deemed appropriate.

COS-P4.9 Neighborhood Parks. The City shall encourage the development of adequate neighborhood parks, five to 15 acres in size. These neighborhood facilities should include children's play equipment, paved games areas, free play fields, and perhaps a passive recreation area for parents and senior citizens.

COS-P4.10 Community Parks. The City shall encourage the development of conveniently-located community parks containing 20 to 50 usable acres for year-round use.

COS-P4.11 Regional Park. The City shall encourage the development of one major regional park at least 100 acres in size.

COS-P4.12 Santa Fe Trail. The City shall continue to expand and enhance the Santa Fe Trail system. As appropriate, given site locations, new developments will be required to dedicate land where needed to extend the trail.

COS-P4.13 Park Location and Design. The City shall effectively locate, design, and use public park facilities to serve the greatest number of Tulare citizens.

COS-P4.14 Collocation with Schools. The City may promote, when feasible, the collocation of parks with school facilities for the purpose of enhancing available open space and recreation.

COS-P4.15 Joint Use of Detention Facilities. At the discretion of the Director of the Parks and Recreation Department, the City may allow stormwater detention basins developed for recreation use to be counted toward park and land dedication requirements based on the following criteria:

- At least 75 percent of land dedication shall be 100 percent usable;
- Up to 25 percent of land dedicated may be partially usable; and
- Unusable land will not be credited.

COS-P4.16 Funding and Maintenance of Recreational Facilities. The City shall ensure the continued funding of new recreational facilities and maintenance and improvement of existing City-owned recreational facilities and require new development and existing residents to participate in alternate maintenance funding mechanisms wherever appropriate.

COS-P4.17 Siting to Maximize Security. The City shall require that new parks be located and designed in such a way as to facilitate their security and policing.

COS-P4.18 Incorporation of Open Space. The City shall encourage the development of natural open space areas in regional and community parks.

COS-P4.19 Public Open Space Steward. The City shall serve as the steward of public open space and ensure that the use and maintenance of the open space is carried out in an environmentally-responsible manner.

COS-P4.20 Recreational Program Coordination. The City shall coordinate its recreation programs with those of other public agencies and private non-profit organizations to maximize recreation opportunities in the City.

COS-P4.21 Youth Programs and Services. The City shall provide and promote recreational services and programs that reflect the cultural diversity of the community.

CITY OF TULARE MUNICIPAL CODE

Chapter 8.56 establishes that development impact fees shall be imposed upon the issuing of building permits for developments to provide park, community center, and trail construction and improvements.

3.14.3 - IMPACT EVALUATION

Methodology

According to the 2035 City of Tulare General Plan, the City operates 295.65 acres of parkland and has 60,627 residents. This results in a parkland ratio of approximately 4.9 acres per 1,000 residents. This meets the parkland standard of four acres per 1,000 residents. The Project includes the construction of seven acres of parkland and open space in the third phase of the Project, expected to be completed by 2039.

Thresholds of Significance

Consistent with *Appendix G* of the *CEQA Guidelines*, the proposed Project is considered to have a significant impact on the environment if it will result in:

a) Increased use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;

b) The construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

3.14.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.14-a: Would the Project result in increased use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The proposed Project includes the construction of a seven-acre park to accommodate the additional residential development. This park would have the ability to expand as necessary

to meet the City's parkland provision standard. Additionally, the Project site is three miles southwest of Mooney Grove Park, a 139-acre County-operated park and within one mile of Blain Park and Prosperity Sports Park, both operated by the City of Tulare. Residents of the proposed Project would have access to these facilities in addition to the park located on the Project site. The Project proposes 342 residential units and at an estimate of four people per unit. The Project would not cause the exceedance of the parkland provision standard of four acres per 1,000 residents.

CONCLUSION

This impact is considered to be less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.14-b: Would the Project result in the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

The Project includes seven acres of park/recreation area. This park will be located on the eastern border of the property and will be designed with a retention basin/pond to hold storm drain runoff of the site. As discussed in Impact #3.14-a, the Project would not require the construction of additional recreational facilities due to the existing ratio of at least four acres per 1,000 residents. Given the close proximity to Mooney Grove Park, Blain Park, and Prosperity Sports Park, the Project is not expected to require the construction or expansion of additional recreational facilities. The included park will be designed in accordance with applicable standards and with the ability to be expanded if deemed necessary by the City to meet the parkland provision standard.

The construction of a seven-acre park as part of the proposed Project will not have a significant impact on the environment due to soil compaction, damage to vegetation and wildlife, or decreased water quality due to the disturbed state of the site and lack of biological resources. For more information regarding these specific impacts, refer to the Agriculture and Forestry Resources, Biological Resources, and Geology, Soils, and Seismicity sections of this EIR.

CONCLUSION

This impact is considered to be less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

3.15 - Transportation/Traffic

This section describes the environmental setting, affected environment and regulatory setting for transportation and traffic. It also describes the impacts on transportation and traffic that would result from implementation of the proposed Project and the mitigation measures that would reduce these impacts. Descriptions and analysis in this section are based on the Traffic Impact Study Report prepared for the proposed Project, included in Appendix G of this EIR (Ruettgers & Schuler 2018).

3.15.1 - ENVIRONMENTAL SETTING

Area Roadway Network

The Project is located near the northern edge of the Tulare city limits, at the Cartmill Avenue/State Route 99 (SR 99) interchange. SR 99 runs north-south, from Tehama County in Northern California to its intersection with Interstate (I) 5 north of the Los Angeles/Kern County line. The local circulation system serving the Project site includes Cartmill Avenue, State Route 99, Hillman Street, J Street, N. Oaks Street, M Street, E. Oakdale Avenue, Prosperity Avenue, and Retherford Street.

The Circulation Element includes a City-wide diagram map that illustrates existing and future transportation infrastructure. The proposed Project site is located along Cartmill Avenue, which is designated as a major arterial roadway, and N. Oaks Street, designated an arterial roadway, by the Circulation Element of the City of Tulare General Plan (City of Tulare 2014). The City of Tulare is in the process of updating this element, and the current proposal is for Akers Street to be extended to bisect the Project site, roughly dividing the commercial and multi-family residential. Akers Street would be classified as a major arterial and provide access through the Project site from both the north and the south.

Public Transit

The City of Tulare is served by three different transit systems:

- Public transportation bus service is provided by Tulare Intermodal Express, which has six scheduled fixed routes that service Tulare and one express bus that provides service to Visalia;
- Dial-a-Ride and para-transit service extends throughout most of the City; and
- Regional transportation is operated by Tulare County Area Transit, a fixed route bus service that connects Tulare to Delano and provides connection routes to the other communities in Tulare County.

Rail Transportation

Tulare is served by a Union Pacific Railroad freight line running parallel to J Street, but there is currently no existing passenger rail infrastructure in the City of Tulare.

Airport Facilities

The nearest public airport facility is the Tulare Municipal Airport - Mefford Field, located approximately six miles south of the Project site. The general aviation airport serves personal and business aircraft. The airport has two paved runways and averages 72 aircraft operations per day (AirNAV 2018).

Bicycle Facilities

Currently, there is a bike lane on E. Cartmill Avenue adjacent to the Project site. The arterial that provides access to the Project site, N. Oaks Street, does not have a bike lane. There are no bike paths in or near the Project site. Improvements to the bike lane on Cartmill Avenue to a Class 1 are proposed, but there is no established timeline for this project (Tulare County Association of Governments, 2018).

Existing Conditions

EXISTING TRAFFIC COUNTS AND ROADWAY GEOMETRICS

Existing weekday peak hour turning movement volumes were field measured at the study intersections in September 2018. Counts were conducted from 7:30 to 8:30 a.m. and 4:30 to 5:30 p.m. to coincide with the peak hours of traffic. Traffic count data worksheets are provided in Appendix G of this EIR.

EXISTING FUNCTIONAL ROADWAY CLASSIFICATION SYSTEM

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the type of service they are intended to provide. Fundamental to this process is the recognition that individual streets and highways do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads.

The following are general descriptions of the roadway types shown on the City of Tulare Circulation Master Plan:

State Freeways and Highways – Freeways and highways provide for high volume, high speed, and interregional travel with limited local access via widely spaced interchanges (one-mile minimum). Freeway access is limited to designated interchanges; no direct access to adjacent land uses is permitted for any use.

- SR 99 – currently exists as a four-lane freeway with a posted speed limit of 65 miles per hour (mph) through the study area. According to the California Department of Transportation's (Caltrans) website, the AADT along SR 99 in 2013 was 63,000.

Expressways - Highways that carry large volumes of traffic relatively long distances within or through an urban or rural area. They also often serve considerable local traffic traveling short distances. Intersections along these expressways can be at grade to accommodate

traffic entering and exiting the roadway. Expressways should be continuous through the urban or rural community they serve and link to arterial routes. The designated right-of way for expressways varies dependent upon the needs of the specific facility. Additional right-of way may be required at some intersection.

Arterials (Major Arterials and Arterials) - Arterials are intended to: (a) provide a high level of capacity in selected high-volume corridors; (b) provide connections between the freeway system and arterials and collector streets via interchanges; and (c) provide access to major traffic generators. Arterials are moderate-speed through streets with average daily traffic over 10,000 vehicles per day. Access to an arterial should be primarily accomplished through primary collector and secondary collector streets. Limited direct access to industrial, commercial, and high-density residential uses is permitted as approved through site plan review.

- **Cartmill Avenue** – an east-west major arterial that provides access to agricultural and residential land uses as well as an interchange with State Route 99. In the vicinity of the project, Cartmill Avenue exists as a six-lane roadway, but reduces to a two-lane roadway east of N. Oak Street.
- **Hillman Avenue -** a north-south major arterial that provides access to commercial, agricultural and residential land uses north of Prosperity Avenue. In the vicinity of the project, Hillman Street exists as a six-lane divided roadway south of Cartmill Avenue, and a four-lane divided roadway north of Cartmill Avenue.
- **J Street** - a north-south major arterial that provides access to commercial, agricultural and residential land uses across central Tulare, and provides access to State Route 99 at its northern extent. In the vicinity of the Project, J Street primarily exists as a two-lane roadway, however it is expanded to four lanes for a short segment at the Cartmill Avenue overpass.
- **M Street -** a north-south minor arterial north of Tulare Avenue. It primarily provides access to residential land uses across central Tulare. In the vicinity of the Project, it exists as a four-lane roadway between Cartmill Avenue and the southern segment of N. Oaks Street, and it shares the N. Oaks Street alignment north of Cartmill Avenue.
- **East Oakdale Avenue** - an east-west major arterial that provides access to agricultural and agricultural production land uses north of metropolitan Tulare, as well as a northbound connection with State Route 99. In the vicinity of the Project, E. Oakdale Avenue exists as a two-lane roadway.
- **Prosperity Avenue** - an east-west major arterial east of Blackstone Street and a minor arterial west of Blackstone Street. Prosperity Avenue provides access to commercial and residential land uses across northern Tulare and provides northbound access to State Route 99. In the vicinity of the Project, Prosperity Avenue exists as a four-lane divided roadway and shares a short portion of its alignment with N. Blackstone Street.
- **Retherford Street -** a north-south minor arterial that extends south from Cartmill Avenue to the south where it becomes Leland Avenue at the entrance of the Tulare Outlet Center. Retherford Street provides access to agricultural as well as developing commercial land uses. In the vicinity of the Project, it exists as a two-lane roadway.

Industrial Collectors - intended to transfer truck traffic in industrial and heavy commercial areas to an arterial. Average daily traffic on a primary collector will usually average less than 10,000 vehicles per day. Direct access for commercial and industrial uses and developments should be permitted consistent with adopted improvement standards.

Primary Collectors – Streets intended to transfer traffic from collector and minor streets to an arterial. Average daily traffic on a primary collector will usually average less than 10,000 vehicles per day. Primary collector streets should provide direct linkages to neighborhood shopping areas. Primary collector intersections should be staggered to discourage their use as through access ways by-passing arterials. Direct access for low-density residential, commercial, and industrial uses and developments should be permitted consistent with adopted improvement standards.

- **North Oaks Avenue** – a north-south primary collector that provides access to residential land uses to the south of State Route 99 and agricultural land uses to the north of State Route 99. While it exists to the north and south of State Route 99, N. Oaks Street is discontinuous and does not currently provide access to the highway. In the vicinity of the project, N. Oaks Street exists as a two-lane roadway and shares the M Street alignment south of Cartmill Avenue.

Secondary Collectors – intended to carry moderate volumes of traffic from local streets to primary collectors and arterials. Average daily traffic on a secondary collector normally averages 500-4,000 vehicles per day. Direct access should be permitted consistent with approved standards. Secondary collector streets are not delineated on the Circulation Diagram; instead they are located through the development and subdivision approval process.

- **Collectors A & B** – these two collectors will be constructed according to the Project's site plan to provide access to the residential and commercial development on site.

Local Streets – intended as low capacity streets primarily serving low-density residential uses. Average daily traffic on a local street averages less than 1,000 vehicles per day, although most local streets average less than 500 vehicles per day. Direct access to local streets is permitted consistent with adopted improvement standards. Local streets are not delineated on the Circulation Diagram; instead, they are designated through the development and subdivision approval process.

Affected Streets and Highways – Street and highway intersections and segments near and adjacent to the Project site were analyzed to determine LOS utilizing the current edition of the Highway Capacity Manual (HCM)-based methodologies. The study intersections and street and highway segments included in this analysis are listed below.

Intersections

Existing Intersections

- Oakdale Avenue & N. Oaks Street/Akers Street
- Akers Street/N. Oaks Street & Pacific Avenue
- J Street & Cartmill Avenue (Northerly Intersection)
- Cartmill Ave & J Street (Southerly Intersection)
- Cartmill Avenue & N. Oaks/M Street
- Cartmill Avenue & SR 99 SB Ramps
- Cartmill Avenue & SR 99 NB Ramps
- N. Oaks Street (Project Access) & Cartmill Avenue
- Retherford Street & Cartmill Avenue
- Cartmill Avenue & Hillman Street
- Cartmill Avenue & N. Mooney Boulevard
- Prosperity Avenue & J Street
- Prosperity Avenue & Hillman Street

Roadway Segments

Existing Segments

- Cartmill Avenue /J Street: North Intersection at J Street to South Intersection at Cartmill Avenue
- Cartmill Avenue: J Street to N. Oaks Street
- Cartmill Avenue: N. Oaks Street to SR 99 SB Ramps
- Cartmill Avenue: SR 99 SB Ramps to SR 99 NB Ramps
- Cartmill Avenue: SR 99 NB Ramps to Akers Street
- Cartmill Avenue: Akers Street to Retherford Street
- Cartmill Avenue: Retherford Street to Hillman S Street
- Cartmill Avenue: Hillman Street to N. Mooney Boulevard
- Oaks Street: Oakdale Avenue to Pacific Avenue
- Akers Avenue: Pacific Avenue to Cartmill Avenue
- J Street: Cartmill Avenue to Prosperity Avenue
- Hillman Street: Cartmill Avenue to Prosperity Avenue

Future Segments

- Pacific Avenue: The Tulare General Plan calls for an extension from Hillman Street to Akers Street, along the north border of the Project site.

Existing Intersection Operations

Tables 3.15-1 and 3.15-2 illustrate the existing conditions at the intersections that may be affected by the proposed Project.

Table 3.15-1
Existing AM Intersection LOS

#	Intersection	Control Type/Direction	2018
1	Oakdale Ave. & Akers St.	EB Stop WB Stop	A A
2	Akers St. & Pacific Ave.	WB Stop	A
3	J St. & Cartmill Ave. (Northerly Intersection)	Signal	A
4	Cartmill Ave. & J St. (Southerly Intersection)	Signal	A
5	Cartmill Ave. & N. Oaks St./M St.	Signal	D (43.5)
6	Cartmill Ave. & SR 99 SB Ramps	Signal	A
7	Cartmill Ave. & SR 99 NB Ramps	Signal	A
8	Akers St. (Project Access) & Cartmill Ave.	Signal	A
9	Retherford St. & Cartmill Ave.	NB Stop	C
10	Cartmill Ave. & Hillman St.	Signal	C
11	Cartmill Ave. & N. Mooney Blvd.	Signal	C
12	Prosperity Ave. & J St.	Signal	C
13	Prosperity Ave. & Hillman St.	Signal	E (63.0)

Table 3.15-2
Exiting PM Intersection LOS

#	Intersection	Control Type/Direction	2018
1	Oakdale Ave. & Akers St.	EB Stop WB Stop	A B
2	Akers St. & Pacific Ave.	WB Stop	A
3	J St. & Cartmill Ave. (Northerly Intersection)	Signal	A
4	Cartmill Ave. & J St. (Southerly Intersection)	Signal	B
5	Cartmill Ave. & N. Oaks St./M St.	Signal	C
6	Cartmill Ave. & SR 99 SB Ramps	Signal	B
7	Cartmill Ave. & SR 99 NB Ramps	Signal	A
8	Akers St. (Project Access) & Cartmill Ave.	Signal	B
9	Retherford St. & Cartmill Ave.	NB Stop	C
10	Cartmill Ave. & Hillman St.	Signal	C
11	Cartmill Ave. & N. Mooney Blvd.	Signal	C
12	Prosperity Ave. & J St.	Signal	B
13	Prosperity Ave. & Hillman St.	Signal	E (75.3)

3.15.2 - REGULATORY SETTING

Federal

FEDERAL CLEAN AIR ACT

The Federal Clean Air Act and foreseeable legislation, requires that the Regional Transportation Plan integrate transportation and air quality during the planning process. The 1990 California Clean Air Act (CCAA) Amendment requires the following stipulations in order to receive federal funding:

- Establish a permitting program that achieves no net increase in stationary source emissions;
- Develop a strategy to reduce vehicle trips, use and miles traveled;
- Increase average vehicle ridership to 1.5 persons per vehicle during commute hours;
- Establish Best Available Retrofit Control Technology (BARCT) requirements for all permitted sources; and
- Development of indirect and area source programs.

Failure to meet Federal and State requirements of the CAA may result in the following disciplinary actions:

- Limitations on the use of federal funds for highway construction;
- Cut off of federal grants for construction of sewage treatment plants; and
- Prohibition of development of new stationary sources of air pollution.

State

CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

The Caltrans Guide for the Preparation of Traffic Impact Studies, dated December 2002, indicates that Caltrans endeavors to maintain a target Level of Service (LOS) at the transition between LOS C and LOS D on State facilities (e.g., SR99).

On State facilities a significant impact is recognized if a proposed project will decrease the LOS below C or if a project will exacerbate an existing intersection operating at LOS D, E, or F by decreasing the LOS at the intersection.

The Caltrans regulations below apply to the potential transportation and traffic impacts of the proposed Project.

- **California Vehicle Code, Division 15, Chapters 1 through 5 (Size, Weight, and Load)** include regulations pertaining to licensing as well as the size, weight, and load of vehicles that operate on State highways.
- **California Street and Highway Code Sections 660–711** require permits from Caltrans for any roadway encroachment. The sections also include regulations pertaining to

the care and protection of State and county highways and provisions for the issuance of written permits, which are required when a load exceeds Caltrans' weight, length, or width standards for public roadways and State highways.

TULARE COUNTY ASSOCIATION OF GOVERNMENTS

The Tulare County Association of Governments (TCAG) is the regional transportation planning agency, the designated metropolitan planning organization (MPO), the regional comprehensive planning agency and the local transportation commissions for Tulare County.

The role of TCAG is to foster intergovernmental coordination, undertake comprehensive regional planning with an emphasis on transportation issues, and provide a forum for citizen input into the planning process and to provide technical services to its member agencies. In all these activities the commission works to develop a consensus among its members regarding multi-jurisdictional transportation issues.

Regional Transportation Plan

The Tulare County Association of Governments 2018 Regional Transportation Plan (RTP) was adopted by TCAG in July 2018. The 2018 RTP ensures that the County's transportation system and implementation policies/programs will safely and efficiently accommodate growth envisioned for the communities of Tulare County through the year 2042 (Tulare County Association of Governments, 2018).

Sustainable Communities Strategy

TCAG implements its 2018 Regional Transportation Plan and Sustainable Communities Strategy. This 2018 edition reflects the horizon or "planning" year of 2042, ensuring that the region's transportation system and implementation policies/programs will safely and efficiently accommodate growth envisioned in the Land Use Elements of the communities of Tulare County. Pursuant to SB 375, the SCS shows how TCAG will achieve State-mandated greenhouse gas reduction targets for the region.

Local

CITY OF TULARE GENERAL PLAN 2035

The Transportation and Circulation Element addresses the movement of people and goods and the facilities needed to accommodate them, which include: roads, railroads, bicycle routes, sidewalks, public transportation, and airports. Goals and associated policies that directly relate to transportation and traffic and the proposed development are the following:

Land Use Element

GOAL

LU-4 To promote commercial development that meets present and future needs of Tulare residents, the regional community, and visitors and to enhance economic vitality and sustainability.

POLICIES

LU-P4.13 Incorporation of Alternative Transportation. Commercial facilities should be designed to encourage and promote transit, pedestrian, and bicycle access. The City shall require, when feasible, that new commercial development be designed to encourage and facilitate pedestrian and bicycle circulation within and between commercial sites and nearby residential areas.

Transportation and Circulation Element

GOAL

TR-1 To develop an integrated transportation system that provides for the safe and efficient movement of people and goods.

POLICIES

TR-P1.1 Integrated Transportation System. The City shall continue to work cooperatively with the various local, state, and federal transportation agencies (i.e., Caltrans, TCAG, Tulare County, and regional transit providers) to maintain a multi-modal transportation system that is well-integrated and interconnected in terms of service, scheduling, and capacity, and that effectively accommodates planned land uses and related transportation needs, and that promotes the safe movement of people and goods and the efficient use of limited public resources.

TR-P1.2 Road Improvements. Land use planning and transportation decisions shall be correlated so that planned land uses are supported by the appropriate types of circulation service, levels of service, and the timing of transportation improvements. Wherever practicable, road improvements shall complement regional needs and initiatives.

TR-P1.3 Consistency with Airport Land Use Commission Policies. The City shall ensure that all development is consistent with the policies adopted by the Tulare County Airport Land Use Commission and the Tulare Airport Master Plan (except where, pursuant to Public Utilities Code Sections 21676 and 21676.5, the City Council, pursuant to a two-thirds vote, exercises its option to conclude that notwithstanding a negative recommendation from the ALUC, the Council's proposed action is consistent with the purposes of providing for the orderly

development of the Airport and the residential uses surrounding the airport while protecting the public health, safety, and welfare by minimizing the public's exposure to excessive and safety hazards.)

GOAL

TR-2 To maintain an efficient, affordable, and safe roadway system throughout Tulare in a way that is economically sustainable and fits within the projected budgeted resources.

POLICIES

TR-P2.1 Circulation Diagram. The City shall utilize and maintain the Circulation Diagram to designate the classification for all major roadways, designate significant transit facilities, and designate bicycle facilities.

TR-P2.2 Roadway Standards. The City shall utilize roadway standards for new roadways, for determining improvements for new projects, and as part of City projects for roadway enhancements and maintenance.

TR-P2.3 Level of Service Standard. The City shall maintain Level of Service of "D," as defined in the Highway Capacity Manual (published by the Transportation Research Board of the National Research Council), as the minimum desirable service level at which freeways, arterial streets, collector streets and their intersections should operate.

TR-P2.4 Freeway Improvements. The City shall coordinate with Caltrans to establish priorities for freeway improvements and initiate a process for the design, funding, and construction of improved freeway interchanges.

TR-P2.5 Interchange Design Coordination. The City shall coordinate with Caltrans on the construction and design of identified future freeway interchange improvement needs and on the establishment of a cooperative funding approach for the required improvements.

TR-P2.6 Highway Right-of-Way. The City will work with Caltrans to ensure that new development projects include the dedication of land to match the ultimate right-of-way as delineated in the Caltrans Transportation Concept Reports.

TR-P2.7 Relocate State Route 137. The City shall continue to work with Caltrans to relocate State Route 137 out of the downtown area (to Paige and Mooney Avenues) to better facilitate truck movements and downtown safety.

TR-P2.8 Traffic Signal Spacing. The City shall ensure traffic signals are spaced no closer than ¼-mile on major arterials and arterials, except in unusual circumstances. The intersections of arterial and collector streets and the access driveways to

major traffic generators shall be located so as to maintain this minimum signal spacing.

TR-P2.9 Roundabouts. Before installing a new signal, the City shall consider whether a roundabout would be an appropriate, safe, and cost-effective solution.

TR-P2.10 Roadway Improvements. The City shall improve existing roadway links and intersections which are identified as operating below Level of Service "D" standard or have other significant existing safety or operational deficiencies.

TR-P2.11 Local Street Traffic. The City shall ensure local streets do not carry unreasonable levels of through traffic. If local streets are determined to be carrying unacceptable levels of through traffic, the City shall take appropriate action to reduce the through traffic levels by means deemed acceptable under the Vehicle Code of the State of California.

TR-P2.12 Arterial Mobility. The City shall maintain system of north-south and east-west arterial streets at approximately one-half-mile intervals (preferred, less separation may be appropriate given the location) to provide for the mobility of the traveling public.

TR-P2.13 Collector Road Design. The City shall maintain a system of collector roads located approximately every one-quarter mile in the city's developed areas.

TR-P2.14 Driveway/Curb Cut Consolidation. The City shall encourage the consolidation of driveways, access points, and curb cuts along existing developed major arterials or arterials when new development or a change in the intensity of existing development or land uses occurs or when traffic operation or safety warrants.

TR-P2.15 Shopping Center Ingress/Egress. The City shall ensure ingress and egress to shopping centers are carefully designed in order to promote traffic safety. Left hand movements into and out of commercial areas should be minimized and existing points of ingress and egress shall be consolidated whenever possible.

TR-P2.16 Commercial Driveway Separation. The City shall ensure the distance between driveways along commercially developed arterials is not less than 400 feet (measurement shall be from centerline to centerline). Where this spacing is not practical, the proposed development shall provide acceptable traffic mitigation measures.

TR-P2.17 Driveway Siting. The City shall encourage that driveways be located on adjacent collector streets rather than on arterial streets.

TR-P2.18 Dual Access. The City shall require at least two (2) independent access routes for all major development areas.

TR-P2.19 Specific Facility Driveway Siting. The City shall ensure driveways for specific facilities (i.e., service stations) near intersections are not serviced by median breaks and are located no less than 50 feet from the intersection. (The measurement shall be from the curb return to the nearest edge of the driveway). If more than one driveway is required to serve a property, the driveways shall be separated by a minimum of 50 feet. (The 50 feet are to be measured edge-to-edge, not centerline to centerline).

TR-P2.20 Major Activity Center Access. The City shall ensure that driveway access to major activity centers is located no closer than 200 feet to the adjacent intersection of a collector or arterial street. (Measurement shall be from the curb return to the nearest edge of the driveway).

TR-P2.21 Median Design. The City shall encourage the use of concrete medians where left turn control is needed and shall also use painted medians on two-way left turn pockets where appropriate. Where concrete medians are provided, median breaks should be spaced not less than 300 feet apart.

TR-P2.22 Master Planned Commercial Development. The City shall require that future commercial development or modifications to existing development are master planned with limited points of ingress and egress onto major arterials and arterials.

TR-P2.23 Four-Leg, Right Angle Intersections. The City shall ensure, where possible, major arterials, arterials, and collectors form four-leg, right-angle intersections. The City shall discourage jog, offset, and skewed intersections of such streets to the extent possible.

TR-P2.24 Traffic Noise. The City shall ensure that circulation systems minimize excessive noise impacts on sensitive land uses. The City shall require new development to mitigate traffic noise impacts where warranted (e.g., by constructing sound walls or berms or increasing setback distances).

TR-P2.25 Roadway Standard Consistency. The City shall require new development to construct public streets within their project boundaries to standards adequate to serve projected traffic volumes. The City shall ensure that plan lines and rights-of-way be provided to meet the standards of the appropriate street designation.

TR-P2.26 Limiting Local Street Use. The City shall encourage residential subdivisions to provide access from collector streets and discourage the use of local streets as alternatives (a bypass) to congested arterials. The City shall ensure that neighborhood streets are designed to reduce excessive speeds.

TR-P2.27 Orientation of Subdivision Away from Arterials. The City shall require residential development to be oriented away (side-on or rear-on) from major arterials and arterials, and properly buffered from these roadway types to preserve the carrying capacity on the street and protect the residential environment. No single-family residence driveways are allowed on collector streets.

TR-P2.28 Connectivity. The City shall promote connectivity throughout residential street patterns. Where cul-de-sacs are permitted, the City shall promote pedestrian and bicycle travel by including pathways as appropriate to connect cui-de-sacs to other streets or community facilities such as parks and schools.

TR-P2.29 Traffic Signal Management. The City shall synchronize and otherwise manage traffic signals on arterial streets to the extent possible to facilitate the movement of people and to minimize stops or delays.

TR-P2.30 Environmental Impacts of Roadway Design. The City shall ensure that construction of new roadways and expansion of existing streets mitigate, to the extent feasible, impacts on air quality, noise, and sensitive biological areas.

TR-P2.31 Commercial Area Access. The City shall require commercial projects to provide frontage roads and/or access controls to reduce traffic congestion.

TR-P2.32 Emergency Vehicle Routes. The City shall establish a street network that provides quick, efficient routes for emergency vehicles, including police, fire, and emergency medical vehicles.

TR-P2.33 Emergency Railroad Crossing. As funding allows, the City will continue to seek opportunities to construct grade-separated east-west railroad crossing at locations which facilitate adequate emergency vehicle movement between west-side neighborhoods and east-side medical facilities.

TR-P2.34 Street Design. The City shall promote street design that provides an environment which encourages transit use, biking, and pedestrian movements.

GOAL

TR-3 To maintain a system for funding needed roadway improvements that ensure a safe and efficient level of service that meets the City's established standards.

POLICIES

TR-P3.1 Roadway Improvement Responsibility. The City shall ensure future development is responsible for its fair-share of street improvements required by cumulative traffic increases.

TR-P3.2 Fair Share Improvements and Maintenance. The City shall ensure that responsibility for all major arterial, arterial, and collector street improvement and maintenance needs, existing and future, is allocated on a fair-share basis between the City and benefiting future development.

TR-P3.3 Roadway Improvement Funding Sources. The City shall pursue designated gas and sales tax subventions, other state or federal sources, or the City's general fund complete needed major arterial, arterial, and collector street connections identified as existing needs.

TR-P3.4 Developer Dedication. The City shall require the dedication of right-of-way or construction of planned facilities within and adjacent to new development projects when such improvements are deemed necessary to promote safe and efficient circulation patterns.

TR-P3.5 Other Funding Sources. The City shall work with Tulare County, TCAG, Caltrans, and other jurisdictions and agencies to secure additional funding to meet transportation funding shortfalls for priority projects and other modes of transportation (e.g., bike and transit).

TR-P3.6 Roadway Improvement Prioritization. The City shall take potential economic development benefits into consideration when prioritizing roadway improvements and maintenance.

GOAL

TR-4 To maintain and develop an adequate transit system that provides for the local and regional transit needs of Tulare residents.

POLICIES

TR-P4.1 Transit Use Promotion. The City shall encourage the increased use of public transit as a means to reduce traffic congestion and air quality impacts.

TR-P4.2 Integration of Public Transportation into New Development Proposals. The City shall evaluate new development proposals to ensure adequate public transportation facilities (e.g., a continuous parking lane with bus stops, special bus turn-outs, etc.) are incorporated.

TR-P4.3 Pedestrian Access to Transit. The City shall ensure pedestrian access to transit along arterials and collectors is available where security walls, noise barriers, or fences are proposed adjacent to residential development.

TR-P4.4 Bus Stop Amenities. The City shall encourage bus stop seating, shelters, safety lighting, and trash receptacles to be integrated into wall designs along arterials or collectors adjacent to residential neighborhoods.

TR-P4.5 Transit Links to Other Communities. The City shall encourage the provision of adequate public transportation links with other communities in Tulare County and adjacent counties.

TR-P4.6 Regional Public Transportation Service. The City shall support and facilitate reasonable proposals to bring regional public transportation service (including Amtrak or other passenger rail service) to Tulare.

TR-P4.7 Railroad ROW Conversion. The City shall work to preserve the right-of-way of abandoned railroads for future transit routes.

TR-P4.8 Transit Compatible Land Use. The City shall encourage the clustering of land uses that generate high trip volumes and other transit-oriented designs to foster the demand needed to support transit activity. Transit-oriented designs should include:

- Provision of sheltered bus stops with new development;
- Location of medium and high-density development near transit services;
- Linking of residential uses to transit stops via continuous sidewalks/pedestrian paths; and
- Incorporation of park-and-ride lots to accommodate not only motorists, but also other users of public transit and van or carpooling.

GOAL

TR-5 To provide adequate convenient parking in the city.

POLICIES

TR-P5.2 Adequate Parking throughout City. The City shall ensure that adequate and convenient parking is provided in all residential neighborhoods, and industrial, office, and commercial areas.

TR-P5.3 Public Development. The City shall ensure new public development in and around Downtown provides adequate on-site parking in accordance with the Zoning Ordinance.

TR-P5.4 On-Site Parking for High-Demand Uses. The City shall require Downtown businesses that generate high parking demand, to provide onsite parking in accordance with the Zoning Ordinance.

TR-P5.5 Convenient Walking Distance. The City shall ensure parking is within convenient walking distance and is not separated by arterial or collector streets from the development it serves.

TR-P5.6 Non-Residential Parking. The City shall discourage nonresidential parking on residential streets.

TR-P5.7 Shared Parking. The City shall promote shared parking among adjacent land uses, especially those whose demand for parking peaks at different times, to minimize land consumption, paving, and curb cuts.

TR-P5.8 Visual Integration. The City shall require parking lots along street frontages to be well designed to reduce their visual impact and maximize pedestrian and bicycle compatibility and safety.

GOAL

TR-6 To maintain an efficient and safe non-vehicular circulation system throughout Tulare.

POLICIES

TR-P6.1 Pedestrian Facilities. The City shall strive to provide continuous and safe sidewalks, paths, and appropriate crosswalks along all city streets and through appropriate open space areas, especially near schools, parks, in the Downtown area, and in other areas with substantial pedestrian traffic.

TR-P6.2 Provision of Sidewalks for New Development. The City shall require all new development to provide sidewalks or other suitable pedestrian facilities. Whenever feasible, pedestrian paths should be developed to allow for unobstructed pedestrian flow to major destinations such as bus stops, schools, parks, and shopping centers.

TR-P6.3 Correction of Sidewalk Deficiencies. The City shall encourage the adjacent property owner to repair sidewalk deficiencies (i.e., damage to existing sidewalks or lack of sidewalks) in established neighborhoods.

TR-P6.4 Non-Vehicular Access. The City shall ensure all recreation areas, public places, and commercial developments are designed to facilitate easy access by pedestrians and bicycles. Development designs for these land uses shall include benches, bike racks, etc., when appropriate.

TR-P6.5 Multi-Purpose Trail. The City shall work to establish a connected, multi-purpose trail system to facilitate walking and other nonvehicular means of transportation as viable modes of transportation and recreation. Wherever possible, the City shall work with the Tulare Irrigation District to site multi-purpose trails adjacent to irrigation canal alignments.

TR-P6.6 Bike Route System. The City shall continue to work with TCAG, other local jurisdictions, and agencies to maintain and implement a connected, comprehensive bike path, bike lane, and bike route system throughout the city, including those routes designated on the Land Use/Circulation Diagram and within the Tulare County Regional Bike Plan. The City shall promote the development of a comprehensive and safe system of recreational and

commuter bicycle routes that provide connections between the city's major employment and housing areas, between its existing and planned bikeways, and between schools, parks, retail shopping, and residential neighborhoods.

TR-P6.7 Railroad Right-of-Way Conversion. The City shall investigate alternative transportation uses (bicycle paths and pedestrian trail systems) for existing and abandoned rights-of-way.

TR-P6.8 Safe Routes to School. The City shall cooperate with local schools to develop, maintain, and update a Safe Routes to School program.

TR-P6.9 Alternate Funding. The City shall consider alternative sources of funding for the development and improvement of bikeways and pedestrian pathways.

TR-P6.10 Intergovernmental Coordination. The City shall continue to coordinate bikeway development efforts between various departments, TCAG, and other local jurisdictions and agencies involved in the planning, construction, and operation of bikeways.

TR-P6.11 Coordination with Transit Facilities. The City shall coordinate the location of bicycle and pedestrian facilities (sidewalks, bicycle lockers/storage, etc.) with transit stops fostering a multi-modal environment.

GOAL

TR-7 To improve the city's transportation systems through use of transportation systems management (TSM) and transportation demand management (TDM).

POLICIES

TR-P7.1 TSM/TDM. The City shall incorporate TSM and TDM into city street improvement programs and the development review process.

TR-P7.2 TSM/TDM Strategy. The City shall incorporate potential TSM and TDM strategies into new residential, commercial, industrial, and institutional development.

TR-P7.3 Demand Reduction and Capacity Expansion. To improve air quality and reduce congestion, the City shall seek to reduce vehicle-miles-traveled per household by making efficient use of existing and planned transportation facilities. Measures that can be applied include:

- Promoting efficient arrangement of land uses.
- Improving public transportation and ridesharing.
- Facilitating more direct routes for pedestrians and bicyclists and other non-polluting modes.

- Encouraging large employers to use transportation demand management techniques to reduce peak hour traffic. These techniques could include: staggered start and end time for employees, carpooling and vanpooling, telecommunications opportunities, and/or business-sponsored transit passes or discounts.

TR-P7.4 Transportation Demand Management Programs. The City shall coordinate and provide support for City Transportation Demand Management programs with other public and private agencies, including programs developed by the TCAG and the San Joaquin Valley Air Pollution Control District (SJVAPCD).

TR-P7.5 Transportation Management Associations. The City shall encourage commercial, retail, and residential developments to participate in or create transportation management associations that can assist in the reduction of pollutants through provisions to support carpooling, alternative transportation, etc.

GOAL

TR-8 To provide an efficient system for goods movement that adequately serves the industrial and commercial areas of Tulare.

POLICIES

TR-P8.1 Truck Route System. The City shall maintain and enforce a truck route system and related parking limitations to minimize conflicts between truck and automobile circulation, minimize the impact of truck traffic on residential neighborhoods and other sensitive uses, and provide for the efficient movement of goods throughout the City. See also Policy TR-2.7, Relocate State Route 137.

TR-P8.2 Access to Transportation. The City shall ensure industrial and commercial development is located in proximity to major transportation corridors and facilities (i.e., highways, rail, and air).

TR-P8.3 Regional Coordination. The City shall participate in regional coordination efforts (including the San Joaquin Valley Goods Movement Action Plan as proposed by the California Partnership for the San Joaquin Valley and the Regional Blueprint process) to assure land use and transportation plans are integrated.

3.15.3 - IMPACT EVALUATION CRITERIA

Methodology

Descriptions and analysis are based on the Traffic Impact Study (TIS) Report prepared for the proposed Project (Ruettgers & Schuler 2018, Appendix G of this Draft EIR). The study methodology is consistent with the guidelines of Caltrans, the City of Tulare, and the City's General Plan.

Roadway and intersection operating conditions are measured with respect to LOS, which is defined by categories ranging from A to F, with LOS A representing the best traffic flow conditions and LOS F representing poor conditions. LOS A indicates free-flowing traffic, and LOS F indicates substantial congestion with stop-and-go traffic and long delays at intersections.

The City of Tulare considers level of service D or better to be acceptable for urban areas, while LOS C or better is acceptable for rural areas. At unsignalized intersections where a substandard LOS exists, traffic signals would only be recommended if warrants for traffic signals are satisfied. The levels of traffic expected approximately twenty years after the assumed opening day of the Project will be directly related to the viable projects within the study area for the City of Tulare and Tulare County.

The following intersections and roadway segments included in the TIS were determined in consultation with the City of Tulare and the California Department of Transportation (Caltrans) and include:

EXISTING INTERSECTIONS

- Oakdale Avenue & N. Oaks Street/Akers Street
- Akers Street /N. Oaks Street & Pacific Avenue
- J Street & Cartmill Avenue (Northerly Intersection)
- Cartmill Avenue & J Street (Southerly Intersection)
- Cartmill Avenue & N. Oaks/M Street
- Cartmill Avenue & SR 99 SB Ramps
- Cartmill Avenue & SR 99 NB Ramps
- N. Oaks Street (Project Access) & Cartmill Avenue
- Retherford Street & Cartmill Avenue
- Cartmill Avenue & Hillman Street
- Cartmill Avenue & N. Mooney Boulevard
- Prosperity Avenue & J Street
- Prosperity Avenue & Hillman Street

EXISTING SEGMENTS

- Cartmill Avenue /J Street: North Intersection at J Street to South Intersection at Cartmill Avenue
- Cartmill Avenue: J Street to N. Oaks Street
- Cartmill Avenue: N. Oaks Street to SR 99 SB Ramps
- Cartmill Avenue: SR 99 SB Ramps to SR 99 NB Ramps
- Cartmill Avenue: SR 99 NB Ramps to Akers Street
- Cartmill Avenue: Akers Street to Retherford Street
- Cartmill Avenue: Retherford Street to Hillman Street
- Cartmill Avenue: Hillman Street to N. Mooney Boulevard
- Oaks Street: Oakdale Avenue to Pacific Avenue
- Akers Avenue: Pacific Avenue to Cartmill Avenue
- J Street: Cartmill Avenue to Prosperity Avenue
- Hillman Street: Cartmill Avenue to Prosperity Avenue

The TIS completed for the proposed Project includes LOS analysis for the following traffic scenarios:

- Existing Conditions;
- Existing Plus Project;
- Near-Term (Opening Year) No Project;
- Near-Term (Opening Year) Plus Project;
- Cumulative Year 2040 No Project; and
- Cumulative Year 2040 Plus Project.

Caltrans identifies a minimum LOS is C, except where the existing LOS is D or below, according to information specified in the Caltrans, "A Guide for Traffic Impact Studies."

Given the LOS standards of the various agencies in the Project area, the goal of the Project was to provide LOS results that met the goals of the individual agencies for intersections and street segments under their jurisdiction.

Table 3.15-3 through Table 3.15-5 illustrates target LOS for each intersection based upon its jurisdictional location.

Table 3.15-3
Signalized Intersections: Level of Service Definitions
(2010 Highway Capacity Manual)

Level of Service	Definition	Average Total Delay (sec/veh)
A	Describes operations with very low delay. This level of service occurs when there is no conflicting traffic for a minor street.	≤10.0
B	Describes operations with moderately low delay. This level generally occurs with a small amount of conflicting traffic causing higher levels of average delay.	>10.0 - 20.0
C	Describes operations with average delays. These higher delays may result from a moderate amount of minor street traffic. Queues begin to get longer.	>20.0 - 35.0
D	Describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from shorter gaps on the mainline and an increase of minor street traffic. The queues of vehicles are increasing.	>35.0 - 55.0
E	Describes operations at or near capacity. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor gaps for the minor street to cross and large queues.	>55.0 - 80.0
F	Describes operations that are at the failure point. This level, considered unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of the intersection. Insufficient gaps of suitable size exist to allow minor traffic to cross the intersection safely.	>80.0

Table 3.15-4
Unsignalized Intersections: Level of Service Definitions
(2010 Highway Capacity Manual)

Average Control Delay (sec/veh)	Level of Service	Expected Delay to Minor Street Traffic
≤10	A	Little or no delay
>10 and ≤15	B	Short traffic delays
>15 and ≤25	C	Average traffic delays
>25 and ≤35	D	Long traffic delays
>35 and ≤50	E	Very long traffic delays
>50	F	Extreme delays

Table 3.15-5
Roadway Segment: Level of Service Definitions
(2010 Highway Capacity Manual)

Level of Service	Definition
A	Represents free flow. Individual vehicles are virtually unaffected by the presence of others in the traffic stream.
B	Is in the range of stable flow, but the presence of other vehicles in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.
C	Is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual vehicles becomes significantly affected by interactions with other vehicles in the traffic stream.
D	Is a crowded segment of roadway with a large number of vehicles restricting mobility and a stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.
E	Represents operating conditions at or near the level capacity. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.
F	Is used to define forced or breakdown flow (stop-and-go gridlock). This condition exists when the amount of traffic approaches a point where the amount of traffic exceeds the amount that can travel to a destination. Operations within the queues are characterized by stop and go waves, and they are extremely unstable.

EXISTING TRAFFIC COUNTS AND ROADWAY ANALYSIS

The first step toward assessing Project traffic impacts is to assess existing traffic conditions. Existing a.m. and p.m. peak hour turning movements were collected at each study intersection by Ruettgers & Schuler. Intersection turning movement counts were conducted for the peak hour periods of 7:30-8:30 a.m. and 4:30-5:30 p.m. for all key intersections in September 2018.

Intersection Capacity Analysis

A capacity analysis of the study intersections was conducted using Synchro 9 software from Trafficware. This software utilizes the capacity analysis methodology in the Transportation Research Board's 2010 Highway Capacity Manual.

Roadway Analysis

A capacity analysis of the study roadways was conducted using HCS software from McTrans. This software utilizes the capacity analysis methodology in the Transportation Research Board's Highway Capacity Manual.

Thresholds of Significance

Consistent with *Appendix G* of the *CEQA Guidelines*, the proposed Project is considered to have a significant impact on the environment if it will:

a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the County congestion management agency for designated roads or highways;

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

e) Result in inadequate emergency access; or

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

3.15.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.13-a: Would the Project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Proposed Project Improvements

The Project includes the construction of two additional collector roads to provide internal access to the residential and commercial development included in the Project.

Trip Generation

As noted in Chapter 2, Project Description, the proposed Project components include the following:

- 806,400 sq. ft. of regional commercial development;
- 132 single-family residences;
- 210 multi-family residences; and
- seven-acre park/recreation area.

Trip generation and design hour volumes were calculated using the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition, as well as data provided in the project proposal (see Appendix G). The a.m./p.m. rates and directional splits for ITE Land Use Codes 210 (Single-Family Detached Housing), 220 (Multi-Family Low-Rise Housing), 411 (Public Park), and 820 (Shopping Center) were used to estimate the trip generation for the proposed project for a.m. peak hour of adjacent street traffic and p.m. peak hour of generator. The Project's estimated Daily, a.m. peak hour, and p.m. peak hour trips are shown in Table 3.15-6 and Table 3.15-7.

Table 3.15-6
Phase 1 Project Trip Generation

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
820	Shopping Center	176 1000 sq ft GLA	eq	8830	eq	62% 149	38% 91	eq	48% 396	52% 429
sub-total				8,830		149	91		396	429
Adjustments										
Pass-by		15%		1,325		22	14		59	64
Total				7,505		127	77		337	365

Table 3.15-7
Phase 2 Project Trip Generation

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	132 Dwelling Units	eq	1342	eq	25% 25	75% 74	eq	63% 84	37% 49
220	Multifamily Housing (Low-Rise)	210 Dwelling Units	eq	1547	eq	23% 22	77% 74	eq	63% 72	37% 42
411	Public Park	7 Acres	eq	93	0.02	59% 0	41% 0	eq	55% 13	45% 10
820	Shopping Center	806.4 1000 sq ft GLA	eq	24858	eq	62% 344	38% 211	eq	48% 1222	52% 1324
sub-total				27,841		391	359		1391	1425
Adjustments										
Capture[1]		7%		1,949		27	25		97	100
Pass-by[2]		15%		3,729		52	32		183	199
Total				22,163		312	302		1,111	1,126

[1]Capture rate of 7%, per NCHRP 684 Internal Capture Estimator, applied to all land uses.

[2]Pass-by rate of 15% applied to Shopping Center only.

A capture rate of seven percent was applied to all land uses to account for trips between multiple land uses within the Project. Capture trips originate and terminate within the Project, and therefore do not impact the surrounding roadway system. The Caltrans Guide for the Preparation of Traffic Impact Studies suggests a five percent capture rate, but where justified, the capture rate may be higher. In this case, a slightly higher capture rate was approved due to the proximity and size of the residential and shopping land uses.

WITHOUT MITIGATION

Implementation of the proposed Project will result in an increase in traffic that would exceed the target LOS standards as identified in the General Plan for various scenarios at multiple intersections.

Results of the analysis show that three of the 12 roadway segments will fall below acceptable LOS through the year 2039. The results of the analysis show that without mitigation, the proposed Project will significantly impact portions of Oaks Street, Akers Avenue, and J Street when comparing the Cumulative Year 2039 No Project and Plus Project scenarios. Before mitigation, impacts of the proposed Project would be considered ***potentially significant***.

Table 3.15-8
AM Intersection Operations

#	Intersection	Control Type/Direction	2018	2020	2020+ Project (P1)	2029	2029+ Project (P1-3)	2039 Cum	2039 Cum+ Project	2039+Proj w/Mit[1]
1	Oakdale Ave & Akers St	EB Stop WB Stop	A A	A B	A B	A B	A B	A C	A C	B[2]
2	Akers St & Pacific Ave	WB Stop	A	A	A	A	B	A	B	-
3	J St & Cartmill Ave (Northerly Intersection)	Signal	A	A	A	A	A	B	B	-
4	Cartmill Ave & J St (Southerly Intersection)	Signal	A	A	A	A	A	B	B	-
5	Cartmill Ave & N Oaks St/M St	Signal	D (43.5)	D (45.2)	D (45.8)	D (48.5)	D (48.8)	D (36.0)	D (36.6)	C
6	Cartmill Ave & SR-99 SB Ramps	Signal	A	B	B	B	B	B	B	-
7	Cartmill Ave & SR-99 NB Ramps	Signal	A	A	A	A	A	A	A	-
8	Akers St (Project Access) & Cartmill Ave	Signal	A	B	C	B	C	C	D (54.4)	B
9	Retherford St & Cartmill Ave	NB Stop	C	C	C	D (31.7)	E (36.0)	F (>300)	F (>300)	B
10	Cartmill Ave & Hillman St	Signal	C	C	C	C	C	F (256.0)	F (275.0)	C
11	Cartmill Ave & N Mooney Blvd	Signal	C	C	C	D (40.9)	D (41.3)	F (321.2)	F (327.3)	C (34.2)
12	Prosperity Ave & J St	Signal	C	C	C	C	C	C	C	-
13	Prosperity Ave & Hillman St	Signal	E (63.0)	E (62.9)	E (62.8)	E (62.2)	E (62.1)	E (61.5)	E (61.5)	-[3]

NOTE: (P1)=Phase 1; (P1-3)=All Phases (Full Build); Cum=Background Cumulative Traffic; Mit=Mitigation
[1]See Table 9 for Mitigation Measures.
[2]Mitigation due to PM level of service.
[3]Project does not decrease level of service or create any further impact.

Table 3.15-9
PM Intersection Operations

#	Intersection	Control Type/Direction	2018	2020	2020+ Project (P1)	2029	2029+ Project (P1-3)	2039 Cum	2039 Cum+ Project	2039+Proj w/Mit[1]
1	Oakdale Ave & Akers St	EB Stop WB Stop	A B	A B	A B	A B	A C	A C	A E (37.9)	C
2	Akers St & Pacific Ave	WB Stop	A	A	A	A	B	A	B	-
3	J St & Cartmill Ave (Northerly Intersection)	Signal	A	A	A	B	B	B	B	-
4	Cartmill Ave & J St (Southerly Intersection)	Signal	B	B	B	B	B	B	B	-
5	Cartmill Ave & N Oaks St/M St	Signal	C	C	D (38.5)	D (38.8)	D (36.3)	D (48.4)	E (59.7)	C
6	Cartmill Ave & SR-99 SB Ramps	Signal	B	B	B	B	B	B	C	-
7	Cartmill Ave & SR-99 NB Ramps	Signal	A	A	A	A	A	A	B	-
8	Akers St (Project Access) & Cartmill Ave	Signal	B	B	D (52.1)	C	F (415.0)	C	F (461.2)	C
9	Retherford St & Cartmill Ave	NB Stop	C	D (27.5)	D (33.8)	F (85.5)	F (268.8)	F (>300)	F (>300)	B
10	Cartmill Ave & Hillman St	Signal	C	C	C	D (48.9)	D (54.8)	F (275.0)	F (336.8)	C
11	Cartmill Ave & N Mooney Blvd	Signal	C	C	C	C	C	F (314.4)	F (336.7)	C
12	Prosperity Ave & J St	Signal	B	B	B	C	C	C	C	-
13	Prosperity Ave & Hillman St	Signal	E (75.3)	E (76.0)	E (77.8)	E (76.2)	E (75.5)	E (75.5)	E (76.2)	-[3]

NOTE: (P1)=Phase 1; (P1-3)=All Phases (Full Build); Cum=Background Cumulative Traffic; Mit=Mitigation

[1]See Table 9 for Mitigation Measures.
[2]Mitigation due to AM level of service.
[3]Project does not decrease level of service or create any further impact.

Table 3.15-10
Segment Operations

Roadway Segment	Segment Orientation	Directional Level of Service					
		2018		2020		2020+Project (Phase 1)	
		N or E AM/PM	S or W AM/PM	N or E AM/PM	S or W AM/PM	N or E AM/PM	S or W AM/PM
Cartmill Ave/J St: North Intersection at J St to South Intersection at Cartmill Ave	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: J St to N Oaks St	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: N Oaks St to SR 99 SB Ramps	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: SR 99 SB Ramps to SR 99 NB Ramps	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: SR 99 NB Ramps to Akers St	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: Akers St to Retherford St	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: Retherford St to Hillman St	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: Hillman St to N Mooney Blvd	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Akers St: Oakdale Ave to Pacific Ave	N-S	D/D	D/D	D/D	D/D	D/D	D/D
Akers St: Pacific Ave to Cartmill Ave	N-S	E/E	E/E	E/E	E/E	E/E	E/E
J St: Cartmill Ave to Prosperity Ave	N-S	C/C	D/C	C/C	D/C	C/C	D/D
Hillman St: Cartmill Ave to Proseperity Ave	N-S	A/A	A/A	A/B	A/A	A/B	A/A

Table 3.15-10
Segment Operations (cont.)

Roadway Segment	Directional Level of Service									
	2029		2029+Project Full Build (Phases 1-3)		2039 Cumulative		2039 Cum+Project		2039 Cum+Project w/Mitigation[1]	
	N or E AM/PM	S or W AM/PM	N or E AM/PM	S or W AM/PM	N or E AM/PM	S or W AM/PM	N or E AM/PM	S or W AM/PM	N or E AM/PM	S or W AM/PM
Cartmill Ave/J St: North Intersection at J St to South Intersection at Cartmill Ave	A/A	A/A	A/A	A/A	A/A	A/A	A/A	A/A	-	-
Cartmill Ave: J St to N Oaks St	A/A	A/A	A/A	A/A	A/A	A/A	A/A	A/A	-	-
Cartmill Ave: N Oaks St to SR 99 SB Ramps	B/A	A/A	B/B	A/A	C/B	B/B	C/C	B/B	-	-
Cartmill Ave: SR 99 SB Ramps to SR 99 NB Ramps	B/A	A/A	B/B	A/B	C/B	B/B	C/C	B/C	-	-
Cartmill Ave: SR 99 NB Ramps to Akers St	A/A	A/A	B/B	A/A	B/B	A/A	C/C	B/C	-	-
Cartmill Ave: Akers St to Retherford St	A/A	A/A	A/A	A/A	B/B	B/B	B/B	B/B	-	-
Cartmill Ave: Retherford St to Hillman St	A/A	A/A	A/A	A/A	B/B	A/B	B/B	A/B	-	-
Cartmill Ave: Hillman St to N Mooney Blvd	A/A	A/A	A/A	A/A	B/C	B/B	C/C	B/B	-	-
Akers St: Oakdale Ave to Pacific Ave	D/E	D/E	D/E	D/E	E/E	E/E	E/E	E/E	A/A	B/B
Akers St: Pacific Ave to Cartmill Ave	E/E	E/E	E/E	E/E	E/E	E/E	E/E	E/E	A/A	A/A
J St: Cartmill Ave to Prosperity Ave	D/D	D/D	D/D	D/D	E/D	E/E	E/D	E/E	A/A	B/B
Hillman St: Cartmill Ave to Proseperity Ave	A/B	A/A	A/B	A/A	A/B	A/A	A/B	A/B	-	-

[1]See Table 10 in the TIS for Mitigation Measures.

WITH MITIGATION

The existing roadway network may be mitigated to ease many of the impacts of the Project and projected future traffic through the year 2039. Table 3.15-11 illustrates intersection operations and Table 3.15-12 shows road segment operations, with implementation of the recommended roadway improvements listed below and mitigation measures.

Recommended Roadway Improvements

Intersections

Table 3.15-11
Future Intersection Improvements and Local Mitigation

#	Intersection	Total Improvements Required by 2039	Project % Share for Local Mitigation
1	Oakdale Ave & Akers St	Add Stop Control NB and SB	12.84%
5	Cartmill Ave & N Oaks St/M St	Configure NBR to Permitted Overlap	11.5%
8	(Project Access) Akers St & Cartmill Ave	Change SBR/L to 2 SBR, 2 SBL Set SBR to Permitted Overlap Add 1 EBL	53.24%
9	Retherford St & Cartmill Ave	Signal Change EBT/R to EBT, EBR	16.23%
10	Cartmill Ave & Hillman St	Change EBT/R to EBR, 2 EBT, EBL Change WBT/R to WBR, 2 WBT, WBL	11.11%
11	Cartmill Ave & N Mooney Blvd	Change EBT/R to 3 EBT, EBR, Add 1 EBL Change WBT/R to 3 WBT, WBR, Add 1 WBL Change NBT/R to NBT, NBR, Add 1 NBL Change SBT/R to SBT, SBR, Add 1 SBL	3.38%

Notes: NB = Northbound; L = Left-Turn Lane; B = Southbound; T = Through Lane; WB = Westbound; R = Right-Turn Lane; EB = Eastbound

The improvements identified above for the Existing Plus Project and Near-Term (year 2020) Plus Project scenarios are sufficient to meet Caltrans' acceptable LOS standard of 'C.' The improvements identified above for the Cumulative Year 2039 Plus Project scenario will reduce impacts of the proposed Project to acceptable LOS standards.

Roadway Segments

Table 3.15-12
Future Roadway Improvements and Local Mitigation

Roadway Segment	Total Improvements Required by 2039	Project % Share for Local Mitigation
Akers St: Oakdale Ave to Pacific Ave	Add 2 Lanes	24.20%
*Akers St: Pacific Ave to Cartmill Ave	Add 2 Lanes	88.99%
J St: Cartmill Ave to Prosperity Ave	Add 2 Lanes	13.76%

SR Freeway and Ramps

Table 3.15-13
Freeway Segment and Ramp Level of Service

Freeway Segments & Ramps	2018	2020	2020 +Project (Phase 1)	2029[1]	2029+Project Full Build (Phases 1-3)[1]	2039 Cumulative[1]	2039 Cum +Project[1]
State Route 99: Prosperity Ave to Cartmill Ave (south of Project)	C	C	C	B	C	C	C
State Route 99: Cartmill Ave to Avenue 264 (north of Project)	C	C	C	B	B	C	C
SR 99 and Cartmill Ave SB Off-Ramp	B	B	B	A	A	A	A
SR 99 and Cartmill Ave SB On-Ramp	B	B	B	A	B	B	B
SR 99 and Cartmill Ave NB Off-Ramp	A	A	A	A	A	A	A
SR 99 and Cartmill Ave NB-E On-Ramp	C	C	C	B	C	C	C
SR 99 and Cartmill Ave NB-W On-Ramp	C	C	C	C	C	C	C
SR 99 and Oakdale Ave NB On-Ramp	C	C	D	C	C	C	C

[1]Analysis for 2029 and 2039 includes planned freeway improvements listed in the Caltrans *State Route 99 Transportation Concept Report*, which calls for the addition of two through lanes as well as auxiliary lanes by 2025.

The improvements identified above for the Cumulative Year 2039 No Project and Plus Project scenarios are sufficient to meet Caltrans' acceptable LOS standard of 'C.'

In order to reduce the proposed Project's contribution to cumulative impacts to traffic, it is recommended that the Project contribute traffic impact fees, as determined by the City of Tulare and Caltrans policy. The payment of these fair-share fees would be used to help fund the applicant's fair-share percentage of the improvements discussed below to mitigate the

proposed Project's contribution to cumulative traffic impacts to less-than-significant levels. Table 3.15-13 illustrates the equitable share responsibility for LOS improvements related to roadway capacity to the City of Tulare and Caltrans facilities as described above.

Based on this analysis of traffic impacts related to the development of the Project site, it is anticipated that implementation of the proposed Project would exceed the acceptable LOS at three identified roadways.

CONCLUSION

This impact is significant.

MITIGATION MEASURE(S)

MM TRA-1: Prior to issuance of any building permit, the applicant will provide to the City of Tulare a written statement of intent, which will detail the approach used to satisfy obligations for supplemental road improvements, as listed in Table 3.15-11 and 3.15-12. This written statement of intent and method proposed will be approved by the City. The applicant will have three approaches to fulfill the road improvement responsibilities:

- Lump Sum Payment: Any lump-sum payment will be made prior to issuance of building permits. All monies will be paid to the City of Tulare. At the time the applicant elects to pay, the City will conduct a review of the distributed share amount and make adjustments, if required, based on increases to the construction cost index, other changes in standards or technology for required signalization or improvements, or updated development projects or proposals. If the applicant pays a Transportation Impact Fee that includes the facilities covered by the fair-share payment, the applicant will be eligible for reimbursement of any monies paid. The City may request, at a cost to be borne by the applicant, a supplemental traffic analysis to determine the correct lump sum payment.
- Construction of Road Improvements: If, in an approved summary of intent, the applicant seeks to construct road improvements in lieu of a lump sum payment, the improvements will be constructed and accepted by the City prior to issuance of the Certificate of Occupancy for the related building permits. Deviations from this sequence of events must be approved by the City.
- Combination of Approach A and Approach B: The applicant may choose to provide construction for certain roadway improvements and payment for others. This approach must be used in communication with the City. All monies designated for roadway improvements will be paid prior to issuance of building permits.

MM TRA-2: Prior to issuance of building permits, the applicant will pay the adopted Transportation Impact Fee in effect at the time building permits are issued.

EFFECTIVENESS OF MEASURE

Implementation of the above mitigation measures will reduce impacts below thresholds of significance. Therefore, this impact will be *less than significant after mitigation*.

Impact #3.15-b: Would the Project Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the County congestion management agency for designated roads or highways?

Construction

It is not anticipated that the construction-related traffic would exceed capacity of the existing roadways; however, there is the potential to disrupt roadway services with the additional vehicles as well as slow-moving trucks delivering heavy equipment, especially during construction personnel shift changes. This is a potentially significant impact.

Operations

As noted in Impact 3.15-a, Table 3.15-6 illustrates that the proposed Project would generate approximately 7,505 daily trips after completion of the first development phase. Upon full build-out, the Project is estimated to generate approximately 22,163 daily trips.

CONCLUSION

The long-term operation impact is significant*.*

MITIGATION MEASURE(S)

MM TRA-3: Prior to the issuance of grading permits, the Project applicant shall:

Prepare and submit a Construction Traffic Control Plan to City of Tulare and the California Department of Transportation offices for District 6, as appropriate, for review and approval. The Construction Traffic Control Plan shall be prepared in accordance with both the California Department of Transportation Manual on Uniform Traffic Control Devices and Work Area Traffic Control Handbook and shall include, but not be limited to, the following issues:

- Timing of deliveries of heavy equipment and building materials;
- Directing construction traffic with a flag person;
- Placing temporary signing, lighting, and traffic control devices if required, including, but not limited to, appropriate signage along access routes to indicate the presence of heavy vehicles and construction traffic;
- Ensuring access for emergency vehicles to the Project site;
- Temporarily closing travel lanes or delaying traffic during materials delivery, transmission line stringing activities, or any other utility connections;
- Maintaining access to adjacent property; and
- Specifying both construction-related vehicle travel and oversize load haul routes, minimizing construction traffic during the a.m. and p.m. peak hour, distributing construction traffic flow across alternative routes to access the Project site, and avoiding residential neighborhoods to the maximum extent feasible.

Obtain all necessary permits for the work within the road right-of-way or use of oversized/overweight vehicles that will utilize City-maintained roads, which may require California Highway Patrol or a pilot car escort. Copies of the issued permits shall be submitted to the City of Tulare.

EFFECTIVENESS OF MEASURE

Mitigation Measure MM TRA-3 would require the approval of a Construction Traffic Control Plan that would include timing large equipment deliveries before or after peak hours. With implementation of Mitigation Measure MM TRA-3, construction at the project site would result in a less-than-significant increase in traffic in relation to the existing traffic load and capacity of the street system because of the anticipated extended construction schedule, the temporary nature of construction vehicle trips, and the projected low project trip generation potential during the construction phase for the site. Impacts to traffic during the construction phase of the proposed Project would be considered ***less than significant***.

With respect to operations, with implementation of the above mitigation measures (Mitigation Measure MM TRA-1 and MM TRA-2), impacts from the projected future traffic growth and Project traffic will be reduced to acceptable LOS. As such, traffic impacts would be considered ***less than significant***.

Impact #3.15-c: Would the Project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

As discussed in Section 3.8 *Hazards and Hazardous Materials*, the Project site is located approximately six miles north of the Tulare Municipal Airport. Implementation of the proposed Project will not result in a change in air traffic patterns.

CONCLUSION

No impact has been identified.

MITIGATION MEASURE(S)

No mitigation measures are required.

Impact #3.15-d: Would the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

During construction, the proposed Project would require the delivery of heavy construction equipment and building materials using area roadways, some of which may require transport by oversize vehicles. The use of oversize vehicles during construction could create a hazard to the public by limiting motorist views on roadways and by the obstruction of space, which is considered a potentially significant impact. As stated above, the Circulation Element includes a City-wide diagram map that illustrates existing and future transportation infrastructure. The proposed Project site is located along Cartmill Avenue, which is

designated as a major arterial roadway, and N. Oaks Street, designated an arterial roadway, by the Circulation Element of the City of Tulare General Plan (City of Tulare 2014). The City of Tulare is in the process of updating this element, and the current proposal is for Akers Street to be extended to bisect the Project site, roughly dividing the commercial and multi-family residential. Akers Street would be classified as a major arterial and provide access through the Project site from both the north and the south.

No obstacles to sight distance are expected to result from the proposed Project construction. However, the current Akers Street alignment through the Project site does not meet the City's standards, given the sharp curve and short distance to the signalized intersection with Cartmill Avenue. Therefore, Mitigation Measure MM TRA-4 will be implemented to realign the roadway to meet the City of Tulare's engineering standards.

CONCLUSION

The use of oversize vehicles during construction could create a hazard to the public by limiting motorist views on roadways and by the obstruction of space, which is considered a potentially significant impact. In addition, the current Akers Street alignment through the Project site does not meet the City's standards, resulting in a potentially significant impact with regard to the sharp curve and distance to the intersection with Cartmill Avenue.

MITIGATION MEASURE(S)

Implement Mitigation Measure MM TRA-3, and in addition, Mitigation Measure MM TRA-4 as listed below.

MM TRA-4: Prior to the issuance of grading permits, the Project proponent shall coordinate with the City of Tulare on the necessary improvements for the future alignment of N. Oaks Street (future Akers Street) so that it meets the City's design standards for a major arterial roadway. The design of the realignment of this street, including necessary sight distances, and curve radii, shall be reviewed and approved by the City Engineer.

EFFECTIVENESS OF MEASURE

Mitigation Measure MM TRA-3 would require that all oversize vehicles used on public roadways during construction obtain required permits and approval of a Construction Traffic Control Plan, as well as identify construction delivery times and vehicle travel routes in advance to minimize construction traffic during a.m. and p.m. peak hours. Travel planning would further reduce construction-related traffic and roadway hazards that would otherwise affect motorists on the public highways in the vicinity of the Project site. Mitigation Measure MM TRA-4 would require that the future alignment of Akers Street through the Project site is adjusted and realigned to meet the City's standards for necessary sight distances and curve radii. This would ensure the additional amount of traffic expected to travel to, from, and through the Project site would not increase hazardous conditions due to the existing sharp curve and short sight and stopping distance with the intersection at

Cartmill Avenue. With implementation of these mitigation measures, the impact will be reduced to a level that is *less than significant.*

Impact #3.15-e: Would the Project result in inadequate emergency access?

The proposed Project includes the construction of internal collector roads and additional lanes on existing access roads. These road improvements will allow for easy access to the facility by first responders and emergency equipment. Additionally, all Project designs and engineering are required to comply with the Uniform Fire Code and City building regulations and standards to ensure adequate emergency access. The site plan will be reviewed by City staff during plan submittals, and prior to issuance of building permits, so that any necessary design revisions are made to ensure adequate access to the facility.

As identified in Mitigation Measure MM TRA-3, a Construction Traffic Control Plan would be required prior to construction of the proposed Project. The Construction Traffic Control Plan would, among other things, schedule equipment deliveries outside peak traffic hours, and be devised so that construction would not interfere with emergency response or evacuation plans. The proposed Project would not interfere with emergency response or evacuation plans and emergency access to the Project site as a result of the proposed Project implementation.

CONCLUSION

With implementation of Mitigation Measure MM TRA-3, this impact is considered less than significant.

MITIGATION MEASURE(S)

No additional mitigation measures are required.

Impact #3.15-f: Would the Project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

The City of Tulare has a comprehensive transportation system that includes a system of pedestrian and bicycle routes throughout the city. There is currently a bike lane on Cartmill Avenue immediately south of the Project site. The circulation infrastructure of the Project would include the establishment of bike lanes and sidewalks in order to connect with the local and regional alternative transportation network. As such, the proposed Project will support the city's alternative transportation plan and encourage pedestrian and bicycle use in the area. Therefore, implementation of the proposed Project would not conflict with City adopted policies, plans or programs to support alternative transportation, would not result in an impact to alternative transportation.

CONCLUSION

This impact is less than significant.

MITIGATION MEASURE(S)

No mitigation measures are required.

3.16 - Tribal Cultural Resources

This section provides an assessment of potential impacts related to tribal cultural resources that could result from implementation of the proposed Project. The analysis in this section is based on the results of the Native American consultation conducted by the City for purposes of compliance with CEQA requirements prompted by AB 52, as well as SB 18, located in Appendix D of this EIR.

3.16.1 - Environmental Setting

Existing Tribal Cultural Resources

Native American Correspondence and SB 18 and AB 52 Consultation

As part of the City's responsibilities pursuant to AB 52 and SB 18, the City requested a Sacred Lands File (SLF) search from the California Native American Heritage Commission (NAHC) for the proposed Project in November 2018. The NAHC responded via a letter dated November 19, 2018, stating that no Native American cultural resources are known to exist within the Project site or the immediate vicinity. The NAHC also provided a list of Native American groups affiliated with the Project site to be contacted for additional information regarding Native American cultural resources. On November 18, 2018, SB 18 notification letters were sent via certified mail to the Native American groups indicated by the NAHC. The letters included a description of the proposed Project, the Project location, and a notification of the type of consultation that the City was initiating. Also, on November 18, 2018, the City sent consultation notification letters via certified mail to Native American groups on pursuant to the requirements of AB 52 pertaining to government-to-government consultation. Table 3.16-1, summarizes the City's consultation efforts to date.

To date, the City has not received any tribe responses.

Table 3.16-1
Summary of SB 18 and AB 52 Consultation Efforts

Tribe/ Organization	Consultation Type	Date Letter Mailed	Response Received
Wuksache Indian Tribe/Eshom Valley Band	SB 18 and AB 52	11/19/18	No response
Santa Rosa Rancheria Tachi Yokut Tribe	SB 18 and AB 52	11/19/18	No response
Twenty-Nine Palms Band of Mission Indians	SB 18 and AB 52	11/19/18	No response
Kern Valley Indian Community	SB 18 and AB 52	11/19/18	No response
Tubatulabals of Kern Valley	SB 18 and AB 52	11/19/18	No response
Tule River Indian Tribe	SB 18 and AB 52	11/19/18	No response

3.16.2 - REGULATORY SETTING

State

NATIVE AMERICAN HERITAGE COMMISSION

The Public Resources Code (PRC), Section 5097.91, established the NAHC, the duties of which include inventorying places of religious or social significance to Native Americans and identifying known graves and cemeteries of Native Americans on private lands. Section 5097.98 of the PRC specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a county coroner.

ASSEMBLY BILL 52 AND RELATED PUBLIC RESOURCES CODE SECTION

AB 52 was approved by California State Governor Edmund Gerald "Jerry" Brown, Jr. on September 25, 2014. The California Environmental Quality Act amended California PRC, Section 5097.94, and added PRC, Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 applies specifically to projects for which a Notice of Preparation (NOP) or a Notice of Intent (NOI) to adopt a Negative Declaration (ND) or Mitigated Negative Declaration (MND) will be filed on or after July 1, 2015. The primary intent of AB 52 was to include California Native American tribes early in the environmental review process and to establish a new category of resources related to Native Americans that require consideration under CEQA, known as tribal cultural resources. PRC, Section 21074(a)(1) and (2) defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" that are either included or determined to be eligible for inclusion in the California Register of Historical Resources (CRHR) or included in a local register of historical resources, or a resource that is determined to be a tribal cultural resource by a Lead Agency , in its discretion and supported by substantial evidence. On July 30, 2016, the CNRA adopted the final text for tribal cultural resources update to *Appendix G* of the *CEQA Guidelines*, which was approved by the Office of Administrative Law on September 27, 2016.

PRC, Section 21080.3.1, requires that within 14 days of a Lead Agency determining that an application for a project is complete, or a decision by a public agency to undertake a project, the Lead Agency provide formal notification to the designated contact, or a tribal representative, of California Native American tribes that are traditionally and culturally affiliated with the geographic area of the project (as defined in PRC, Section 21073) and who have requested in writing to be informed by the Lead Agency (PRC, Section 21080.3.1(b)). Tribes interested in consultation must respond in writing within 30 days from receipt of the Lead Agency's formal notification and the Lead Agency must begin consultation within 30 days of receiving the tribe's request for consultation (PRC, Sections 21080.3.1(d) and 21080.3.1(e)).

PRC, Section 21080.3.2(a), identifies the following as potential consultation discussion topics: the type of environmental review necessary; the significance of tribal cultural resources; the significance of the project's impacts on the tribal cultural resources; project

alternatives or appropriate measures for preservation; and mitigation measures. Consultation is considered concluded when either: (1) the parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or (2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached (PRC, Section 21080.3.2(b)).

If a California Native American tribe has requested consultation pursuant to Section 21080.3.1 and has failed to provide comments to the Lead Agency , or otherwise failed to engage in the consultation process, or if the Lead Agency has complied with Section 21080.3.1(d) and the California Native American tribe has failed to request consultation within 30 days, the Lead Agency may certify an EIR or adopt an MND (PRC, Section 21082.3(d)(2) and (3)).

PRC, Section 21082.3(c)(1), states that any information, including, but not limited to, the location, description, and use of the tribal cultural resources, that is submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the Lead Agency or any other public agency to the public without the prior consent of the tribe that provided the information. If the Lead Agency publishes any information submitted by a California Native American tribe during the consultation or environmental review process, that information shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public.

SENATE BILL 18

SB 18 (Statutes of 2004, Chapter 905), which went into effect January 1, 2005, requires local governments (city and county) to consult with Native American tribes before making certain planning decisions and to provide notice to tribes at certain key points in the planning process. The intent is to "provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places" (OPR, 2005).

The purpose of involving tribes at these early planning stages is to allow consideration of cultural places in the context of broad local land use policy, before individual site-specific, project-level, land use designations are made by a local government. The consultation requirements of SB 18 apply to general plan or specific plan processes proposed on or after March 1, 2005.

According to the Tribal Consultation Guidelines: Supplement to General Plan Guidelines (OPR, 2005), the following are the contact and notification responsibilities of local governments:

- Prior to the adoption or any amendment of a general plan or specific plan, a local government must notify the appropriate tribes (on the contact list maintained by the NAHC) of the opportunity to conduct consultations for the purpose of preserving, or

mitigating impacts to, cultural places located on land within the local government's jurisdiction that is affected by the proposed plan adoption or amendment. Tribes have 90 days from the date on which they receive notification to request consultation, unless a shorter timeframe has been agreed to by the tribe (Government Code, Section 65352.3).

- Prior to the adoption or substantial amendment of a general plan or specific plan, a local government must refer the proposed action to those tribes that are on the NAHC contact list and have traditional lands located within the city or county's jurisdiction. The referral must allow a 45-day comment period (Government Code, Section 65352). Notice must be sent regardless of whether prior consultation has taken place. Such notice does not initiate a new consultation process.
- Local government must send a notice of a public hearing, at least 10 days prior to the hearing, to tribes who have filed a written request for such notice (Government Code, Section 65092).

3.16.3 - IMPACT EVALUATION CRITERIA

Methodology

The proposed Project's potential impacts to tribal cultural resources have been evaluated using a variety of resources, including an SLF search conducted by the NAHC. SB 18 and AB 52 notification letters were sent to Native American groups and individuals indicated by the NAHC to solicit information regarding the presence of tribal cultural resources. Using the aforementioned resources and professional judgment, impacts were analyzed according to CEQA significance criteria described below.

Thresholds of Significance

CEQA Guidelines, Appendix G Checklist, states that a project would have a significant impact on tribal resources if it would:

a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, Section 21074, as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code, Section 5020.1(k), or

ii) A resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code, Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code, Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American tribe.

3.16.4 - IMPACTS AND MITIGATION MEASURES

Impact #3.16-a(i): Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, Section 21074, as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code, Section 5020.1(k)?

The SLF search conducted by the NAHC did not indicate the presence of tribal cultural resources within or immediately adjacent to the Project site. Furthermore, the City's government-to-government notification and consultation efforts with interested Native American groups conducted pursuant to SB 18 and AB 52 did not result in the identification of tribal cultural resources within the Project site. Given that no tribal cultural resources have been identified within or immediately adjacent to the Project site, the Project would not cause a substantial adverse change in the significance of a tribal cultural resource and no mitigation is required.

CONCLUSION

There would be no impact to tribal resources as a result of the proposed Project.

MITIGATION MEASURES

No mitigation measures are required.

Impact #3.16-a(ii): Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, Section 21074, as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code, Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code, Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American tribe?

As noted above, no tribal cultural resources were identified through the SLF search conducted by the NAHC, nor as part of the City's government-to-government notification and consultation efforts with interested Native American groups conducted pursuant to SB 18 and AB 52. Given that no tribal cultural resources have been identified within or immediately adjacent to the Project site, the Project would not cause a substantial adverse change in the significance of a tribal cultural resource and no mitigation is required.

CONCLUSION

There would be no impact to tribal resources as a result of the proposed Project.

MITIGATION MEASURES

No mitigation measures are required.

CHAPTER 4 - EVALUATION OF ALTERNATIVES

4.1 - Introduction

CEQA requires that alternatives to the proposed Project be discussed in the EIR. The analysis of this section is consistent with *CEQA Guidelines*, *Section 15126.6*. The primary purpose of this section is to provide decision-makers and the general public with a reasonable number of feasible Project alternatives that could attain most of the basic Project objectives, while avoiding or reducing any of the Project's significant adverse environmental effects. Important considerations for these alternatives' analyses are noted below (as stated in *CEQA Guidelines*, *Section 15126.6*).

Section 15126.6(a) of the *CEQA Guidelines* requires EIRs to describe "... a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible. The Lead Agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason." This section of CEQA also provides guidance regarding what the alternatives analysis should consider. Subsection (b) further states the purpose of the alternatives analysis, as follows: "...because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment, the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly."

According to *CEQA Guidelines*, *Section 15126.6(c)*, the range of potential alternatives to the proposed project:

> …shall include those that could feasibly accomplish most of the basic purposes of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the Lead Agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the Lead Agency's determination. Additional information explaining the choice of alternatives may be included in the administrative record.

CEQA Guidelines, *Section 15126.6(f)*, observes that the range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would

avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR needs examine in detail only the ones that the Lead Agency determines could feasibly attain most of the basic objectives of the project. Alternatives that fail to meet the fundamental project purpose need not be addressed in detail in an EIR. (In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings (2008) 43 Cal.4th 1143, 1165-1167.) The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision-making.

In defining "feasibility" (e.g.," ... feasibly attain most of the basic objectives of the project ..."), *CEQA Guidelines*, *Section 15126.6(f)(1)*, states, in part:

> Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.

In determining what alternatives should be considered in the EIR, it is important to acknowledge the objectives of the project, the project's significant effects, and unique project considerations. These factors are crucial to the development of alternatives that meet the criteria specified in *Section 15126.6(a)*. Although, as noted above, EIRs must contain a discussion of "potentially feasible" alternatives, the ultimate determination as to whether an alternative is feasible or infeasible is made by the Lead Agency's decision-making body, here the City of Tulare Planning Commission or City Council (PRC, Section 21081(a)(3)). At the time of action on the project, the Planning Commission or City Council may consider evidence beyond that found in this EIR in addressing such determinations. The Commission or Council, for example, may conclude that a particular alternative is infeasible (i.e., undesirable) from a policy standpoint, and may reject an alternative on that ground provided that the Commission or Council adopts a finding, supported by substantial evidence, to that effect, and provided that such a finding reflects a reasonable balancing of the relevant economic, environmental, social, and other considerations supported by substantial evidence. (*City of Del Mar v. City of San Diego* (1982) 133 Cal.App.3d 401, 417; *California Native Plant Society v. City of Santa Cruz* (2009) 177 Cal.App.4th 957, 998.)

4.2 - Project Objective

The objective of the Project is to build and operate an economically viable and competitive development with a mix of commercial and residential uses in compliance with applicable laws and regulations, optimally utilizing the available land resource while minimizing any environmental impacts to the extent feasible.

4.3 - Alternatives Selection

In accordance with the *CEQA Guidelines*, alternatives should be selected in order to reduce or fully mitigate potential environmental impacts beyond that which can be accomplished through mitigation measures alone. The proposed Project would result in the following significant unavoidable impacts:

- Agricultural and Forestry Resources – The continued regional trend of converting farmland to residential and/or commercial uses is considered a significant and unavoidable impact;
- Public Services and Utilities – The Kaweah Subbasin is currently designated as "critically overdrafted" so any regional increases in groundwater demand will result in a significant and unavoidable impact; and
- Transportation and Traffic – Several intersections will exceed applicable standards due to cumulative growth with or without the proposed Project.

Accordingly, alternatives to the proposed Project were chosen specifically for their ability to address, and reduce to the degree practicable, those potential environmental impacts.

4.3.1 - Alternatives Considered and Rejected

The following excerpts from the *CEQA Guidelines* provide direction relative to the analysis of an alternative site. *CEQA Guidelines*, *Section 15126.6(a)*, states:

> An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessens any of the significant effects of the project…

CEQA Guidelines, *Section 15126.6(f)(2)*, provides the following specific guidance as to when an EIR must include alternative locations.

> 2) Alternative locations.
>
> (A) Key question. The key question and first step in analysis is whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR.
>
> (B) None feasible. If the Lead Agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR. For example, in some cases there may be no feasible alternative locations for a geothermal plant or mining project which must be in close proximity to natural resources at a given location.

> (C) Limited new analysis required. Where a previous document has sufficiently analyzed a range of reasonable alternative locations and environmental impacts for projects with the same basic purpose, the Lead Agency should review the previous document. The EIR may rely on the previous document to help it assess the feasibility of potential project alternatives to the extent the circumstances remain substantially the same as they relate to the alternative. (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 573).

The proposed Project's significant impacts would not be avoided or substantially lessened if the Project was in a different location. Therefore, an alternative site for the proposed Project was rejected.

4.4 - Alternatives Analyzed

The following sections present a description of the alternatives considered and an analysis of the alternatives in the context of the *CEQA Guidelines*. This EIR includes an evaluation of the following alternatives:

- No Project Alternative;
- No Annexation, All Commercial Alternative;
- All Residential Alternative; and
- Reduced Project Alternative.

These alternatives are summarized in the next section and compared with the proposed Project. For each resource topic there is a description of how the potential environmental impact compares to that of the proposed Project. This chapter includes an analysis of the comparative environmental superiority of the various alternatives, as required by CEQA.

4.4.1 - NO PROJECT ALTERNATIVE

CEQA Guidelines, *Section 15126.6(e)*, requires every EIR to include a "No Project Alternative." "The purpose of describing and analyzing a No Project Alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." In general, this alternative should discuss "existing conditions…as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services."

The manner in which a No Project Alternative shall be composed depends on the nature of the project at issue. "When the project is the revision of an existing land use or regulatory plan, policy or ongoing operation, the 'No Project' Alternative will be the continuation of the existing plan, policy or operation into the future. Typically, this is a situation where other projects initiated under the existing plan will continue while the new plan is developed. Thus,

the projected impacts of the proposed plan or alternative plans would be compared to the impacts that would occur under the existing plan" (*CEQA Guidelines*, *Section 15126.6(e)(3)(A)*).

In contrast, "[i]f the project is other than a land use or regulatory plan, for example a development project on identifiable property, the 'No Project' Alternative is the circumstance under which the project does not proceed. Here the discussion would compare the environmental effects of the property remaining in its existing state against environmental effects which would occur if the project is approved. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this 'No Project' consequence should be discussed. In certain instances, the No Project Alternative means 'no build' wherein the existing environmental setting is maintained. However, where failure to proceed with the project will not result in preservation of existing environmental conditions, the analysis should identify the practical result of the project's non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment" (*CEQA Guidelines*, *Section 15126.6(e)(3)(B)*).

For this analysis, the No Project Alternative is a preservation of the Project site in its current undeveloped condition. The site is zoned Exclusive Agriculture by the Tulare County Zoning Ordinance, so the existing agriculture operations in the Project area would continue.

The No Project Alternative would eliminate the proposed Project's impacts to agricultural resources by not converting the existing farmland in the area to residential and commercial uses. Additionally, this alternative would reduce further overdrafting of the Kaweah Subbasin. The cumulative transportation and traffic-related impacts would still occur because applicable standards are projected to be exceeded with or without the proposed Project. The objective of the Project to provide a mix of commercial and residential development would not be met in this alternative. The City of Tulare Regional Housing Needs Assessment (RHNA) would also not be met if the Project did not include residential development.

4.4.2 - No Annexation, All Commercial Alternative

For this analysis, this alternative would eliminate the residential development included with the proposed Project and remove the annexation of the Project site into Tulare City limits. This alternative would reduce the impacts to agricultural resources by leaving a portion of the existing site available for continued agriculture operations. This alternative would also have a reduced groundwater demand, so cumulative impacts to the overdrafted Kaweah Subbasin would be reduced. Finally, the transportation and traffic-related impacts would still occur because several intersections are projected to exceed applicable standards with or without the Project. The Project's contribution to the cumulatively significant traffic impacts would be reduced, but not below thresholds of significance established by the City of Tulare. An objective of the Project is to provide a mix of commercial and residential development, which would not be met in this alternative. The City of Tulare RHNA would also not be met if the Project did not include residential development.

4.4.3 - ALL RESIDENTIAL ALTERNATIVE

For this analysis, this alternative would consist of the annexation of the Project site into the City of Tulare and the development of the residential component of the proposed Project. This would reduce the amount of farmland being converted to urban uses by leaving a portion of the existing site available for continued agriculture operations. This alternative would also have a reduced groundwater demand, so cumulative impacts to the critically overdrafted Kaweah Subbasin would be reduced. Finally, the local circulation system would still be impacted due to the projected exceedance of applicable standards with or without the proposed Project. An objective of the Project to provide a mix of commercial and residential development, which would not be met in this alternative.

4.4.4 - REDUCED PROJECT ALTERNATIVE

For this analysis, this alternative would consist of the same composition of residential and commercial development as the proposed Project, but on a reduced scale. This would allow for a greater portion of the existing farmland in the area to remain suitable for agriculture purposes. The reduced scale of this alternative compared to the proposed Project would reduce the cumulative impact to the critically overdrafted Kaweah Subbasin. The local circulation system would still be impacted due to the projected exceedance of applicable standards with or without the proposed Project. An objective of the Project to is provide a mix of commercial and residential development, which would be met in this alternative but not to the same degree as the proposed Project. The City of Tulare RHNA would potentially not be met if the Project did not include enough residential development to satisfy this requirement.

4.5 - Environmentally Superior Alternative

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. *Section 15126.6(e)(2)* of the *CEQA Guidelines* requires that an environmentally superior alternative be designated, and states, "[I]f the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." Table 4-1 displays the environmental impacts of alternatives to the Project in terms of the 16 impact areas that were analyzed in this Draft EIR in **Chapter 3, Environmental Impact Analysis**. As shown, the Reduced Project Alternative would be considered the environmentally superior alternative.

Table 4-1
Significance of Environmental Effects under Alternatives

	No Project	No Annexation, All Commercial	All Residential	Reduced Intensity
Aesthetics				
Have a substantial effect on a scenic vista?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Substantially damage scenic resources?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Substantially degrade the existing visual character or quality of the site and its surroundings?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Agriculture and Forestry Resources				
Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	No Impact	Significant and Unavoidable	Significant and Unavoidable	Less Than Significant
Air Quality				
Conflict with or obstruct implementation of the applicable air quality plan?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant

	No Project	No Annexation, All Commercial	All Residential	Reduced Intensity
Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Expose sensitive receptors to substantial pollutant concentrations?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Create objectionable odors affecting a substantial number of people?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Biological Resources				
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 California Department of Fish and Game or U.S. Fish and Wildlife Service?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
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 California Department of Fish and Game or US Fish and Wildlife Service?	No Impact	No Impact	No Impact	No Impact
Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	No Impact	No Impact	No Impact	No Impact
Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife	No Impact	No Impact	No Impact	No Impact

	No Project	No Annexation, All Commercial	All Residential	Reduced Intensity
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?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	No Impact	No Impact	No Impact	No Impact
Cultural Resources				
Cause a substantial adverse change in the significance of a historical resource as defined in *Section 15064.5*?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Cause a substantial adverse change in the significance of an archaeological resource pursuant to *Section 15064.5*?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Disturb any human remains, including those interred outside of formal cemeteries?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Geology, Soils, and Seismicity				
Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Strong seismic ground shaking?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Seismic-related ground failure, including liquefaction?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant

	No Project	No Annexation, All Commercial	All Residential	Reduced Intensity
Landslides?	No Impact	No Impact	No Impact	No Impact
Result in substantial soil erosion or the loss of topsoil?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?	No Impact	No Impact	No Impact	No Impact
Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	No Impact	No Impact	No Impact	No Impact
Greenhouse Gases				
Generate greenhouse gas emissions, either directly or indirectly, that may have a significant effect on the environment?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Hazards and Hazardous Materials				
Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant

	No Project	No Annexation, All Commercial	All Residential	Reduced Intensity
Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code, Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	No Impact	No Impact	No Impact	No Impact
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, would the project result in a safety hazard for people residing or working in the project area?	No Impact	No Impact	No Impact	No Impact
For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	No Impact	No Impact	No Impact	No Impact
Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Hydrology and Water Quality				
Violate any water quality standards or waste discharge requirements?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of	No Impact	Less Than Significant	Less Than Significant	Less Than Significant

	No Project	No Annexation, All Commercial	All Residential	Reduced Intensity
the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				
Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or offsite?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or offsite?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Otherwise substantially degrade water quality?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	No Impact	No Impact	No Impact	No Impact
Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	No Impact	No Impact	No Impact	No Impact
Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	No Impact	No Impact	No Impact	No Impact
Inundation by seiche, tsunami, or mudflow?	No Impact	No Impact	No Impact	No Impact
Land Use and Planning				

	No Project	No Annexation, All Commercial	All Residential	Reduced Intensity
Physically divide an established community?	No Impact	No Impact	No Impact	No Impact
Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Conflict with any applicable habitat conservation plan or natural community conservation plan?	No Impact	No Impact	No Impact	No Impact
Mineral Resources				
Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	No Impact	No Impact	No Impact	No Impact
Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	No Impact	No Impact	No Impact	No Impact
Noise				
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?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant

	No Project	No Annexation, All Commercial	All Residential	Reduced Intensity
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, would the project expose people residing or working in the project area to excessive noise levels?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	No Impact	No Impact	No Impact	No Impact
Population and Housing				
Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	No Impact	No Impact	No Impact	No Impact
Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	No Impact	No Impact	No Impact	No Impact
Public Services and Utilities				
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire Protection?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant

	No Project	No Annexation, All Commercial	All Residential	Reduced Intensity
Police Protection?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Schools?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Parks?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Other Public Facilities?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	No Impact	Significant and Unavoidable	Less Than Significant	Less Than Significant
Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	No Impact	Significant and Unavoidable	Less Than Significant	Less Than Significant
Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	No Impact	Significant and Unavoidable	Less Than Significant	Less Than Significant
Recreation				
Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Transportation/Traffic				

	No Project	No Annexation, All Commercial	All Residential	Reduced Intensity
Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	No Impact	No Impact	No Impact	No Impact
Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Result in inadequate emergency access?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	No Impact	Less Than Significant	Less Than Significant	Less Than Significant
Tribal Resources				
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, Section 21074, as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical	No Impact	No Impact	No Impact	No Impact

	No Project	No Annexation, All Commercial	All Residential	Reduced Intensity
resources as defined in Public Resources Code, Section 5020.1(k)?				
A resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code, Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code, Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American tribe?	No Impact	No Impact	No Impact	No Impact

CHAPTER 5 - CUMULATIVE IMPACTS

5.1 - Introduction

CEQA requires that an EIR examine the cumulative impacts associated with a project. "Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (*CEQA Guidelines*, *Section 15355*; see also PRC, Section 21083, subdivision (b)). Stated another way, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with *other projects* causing related impacts" (*CEQA Guidelines*, *Section 15130*, *subdivision (a)(1)* (emphasis added)).

CEQA Guidelines, *Section 15130*, requires the consideration of cumulative impacts within an EIR when a project's incremental effects are cumulatively considerable. Cumulatively considerable means that ". . . the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." This formulation indicates that particular impacts may be less than significant on a project-specific basis but significant on a cumulative basis, because their small incremental contribution, viewed against the larger backdrop, is cumulatively considerable.

In accordance with *CEQA Guidelines*, *Section 15130(b)*, "...the discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, the discussion need not provide as great [a level of] detail as is provided for the effects attributable to the project alone." The discussion should be guided by standards of practicality and reasonableness, and it should focus on the cumulative impact to which the identified other projects contribute rather than on the attributes of other projects that do not contribute to the cumulative impact. The project's cumulatively considerable contribution to a cumulative impact is not considered significant if the project's contribution to the cumulative impact can be mitigated to below the level of significance through mitigation, including providing improvements and/or contributing funds through adopted fee-payment programs. The EIR must examine "reasonable options for mitigating or avoiding any significant cumulative effects of a proposed project" (*CEQA Guidelines*, *Section 15130*).

The *CEQA Guidelines* allow for the use of one of two alternative methods to determine the scope of projects for the cumulative impact analysis:

- List Method – A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency (*Section 15130 (1)(A)*); and/or
- General Plan Projection Method – A summary of projections contained in an adopted General Plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact (*Section 15130 (1)(B)*).

Although the List Method was selected to conduct the cumulative impact analysis for this Draft EIR, it is important to note that certain cumulative impacts such as effects of the proposed Project on air quality (regional air basin) and greenhouse gas emission (worldwide) must consider a much larger geographic area than the area comprised of the projects constituting the "list" of projects in the general vicinity of the proposed Project.

The following section summarizes projects in the vicinity of the proposed Project.

5.2 - Cumulative Projects

Table 5-1 identifies related projects and other possible development in the Project vicinity determined as having the potential to interact with the Project to the extent that a significant cumulative effect might be expected to occur. Any proposed project within the Project vicinity for which an application had been filed at the time of the NOP for the Project was considered a probable future project.

As stated in the introduction to this chapter, unlike other resources, cumulative impacts related to regional air quality and global climate change are not limited to consideration of the immediate geographic vicinity of the proposed Project.

5.3 - Cumulative Impacts Analysis

5.3.1 - AESTHETICS

The landscape along SR 99 in the City of Tulare has been changing over the years from one of rural open space and agricultural grazing land to urban uses. Implementation of the proposed Project will change the existing visual character of the property from a vacant lot to a commercial and residential development featuring a public park. Mitigation measures for lighting have been included in this Project that will reduce local impacts, and these would also be implemented in surrounding projects in accordance with development standards established by the City of Tulare General Plan and Zoning Ordinance. With the implementation of aesthetic-related mitigation measures, impacts would be *less than cumulatively considerable.*

5.3.2 - AGRICULTURE AND FORESTRY RESOURCES

Development of the Project site will result in the direct conversion of 120 acres of State designated Prime Farmland, even though the site is not zoned for agricultural, nor does it have a Williamson Act contract. However, due to the close proximity of agricultural lands, there may be a conflict with ongoing farming operations. Mitigation has been incorporated into the Project that will reduce the impact to agriculture, but the remaining impact is significant and unavoidable after mitigation. Projects listed in Table 5-1 will also compromise available farmland in the Project vicinity. Considering the local impacts and the impacts of projects in the area, there would be a *significant and unavoidable cumulative* impact on agricultural resources in the City of Tulare.

5.3.3 - AIR QUALITY

According to the SJVAPCD, any proposed project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact. It was previously concluded that the Project would not individually create a significant impact from exceeding the established thresholds for ROG, NOx, and CO (see **Section 3.2, Agricultural and Forestry Resources** for more information on these air pollutants). In addition, the proposed Project is consistent with the AQAP. Therefore, the cumulative impact to the region's ambient air quality is ***less than cumulatively considerable.***

5.3.4 - BIOLOGICAL RESOURCES

Conversion of the Project site from its current vacant state to that of a planned residential and commercial development is not expected to contribute cumulatively to biological resource impacts in the region because the proposed Project site is currently disturbed, consists of low-quality habitat for special-status species, and contains no natural water bodies. Furthermore, the Project site was historically used for agriculture. As such, the property historically has contained little value to biological resources. The Project would result in permanent facilities being constructed on the site, but the wildlife values would not be reduced substantially from historic levels. There exists no USFWS-designated critical habitat within 10 miles of the Project site, so the cumulative impacts to critical habitat are less than significant. Additionally, there are no Habitat Conservation Plans or Natural Community Conservation Plans in the vicinity of the Project so the cumulative impact to any Habitat Conservation Plan would also be less than significant. When combined with impacts from other past, present and reasonably foreseeable future development projects within the City, the loss and/or fragmentation of plant and wildlife habitat is ***less than cumulatively considerable***.

5.3.5 - CULTURAL RESOURCES

An analysis of cumulative impacts takes into consideration the entirety of impacts that the projects as discussed in **Chapter 2, Project Description**, would have on cultural and paleontological resources. This geographic scope of analysis is appropriate because the archaeological, historical, and paleontological resources within the radius are expected to be similar to those in the Project area because of their proximity. Similar environments, landforms, and hydrology would result in similar land uses and therefore, site types. Similar geology within this vicinity would likely yield fossils of similar sensitivity and quantity. Impacts of the proposed Project would be cumulatively considerable if they have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects.

No historical or archaeological resources were identified in the course of studies for this Project. Excavation activities associated with the proposed Project in conjunction with other projects in the area could contribute to the progressive loss of fossil remains, as-yet unrecorded cultural or paleontological resources, associated geological and geographic data, and fossil bearing strata.

Similar mitigation that reduced this Project's cultural impacts to a less-than-significant level would also be imposed on other projects in Tulare to reduce each individual project's impact on cultural and paleontological resources. Consequently, the incremental effects of the proposed Project, after mitigation, would not contribute to an adverse cumulative impact on cultural or paleontological resources or human remains and impacts are ***less than cumulatively considerable***.

5.3.6 - GEOLOGY, SOILS, AND SEISMICITY

Implementation of the proposed Project has the potential to result in soil erosion and instability. Implementation of mitigation measures provided in this EIR will reduce potential impacts to a level of less than significant. Potential soil erosion impacts are site-specific and contained within the Project boundary. The impacts related to soil and seismicity, when considered in combination with the impacts of other projects in the region would be ***less than cumulatively considerable***.

5.3.7 - GREENHOUSE GASES

According to the SJVAPCD's 2015 Guide for Assessing and Mitigating Air Quality Impacts, GHG emissions, and their associated contribution to climate change, are inherently a cumulative impact issue. Therefore, project-level impacts of GHG emissions are treated as one-in-the-same as cumulative impacts. The Air Quality/Greenhouse Gas Technical Report states that projects achieving at least a 29 percent GHG emission reduction compared to business as usual would be determined to have a less-than-significant individual and cumulative impact for GHG. Therefore, since the Project is individually less than significant, with a 41.83 percent GHG reduction compared to business as usual, cumulative impacts are also considered ***less than cumulatively considerable.***

5.3.8 - HAZARDS AND HAZARDOUS MATERIALS

Impacts related to the transport, disposal, and handling of hazardous materials would occur during construction and operation of the Project. During construction, hazardous waste that is generated during construction of the Project would be collected and transported away from the Project site in compliance with existing regulations. The Project proponent would have to develop and comply with a HMMP during operation in accordance with the Business Plan Act, and transporters of hazardous materials to the site would have to comply with California Vehicle Code, Section 32000. Additionally, the Tulare County Environmental Health Department would issue permits for underground storage tanks at the site in order to oversee their installation, operation, and removal. With implementation of these measures, impacts as a result of transport, disposal, and handling of hazardous materials would be less than significant.

The Project site is not located within 0.25 miles of an existing or planned school and is not found on a list of hazardous materials sites compiled pursuant to Government Code, Section 65962.5. The site is not found within any public airport's flight path or Compatibility Zone boundary for the airport that restricts development. The site is not found within the vicinity

of a private airstrip. The Project is not surrounded by wildland areas and is in proximity to existing fire services and therefore, would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires.

Other projects in the area would also have to comply with similar and applicable laws and be required to implement similar and/or unique mitigation in order to mitigate their potentially significant hazards and hazardous materials effects on a case-by-case basis. Given that the Project mitigates any potential hazards and hazardous materials impacts to a level of less than significant, the impacts of other projects in the region are ***less than cumulatively considerable.***

5.3.9 - HYDROLOGY AND WATER QUALITY

Development patterns associated with past, present and reasonably foreseeable future projects in the City and greater Tulare County, in conjunction with the proposed Project, would change and alter drainage patterns within the region. The majority of such projects would likely occur on vacant land, which currently allows stormwater to percolate into the ground or run off of the affected sites into drainage sumps, nearby canals, or other systems. These projects would include some form of hardscape areas that would result in an increase in runoff and a decrease in percolation into the groundwater basin.

Each of these projects may include designs for stormwater drainage systems to capture and discharge waters from project sites, as required by the City and greater Tulare County. Thus, some of the cumulative projects in the area would transmit stormwater into retention facilities that would be developed as part of the respective projects, which would then percolate water back into groundwater aquifers.

These projects may alter local and regional drainage conditions and increase the amount of urban pollutants, which could ultimately affect surface water and groundwater. Stormwater pollutants may include grease, oil, rubber, silt, pesticides, fertilizers, and/or general debris. As part of new development projects, these types of uses would be subject to the requirements of the Clean Water Act, which are implemented by NPDES requirements. Water quality standards are achieved through the implementation of Best Management Practices during design, construction, and post-construction operations. Similar to other projects, the Project is also subject to these requirements. The Project proponent would implement mitigation measures discussed in **Section 3.9, Hydrology and Water Quality**, which would reduce the proposed Project's contribution to hydrology and water quality impacts to levels that would be ***less than cumulatively considerable***.

5.3.10 - LAND USE AND PLANNING

The City of Tulare General Plan has already accounted for the development of this Project in its latest update. The projects listed in Table 5-1 will not cumulatively divide an established community, and there are currently no habitat conservation plans in the vicinity of the Project site. Each of these projects will need to conform to Section 10.120 of the Tulare Municipal Code, which required site plan review to take place. This ensures consistency with

all applicable development standards and General Plan policies. Based on analysis of the local and regional impacts to land use and planning, the cumulative impacts are determined to be *less than cumulatively considerable*.

5.3.11 - NOISE

The area influenced by cumulative noise effects related to adjacent parcels and the surrounding planned development areas is discussed in **Chapter 2, Project Description**. Similar to the proposed Project, each individual project would be subject to the City of Tulare Noise Ordinance standards and thresholds pertaining to increased noise at the locations of sensitive receptors.

Construction activities associated with the proposed Project could occur at the same time as other projects in the vicinity. Significant operational noise impacts are not expected to result. No other concurrent construction projects are anticipated adjacent to the Project site; therefore, cumulative noise impacts during construction of the proposed Project and other proposed projects would be considered less than significant. Similarly, significant operational noise impacts are not expected to result. As indicated above, implementation of Mitigation Measures NSE-1 and NSE-2 would result in less-than-significant noise impacts. As a result, the proposed Project is not expected to considerably contribute to cumulative noise impacts during either construction or operation.

Due to the localized nature of noise impacts and the distance of sensitive receptors from the project sites, the proposed Project would not contribute to significant cumulative noise impacts. Therefore, noise impacts of past, present, and reasonably foreseeable projects would be *less than cumulatively considerable*.

5.3.12 - POPULATION AND HOUSING

Housing is included as part of the proposed project, so the construction of additional housing is not expected to be required as a result of the project. Additionally, no housing is being destructed as part of the proposed project. Therefore, the project's contribution to a cumulative impact to population and/or housing would be *less than cumulatively considerable*.

5.3.13 - PUBLIC SERVICES, UTILITIES, AND SERVICE SYSTEMS

The Kaweah Subbasin is considered "critically overdrafted" by the California Department of Water Resources. However, the Project would not result in a change of land use designation from that analyzed for the most current General Plan EIR. Therefore, the increased demand for public utilities projected for this site has already been analyzed in the preparation of the General Plan Update. Groundwater consumption is inherently a cumulative impact due to subbasin boundaries extension beyond the boundaries of any single project. Although the City of Tulare General Plan states that prior to subdivision approvals the developer shall "ensure there is sufficient available water supply to meet projected buildout," the projects listed on Table 5-1 include water-intensive uses such as hotels and mixed-use developments.

Therefore, the cumulative impact due to groundwater extraction is ***potentially cumulatively significant.***

5.3.14 - RECREATION

As discussed in *Section 3.14 – Recreation*, the City currently exceeds its parkland provision standard of four acres per 1,000 residents with a ratio of 4.9 acres per 1,000 residents. The Project also includes the construction of a seven-acre park, with the ability to expand in order to meet the parkland provision in the future. Therefore, the Project's contribution to recreation impacts would be considered ***less than cumulatively significant.***

5.3.15 - TRANSPORTATION AND TRAFFIC

The analysis of cumulative impacts in this section included all cumulative projects in Table 5-1. Projections of future traffic conditions incorporate regional population and employment growth that is expected to occur by the future analysis year (2039), independent of the proposed Project. There are several commercial and residential developments in the Project's vicinity that will add new trips to the intersections and roadway segments that were analyzed. Because of this, future condition scenarios (2039) without the proposed Project capture the effects of cumulative projects. Future condition scenarios (2039) with the proposed Project capture the effects of both cumulative projects and those of the proposed Project.

Results of the analysis show that the intersections of Cartmill Avenue and Hillman Street and Cartmill Avenue and North Mooney Boulevard will operate below an acceptable levels of service (LOS) prior to the addition of the Project. Oakdale Avenue and Akers Street will operate at or below an acceptable LOS with the addition of cumulative and project traffic; however, all other intersections are anticipated to operate at or above LOS C.

Results of the analysis also show that three of the 12 roadway segments will fall below acceptable (LOS) through the year 2039. However, the analysis shows that cumulative impacts at all of these roadway segments would occur due to cumulative growth, with or without the Project.

Thus, significant cumulative intersection and roadway impacts are expected to result from the proposed Project in connection with past, present, and reasonably foreseeable projects and the Project's contribution to those impacts would be ***cumulatively considerable***. Implementation of Mitigation Measures MM TRA-1 through MM TRA-3 will reduce cumulative impacts associated with intersections operating below the adopted LOS standard. As shown in Tables 3.15-8 through 3.15-11, several intersections and roadway segments will exceed applicable standards in the year 2039 accounting for the Project and projected growth in the area. However, mitigation and improvements increase the LOS to an acceptable level. Therefore, it can be concluded that these impacts would be fully mitigated and the proposed Project's contribution to the impact would be ***less than cumulatively significant***.

There is currently a bike lane on Cartmill Avenue from the northbound SR 99 onramp to the intersection of Cartmill Avenue and North Oaks Street. There are mass transit routes in the vicinity of the Project site, but these routes will not be impacted by the implementation of the Project. Therefore, with the implementation of the proposed Project, in combination with past, present, and reasonably foreseeable projects, there would be no conflict with applicable plan, ordinance or policy establishing measures of effectiveness for the performance of pedestrian and bicycle paths and mass transit.

5.3.16 - TRIBAL CULTURAL RESOURCES

The Project is not anticipated to result in any impact to Tribal Cultural Resources. Therefore, the Project's contribution to the impact would be *less than cumulatively significant*.

CHAPTER 6 - MANDATORY CEQA SECTIONS

6.1 - Significant Unavoidable Environmental Effects

The *CEQA Guidelines, Section 15126.2 (a)(b)*, requires a description of any significant impacts, including those which can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described. The Project was evaluated with respect to specific resource areas to determine whether implementation would result in significant adverse impacts.

Potentially significant environmental impacts that would result from implementation of the proposed Project are summarized in Table 1-2 in **Chapter 1, Introduction and Executive Summary**, of this Draft EIR. In some cases, impacts that have been identified would be less than significant. In other instances, incorporation of the mitigation measures proposed in this Draft EIR would reduce the impacts to levels that are less than significant. Although the proposed Project contains policies and guidelines that mitigate certain impacts, no mitigation measures have been identified to reduce the following impacts to a less-than-significant level. Those impacts that cannot feasibly be mitigated to a less-than-significant level, or for which no mitigation measures are available, would remain as significant unavoidable adverse impacts, as described below.

6.1.1 - AGRICULTURAL AND FORESTRY RESOURCES

Impact #3.2-e: Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

6.1.2 - PUBLIC SERVICES AND UTILITIES

Impact #3.13-c: Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

6.2 - Significant and Irreversible Environmental Changes

CEQA provides that an EIR shall include a detailed statement setting forth "[i]n a separate section…[a]ny significant effects on the environment that would be irreversible if the project is implemented" (PRC, Section 21100(b)(2)). *Section 15126.2(c)* of the *CEQA Guidelines* provides the following for analyzing the significant irreversible environmental changes of a project:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a

> previously inaccessible area) generally commit future generations to similar uses. Also, irretrievable damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Where the decision of the public agency allows the occurrence of significant effects that are identified in the Final EIR but are not at least substantially mitigated, the agency shall state in writing the specific reasons to support its action based on the Final EIR and/or the information in the record (*Section 15093(b)*). This statement is called a "Statement of Overriding Considerations." This statement will be prepared at the end of the CEQA review process, after the Final EIR for this Project has been completed.

Implementation of the proposed Project would result in the short-term commitment of non-renewable and/or slowly renewable energy resources and natural resources including lumber and other forest products, sand and gravel, asphalt, steel, copper, lead, other metals, and water due to construction activities. As the Project site develops, non-residential development would require further commitment of energy resources in the form of natural gas and electricity. Increased motor vehicular travel as a result of the increased commitment of public services would also be required. Implementation of the proposed Project would result in the long-term commitment of resources to serve the proposed Project site. The most notable significant irreversible impacts are increased generation of air pollutants and noise from additional vehicular traffic.

The proposed Project could result in irreversible damage from environmental accidents, such as an accidental spill or explosion of a hazardous material. During construction, equipment on the site would use various types of fuel. During operation, the Love's Travel Stop's fuel islands and propane area as well as the tire shop and truck area would require the transport large amounts of hazardous materials including gasoline, oil, and other automotive materials. In accordance with California Vehicle Code, Section 32000, however, licensing is required for every motor (common) carrier who transports, for a fee, in excess of 500 pounds of hazardous materials at one time, and every carrier, if not for hire, who carries more than 1,000 pounds of hazardous material of the type requiring placards. Transport of hazardous materials as a result of Project operations would also have to adhere to the State's Hazardous Materials Transportation Regulations (CCR 26). The enforcement of these existing regulations would be expected to minimize the potential for irreversible damage associated with accidental spills or explosions on the Project site.

Significant impacts resulting from development of the proposed Project, for which complete mitigation is unavailable, infeasible, or outside the jurisdiction of the City of Tulare to implement, are summarized in **Section 6.1, Significant Unavoidable Environmental Impacts**, and are described in detail in the appropriate sections in **Chapter 3, Environmental Impact Analysis,** of this Draft EIR. Although the proposed Project would result in the irretrievable commitment of non-renewable resources, the City of Tulare's decision-makers could reasonably conclude that such consumption would be justified because the proposed Project would provide an economically viable and competitive mix of commercial and residential uses.

6.3 - Growth-inducing Impacts

Section 15126.2(d) of the *CEQA Guidelines* requires a discussion of how the potential growth-inducing impacts of the proposed Project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Direct population growth occurs when a project would result in the construction of a substantial amount of new housing or otherwise directly cause a substantial increase in a community's population. Indirect growth inducement occurs when a project would extend infrastructure to undeveloped areas, remove obstacles to population growth, or otherwise encourage activities that cause significant environmental effects. Induced growth is distinguished from the direct employment, population, or housing growth of a project. If a project has characteristics that "may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively," then these aspects of the project must be discussed as well. Induced growth is any growth that exceeds planned growth and results from new development that would not have taken place in the absence of the proposed project. For example, a project could induce growth by lowering or removing barriers to growth or by creating or allowing a use such as an industrial facility that attracts new population or economic activity. *CEQA Guidelines* also indicate that the topic of growth should not be assumed to be either beneficial or detrimental.

Growth inducement itself is not an environmental effect but may lead to environmental effects. These environmental effects may include increased demand on other community and public services and infrastructure, increased traffic and noise, degradation of air or water quality, degradation or loss of plant or animal habitats, or conversion of agricultural and open space land to urban uses.

6.3.1 - Direct and Indirect Growth Inducement

A key consideration in evaluating growth inducement is whether the activity in question constitutes "planned growth." A project that is consistent with the underlying General Plan and zoning designations would generally be considered planned growth because it was previously contemplated by these long-range documents, and, thus, would not be deemed to have a significant growth-inducing effect. Likewise, a project that requires a General Plan Amendment and re-zone to develop more intense uses than are currently allowed may be considered to have a substantial growth-inducing effect because such intensity was not contemplated by the applicable long-range documents. It should be noted that these are hypothetical examples, and conclusions about the potential for growth inducement will vary on a case-by-case basis.

6.3.2 - Direct Population Growth

Project implementation will have a direct growth-inducing impact because the Project includes proposed dwellings. This growth has been accounted for in the most recent Tulare General Plan Update.

6.3.3 - REMOVAL OF BARRIER TO GROWTH

The proposed Project would result in the extension of urban infrastructure to an area that is currently not serviced because the Project requires connection to urban infrastructure. In particular, potable water and sewer service will be extended to the Project site.

Overall, the proposed Project is consistent with the land use designations contained in the Tulare General Plan and will not encourage growth that exceeds population projections. Growth inducement, as it pertains to CEQA and this document, generally denotes growth that is not planned. Given that the proposed Project complies with City growth projections, it will not result in significant direct growth-inducing impacts.

6.4 - Effects Not Found to be Significant

CEQA Guidelines, Section 15128, states that "an EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR." During the scoping process for this EIR, it was determined that certain environmental topics cited in the Notice of Preparation (NOP) would not be evaluated in detail; therefore, the Project was analyzed in detail with respect to certain environmental areas described within the Appendix G Guidelines, and other environmental topics were dismissed from further analysis. The environmental issue areas that were dismissed from further analysis in this EIR are:

Agriculture and Forestry Resources

e) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code, Section 12220(g)), timberland (as defined by Public Resources Code, Section 4526), or timberland zoned Timberland Production (as defined by Government Code, Section 51104(g)); and

f) Result in the loss of forestland or conversion of forestland to non-forest use.

Geology and Soils

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

Hazards and Hazardous Materials

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code, Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the

project result in a safety hazard for people residing or working in the project area; and

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.

Hydrology and Water Quality

g) Place housing within a 100-year flood hazard area as mapped on a federal flood hazard boundary or flood insurance rate map or other flood hazard delineation map;

h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows; and

j) Contribute to inundation by seiche, tsunami, or mudflow.

Land Use and Planning

b) Physically divide an established community; and

d) Conflict with any applicable habitat conservation plan or natural community conservation plan.

Mineral Resources

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

Noise

g) 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, would the project expose people residing or working in the project area to excessive noise levels.

h) For a project located within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

Population and Housing

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; and

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Results of the comprehensive environmental analysis are presented in **Chapter 3, Environmental Impact Analysis,** of this EIR.

6.5 - Energy Conservation

Public Resources Code, Section 21100(b)(3) and *CEQA Guidelines* Appendix F, require EIRs to describe, where relevant, the wasteful, inefficient, and unnecessary consumption of energy caused by a project. In 1975, the State Legislature adopted AB 1575, which created the California Energy Commission (CEC). The statutory mission of the CEC is to forecast future energy needs, license thermal power plants of 50 megawatts or larger, develop energy technologies and renewable energy resources, plan for and direct State responses to energy emergencies, and promote energy efficiency through the adoption and enforcement of appliance and building energy efficiency standards (BEES).

AB 1575 also amended Public Resources Code, Section 21100(b)(3), to require EIRs to consider the wasteful, inefficient, and unnecessary consumption of energy caused by a project. Appendix F of the *CEQA Guidelines*, created by the State Resources Agency, is a guidance document that assists EIR preparers in determining whether a project will result in the inefficient, wasteful, and unnecessary consumption of energy.

This EIR considers whether the proposed Project would result in the wasteful, inefficient, and unnecessary consumption of energy, cause the need for additional natural gas or electrical energy-producing facilities, or otherwise have an excessive energy requirement in the Project operations.

6.5.1 - FEDERAL ENERGY POLICY

The Federal Energy Policy and Conservation Act of 1975 sought to ensure that all vehicles sold in the U.S. would meet certain fuel economy goals. Congress established the first fuel economy standards for on-road motor vehicles in the U.S through this Act. The first ever standards for heavy duty vehicles (i.e. vehicles and trucks over 8,500 pounds gross vehicle weight) were established under the Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium and Heavy-Duty Engines and Vehicles on September 15, 2011 in response to the President's directive on May 21, 2010. The Corporate Average Fuel Economy (CAFE) Program, which is administered by the EPA, was created to determine vehicle manufacturers' compliance with the fuel economy standards. In the course of its 30+ year history, this regulatory program has resulted in vastly improved fuel economy throughout the nation's vehicle fleet.

Energy Independence and Security Act of 2007 as approved January 4, 2007 was promulgated "to move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy

greenhouse gas capture and storage options, and to improve the energy performance of the federal government, and for other purposes" (Congress 2007).

The December 2013 Presidential Memorandum: Federal Leadership on Energy Management, which was issued to the heads of executive departments and agencies, says that by fiscal year 2020, 20 percent of the total amount of electric energy consumed by each federal agency during any fiscal year shall be renewable energy. This was followed with a Presidential Executive Order 13693 on March 19, 2015: Planning for Federal Sustainability in the Next Decade, "in order to maintain federal leadership in sustainability and greenhouse gas emission reductions."

6.5.2 - STATE ENERGY EFFICIENCY STANDARDS

The CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs.

Title 24, which was promulgated by the CEC in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption, provides energy efficiency standards (EES) for residential and non-residential buildings. According to the CEC, since the EES went into effect in 1978, it is estimated that California residential and non-residential consumers have reduced their utility bills by at least $15.8 billion.

In 2013, the CEC adopted new EES. All projects that apply for a building permit after July 1, 2014 must adhere to the new 2013 standards. The 2013 BEES focus on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings and include requirements that will enable both demand reductions during critical peak periods and future solar electric and thermal system installations. The 2013 Standards also include updates to the energy efficiency divisions of the California Green Building Code Standards (Title 24, Part 11). California Green Building Standards: On January 12, 2010, the State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code, which went into effect on January 1, 2011. The Code is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings.

Because the adoption of Title 24 post-dates the adoption of AB 1575, it has generally been the presumption throughout California that compliance with Title 24 (as well as compliance with the federal and State regulations) ensures that projects will not result in the inefficient, wasteful, and unnecessary consumption of energy. Title 24 is designed to provide certainty and uniformity throughout California while ensuring that the efficient and non-wasteful consumption of energy is carried out through design features. Adherence to Title 24 is deemed necessary to ensure that no significant impacts occur from the inefficient, wasteful, and unnecessary consumption of energy. In addition, the adoption of federal vehicle fuel

standards, which have been continually improved since their original adoption in 1975, have also protected against the inefficient, wasteful, and unnecessary use of energy.

According to the CEC, reducing energy use has been a benefit to all. Building owners save money, Californians have a more secure and healthy economy, the environment is less negatively impacted, and our electrical system can operate in a more stable state. The 2013 BEES (Title 24) will lead to 25 percent less energy consumption for residential buildings and 30 percent savings for non-residential buildings over 2008 Energy Standards. These standards are estimated to save 200 million gallons of water (equal to more than 6.5 million wash loads) and avoid 170,500 tons of greenhouse gas emissions a year. These savings will accumulate as the standards affect each subsequent year of construction.

Since the California 2000–2001 electricity crisis, the CEC has placed greater emphasis on demand reductions. The 2013 standards update codes for lighting, space heating and cooling, ventilation, and water heating. These standards add approximately $2,000 to the new residential building construction costs. Estimated energy savings to homeowners, however, is more than $6,000 over 30 years.

Pursuant to the California Building Standards Code and the Title 24 Energy Efficiency Standards, the City will review the design and construction components of the Project's Title 24 compliance when specific building plans are submitted.

6.5.3 - ENERGY REQUIREMENTS OF THE PROPOSED PROJECT

A project would be considered to result in a significant impact under the *CEQA Guidelines* for public services if the project would result in the wasteful, inefficient or unnecessary consumption of energy; or a substantial increase in demand or transmission service that would require new or expanded infrastructure.

Appendix F of the *CEQA Guidelines* specifically calls out for discussion of energy conservation, which includes (but is not limited to):

- Decreasing energy consumption per capita;
- Decreasing fossil fuel reliance; and
- Increasing reliance on renewable energy sources.

Construction and operation of the proposed Project would increase the use of energy resources on the Project site, including fossil fuels, but would not result in wasteful, inefficient or unnecessary consumption of these resources. Implementation of the Project would result in the use of energy resources both in the short-term during construction and in long term during Project operations.

6.5.4 - SHORT-TERM CONSTRUCTION

The EPA regulates non-road diesel engines. The EPA has no formal fuel economy standards for non-road (e.g., construction) diesel engines but does regulate diesel emissions, which

indirectly affects fuel economy. In 1994, the EPA adopted the first set of emissions standards (Tier 1) for all new non-road diesel engines greater than 37 kilowatts (50 horsepower). The Tier 1 standards were phased in for different engine sizes between 1996 and 2000, reducing nitrogen oxide (NOx) emissions from these engines by 30 percent. The EPA has since adopted more stringent emission standards for NOx, hydrocarbons, and particulate matter from new non-road diesel engines. These standards will further reduce non-road diesel engine emissions for NOx and particulate matter (PM) from Tier 1 emission levels. In 2004, the EPA issued the Clean Air Non-Road Diesel Rule in 2014. The rule was fully phased in and has cut emissions from non-road diesel engines significantly.

During construction, the Project would consume energy from fuel energy utilized by construction equipment and vehicles and through energy utilized in the production of construction materials.

Construction for the development is scheduled to begin in 2019, and since specific construction details were not available at the time the study was prepared, this analysis used the CalEEMod construction defaults, with the exception of acreage to be disturbed, which was supplied by the applicant. CalEEMod output is provided in the Appendix of the Air Quality Report (Appendix B). As such, a construction equipment list is not provided; however, it is anticipated that during site clearing, grading and general building construction, fossil fuels would be used in construction equipment. This increase in fossil fuel use would be temporary and would not result in a significant demand of energy resources.

During construction activities the Project proponent would comply with current regulatory requirements and rules that will reduce impacts to energy resources. Some of those requirements include vehicle idling restrictions, recycling and reuse mandates and sustainability practices (such as green building practices and materials). There are no unusual Project characteristics that would necessitate the use of construction equipment that would be significantly less energy-efficient than at comparable construction sites in other parts of the region or State. Therefore, it is expected that construction fuel consumption associated with the proposed Project would not be any more inefficient, wasteful, or unnecessary than at other construction sites in the region or State.

6.5.5 - LONG-TERM OPERATIONS

Operation of the Project would result in an increase in energy consumption for multiple purposes including, but not limited to, inside and outside lighting, building heating and cooling, residential uses, and commercial equipment.

The Project includes several facilities that will attract motorists; however, it is not expected to result in an increase in vehicle trips on a regional basis, based on the premise that the proposed Project is being constructed at a location that will capitalize upon existing vehicular traffic traveling on SR 99. The close proximity of the proposed development to SR 99 will minimize fuel consumption that would otherwise be required if the development were located further from its planned location. A key feature of the Project is to provide new

residential and commercial development on the northern border of Tulare City limits. The Project's long-term energy consumption will largely result from the residential development included in the Project. The Tulare Intermodal Express currently services the City of Tulare and surrounding area, so alternative modes of transportation are available for use by residents of the proposed Project.

The proposed Project's first phase of construction is anticipated to be completed by 2022 and the second and third phases to be completed by 2039. The proposed Project would not be any more inefficient, wasteful, or unnecessary than for any other similar land use in the region.

6.5.6 - ENERGY CONSERVATION

The proposed Project's structures would be designed to adhere to the new Title 24 2013 Standards. These requirements include standards for water and space heating and cooling equipment, insulation and commercial appliances. These standards, along with additional energy conservation designs and practices and mitigation measures employed by the proposed Project, would reduce impacts to energy resources during Project operations.

6.6 - Conclusion

In summary, the operation of the proposed Project would result in the consumption of electricity. Additional gasoline would be consumed during both construction and operation of the proposed Project. There are a number of energy conservation measures that will be incorporated into the design, construction, and operational aspects of the Project which would result in a reduction in energy consumption. In conclusion, the proposed Project would not result in a significant impact to energy resources, as energy conservation measures incorporated into the Project's design and operation would avoid wasteful, inefficient, or unnecessary consumption of energy.

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QK

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- Jaymie Brauer, Principal Planner
- Chris Mynk, Principal Planner
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Traffic Impact Study

Ruettgers & Schuler

Phase I Site Assessment Report

CTL, Inc.

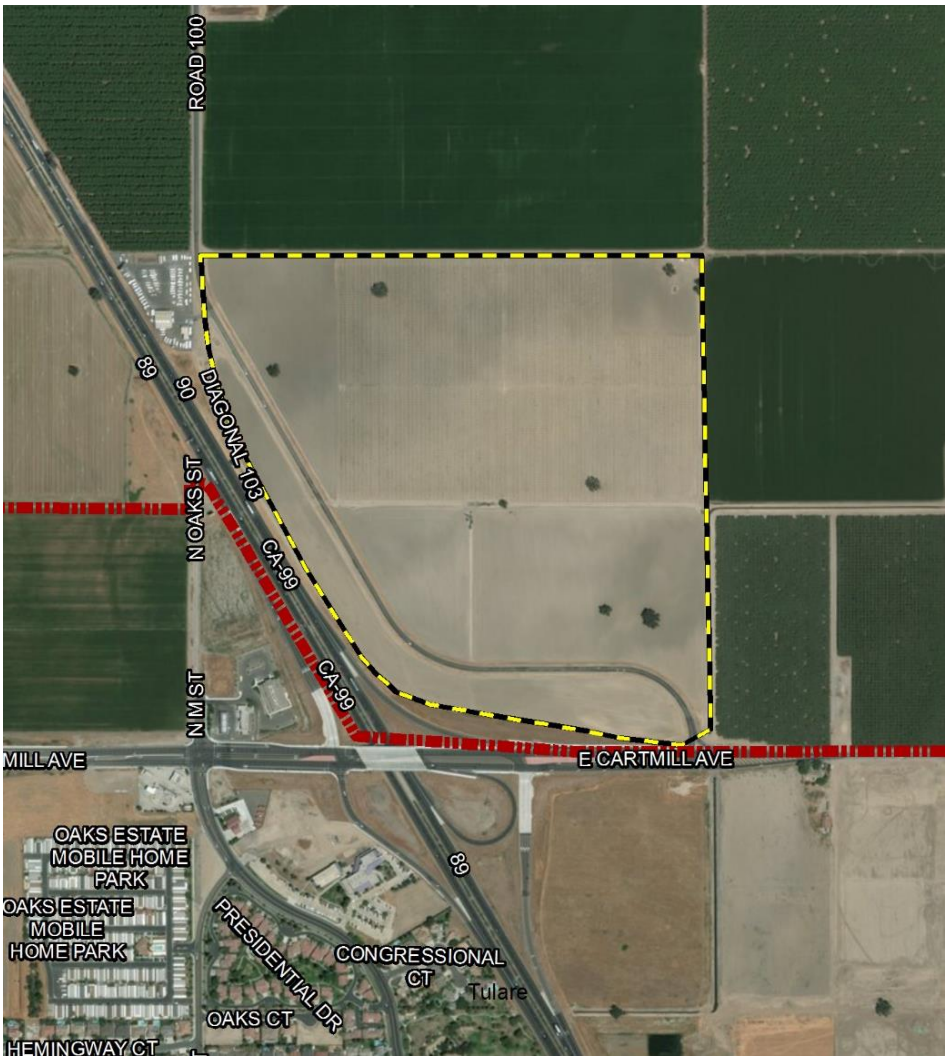
APPENDIX A

INITIAL STUDY AND NOTICE OF PREPARATION

INITIAL STUDY

CITY OF TULARE

CARTMILL CROSSINGS



November 2018

November 19, 2018

Community & Economic Development Department

NOTICE OF PREPARATION

TO: State Clearinghouse
State Responsible Agencies
State Trustee Agencies
Other Public Agencies
Interested Organizations

FROM: Mario Anaya, Principal Planner
City of Tulare
411 East Kern Ave.
Tulare, CA 93274
(559) 684-4223

SUBJECT: Notice of Preparation – Cartmill Crossings

EIR CONSULTANT
Steve Brandt, AICP, Principal Planner
QK
901 East Main Street
Visalia, CA 93292
(559) 733-0440

An Initial Study has been prepared for the proposed Project and is attached to this Notice of Preparation (NOP). The Initial Study lists those issues that will require detailed analysis and technical studies that will need to be evaluated and/or prepared as part of the EIR. The EIR will consider potential environmental effects of the proposed Project to determine the level of significance of the environmental effect and will analyze these potential effects to the detail necessary to make a determination on the level of significance.

Those environmental issues that have been determined to be less than significant will have a discussion that is limited to a brief explanation of why those effects are not considered potentially significant. In addition, the EIR may also consider those environmental issues which are raised by responsible agencies, trustee agencies, and members of the public or related agencies during the NOP process.

We need to know the views of your agency or organization as to the scope and content of the environmental information germane to your agency's statutory responsibilities or of interest to your organization in connection with the proposed Project. Specifically, we are requesting the following:

1. If you are a public agency, state whether your agency will be a responsible or trustee agency for the proposed Project and list the permits or approvals from your agency that will be required for the Project and its future actions;
2. Identify significant environmental effects and mitigation measures that you believe need to be explored in the EIR with supporting discussion of why you believe these effects may be significant;
3. Describe special studies and other information that you believe are necessary for the City of Tulare to analyze the significant environmental effects, alternatives, and mitigation measures you have identified;
4. For public agencies that provide infrastructure and public services, identify any facilities that must be provided (both on- and off-site) to provide services to the proposed Project;
5. Indicate whether a member(s) from your agency would like to attend a scoping workshop/meeting for public agencies to discuss the scope and content of the EIR's environmental information;
6. Provide the name, title, and telephone number of the contact person from your agency or organization that we can contact regarding your comments.

Due to the time limits mandated by State law, your response must be sent and received by the City of Tulare by the following deadlines:

- For responsible agencies, not later than 30 days after you receive this notice.
- For all other agencies and organizations, not later than 30 days following the publication of this Notice of Preparation. The 30 day review period ends on December 19, 2018.

If we do not receive a response from your agency or organization, we will presume that your agency or organization has no response to make.
A responsible agency, trustee agency, or other public agency may request a meeting with the City of Tulare or its representatives in accordance with Section 15082(c) of the CEQA Guidelines. A public scoping meeting will be held during the public review period as follows:

1. Thursday December 6, 2018 from 3:00pm till 6:00pm in the Community Room at City Hall. Community Room is located inside Tulare City Hall, 411 E. Kern Ave. Tulare, CA 93274.

Please send your response to Mario Anaya, Prinicpal Planner at the City of Tulare, 411 East Kern Ave. Tulare, CA 93274. If you have any questions, please contact Mario Anaya at (559) 684-4223.

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Cartmill Crossings

Lead Agency: City of Tulare — Contact Person: Mario Anaya

Mailing Address: 411 East Kern Avenue — Phone: (559) 684-4223

City: Tulare, CA — Zip: 93274 — County: Tulare

Project Location: County: Tulare — City/Nearest Community: City of Tulare

Cross Streets: northeast corner of the State Route 99 (SR 99)/Cartmill Avenue — Zip Code: 93274

Longitude/Latitude (degrees, minutes and seconds): 36 ° 14 ′ 39.96″ N / 119 ° 20 ′ 38.79″ W Total Acres: 120

Assessor's Parcel No.: 149-230-010, -019, -020 and -021 — Section: 26 — Twp.: 19S — Range: 19E — Base: MDB&M

Within 2 Miles: State Hwy #: 99 — Waterways: NA

Airports: NA — Railways: Union Pacific and BNSF — Schools: Heritage Elem, Liberty El

Document Type:

CEQA: ☒ NOP ☐ Draft EIR — NEPA: ☐ NOI — Other: ☐ Joint Document
☐ Early Cons ☐ Supplement/Subsequent EIR ☐ EA ☐ Final Document
☐ Neg Dec (Prior SCH No.) ☐ Draft EIS ☐ Other:
☐ Mit Neg Dec Other: ☐ FONSI

Local Action Type:

☐ General Plan Update ☐ Specific Plan ☐ Rezone ☒ Annexation
☒ General Plan Amendment ☐ Master Plan ☒ Prezone ☐ Redevelopment
☐ General Plan Element ☐ Planned Unit Development ☐ Use Permit ☐ Coastal Permit
☐ Community Plan ☐ Site Plan ☒ Land Division (Subdivision, etc.) ☐ Other:

Development Type:

☒ Residential: Units ____ Acres 42
☐ Office: Sq.ft. ____ Acres ____ Employees ____ ☐ Transportation: Type ____
☒ Commercial: Sq.ft. ____ Acres 68 Employees ____ ☐ Mining: Mineral ____
☐ Industrial: Sq.ft. ____ Acres ____ Employees ____ ☐ Power: Type ____ MW ____
☐ Educational: ____ ☐ Waste Treatment: Type ____ MGD ____
☒ Recreational: Park ☐ Hazardous Waste: Type ____
☐ Water Facilities: Type ____ MGD ____ ☐ Other: ____

Project Issues Discussed in Document:

☒ Aesthetic/Visual ☐ Fiscal ☒ Recreation/Parks ☒ Vegetation
☒ Agricultural Land ☒ Flood Plain/Flooding ☐ Schools/Universities ☒ Water Quality
☒ Air Quality ☒ Forest Land/Fire Hazard ☐ Septic Systems ☒ Water Supply/Groundwater
☒ Archeological/Historical ☒ Geologic/Seismic ☒ Sewer Capacity ☒ Wetland/Riparian
☒ Biological Resources ☒ Minerals ☒ Soil Erosion/Compaction/Grading ☒ Growth Inducement
☐ Coastal Zone ☒ Noise ☒ Solid Waste ☒ Land Use
☒ Drainage/Absorption ☒ Population/Housing Balance ☒ Toxic/Hazardous ☒ Cumulative Effects
☐ Economic/Jobs ☒ Public Services/Facilities ☒ Traffic/Circulation ☐ Other:

Present Land Use/Zoning/General Plan Designation:

Exclusive Agriculture (AE-20) /Regional Commercial

Project Description: *(please use a separate page if necessary)*

The proposed Cartmill Crossings (Project) includes an Annexation, General Plan Amendment, and Pre-zone to allow for a multi-use project consisting of a commercial shopping district and multi-family and single-family residential development. The Project would consist of five (5) different land use designations: Regional Commercial, Low Density Residential, Medium Density Residential, High Density Residential, and Parks and Recreation by the City of Tulare General Plan. The Pre-Zoning for the site will be consistent with the General Plan Land Use designations: Retail Commercial (C-3), Single-Family Residential (R-1-6), Multiple-Family Residential 3,000 square feet per unit (R-M-2), Multiple-Family Residential 1,500 square feet per unit (R-M-4), and Public Lands (P-L).

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

X	Air Resources Board		Office of Historic Preservation
	Boating & Waterways, Department of		Office of Public School Construction
	California Emergency Management Agency		Parks & Recreation, Department of
	California Highway Patrol		Pesticide Regulation, Department of
X	Caltrans District #6		Public Utilities Commission
	Caltrans Division of Aeronautics	X	Regional WQCB #Cent
	Caltrans Planning		Resources Agency
	Central Valley Flood Protection Board		Resources Recycling and Recovery, Department of
	Coachella Valley Mtns. Conservancy		S.F. Bay Conservation & Development Comm.
	Coastal Commission		San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
	Colorado River Board		San Joaquin River Conservancy
X	Conservation, Department of		Santa Monica Mtns. Conservancy
	Corrections, Department of		State Lands Commission
	Delta Protection Commission		SWRCB: Clean Water Grants
	Education, Department of	X	SWRCB: Water Quality
	Energy Commission		SWRCB: Water Rights
X	Fish & Game Region #		Tahoe Regional Planning Agency
	Food & Agriculture, Department of		Toxic Substances Control, Department of
	Forestry and Fire Protection, Department of	X	Water Resources, Department of
	General Services, Department of		
	Health Services, Department of		Other:
X	Housing & Community Development		Other:
X	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date November 19, 2018 Ending Date December 19, 2018

Lead Agency (Complete if applicable):

Consulting Firm:
Address:
City/State/Zip:
Contact:
Phone:

Applicant:
Address:
City/State/Zip:
Phone:

Signature of Lead Agency Representative: /s/ **Date:** 11/19/18

Mario Anaya, Principal Planner

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

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Sacramento, CA 95812-3044
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Central Region
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California Department of Water Resources
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US Fish and Wildlife Service
2800 Cottage Way, W-2606
Sacramento, CA 95825

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210 N. Church St., Suite B
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Southern California Edison
Attention: Regional Manager
2425 S. Blackstone Street
Tulare, CA 93274

Tulare County Resource Management
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Director
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Visalia, California 93277

Tulare Irrigation District
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Tulare, CA 93275

Tulare County Farm Bureau
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Visalia, CA 93292

City of Tulare Public Works
Department

Kaweah Delta Water Conservation District
2975 N. Farmersville Boulevard
Farmersville, CA 93223

Division of Oil, Gas &
Geothermal Resources
4800 Stockdale Highway, #417
Bakersfield, CA 93309

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Eshom Valley Band
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Lake Isabella, CA 93240

INITIAL STUDY

CARTMILL CROSSINGS

Prepared for:

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Tulare, CA 93274
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Consultant:

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Visalia, CA 93292
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November 2018

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Project #170151.01

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SECTION 1 - INTRODUCTION

The proposed Cartmill Crossings (Project) includes an Annexation, General Plan Amendment, and Pre-zone to allow for a multi-use project consisting of a commercial shopping district and multi-family and single-family residential development.

1.1 - Purpose of the Initial Study

An Initial Study (IS) is a preliminary analysis that is prepared to determine the relative environmental impacts associated with a proposed Project. It is designed as a measuring mechanism to determine if a project will have a significant adverse effect on the environment, thereby triggering the need to prepare an Environmental Impact Report (EIR). This Initial Study has been prepared consistent with CEQA Guidelines Section 15063, to determine if the proposed Cartmill Crossings Project may have a significant effect upon the environment.

1.2 - Project Location and Setting

1.2.1 - PROJECT LOCATION

Cartmill Crossings is an approximately 120-acre land development project proposed to be constructed in an area immediately north and adjacent to the City of Tulare, California (Figure 1). Tulare is in the California's Central Valley, eight miles south of Visalia and sixty miles north of Bakersfield. The Project site is in the northeast corner of the State Route 99 (SR 99)/Cartmill Avenue interchange and bounded by SR 99 to the west and Cartmill Avenue to the south (Figure 2). The Project site is within the Tulare USGS Visalia quadrangle. It is located in Section 26, Township 19S, Range 19E, Mount Diablo Base and Meridian (MDB&M).

1.2.2 - EXISTING AND SURROUNDING USES

The Project site currently consists of approximately 120 acres of undeveloped land (APN 149-230-010, -019, -020 and -021). Uses immediately adjacent to the Project site include undeveloped agricultural land to the north and east, Cartmill Avenue and the SR 99 interchange to the south, and SR 99 to the west.

1.2.3 - ENVIRONMENTAL SETTING

As set forth in Section 15125(a) of the State CEQA Guidelines: "An EIR must include a description of the physical environmental conditions in the vicinity of the Project as they exist as the time of the Notice of Preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. The description of the environmental setting shall be no longer than is necessary to an understanding of the significant effects of the proposed Project and its alternatives."

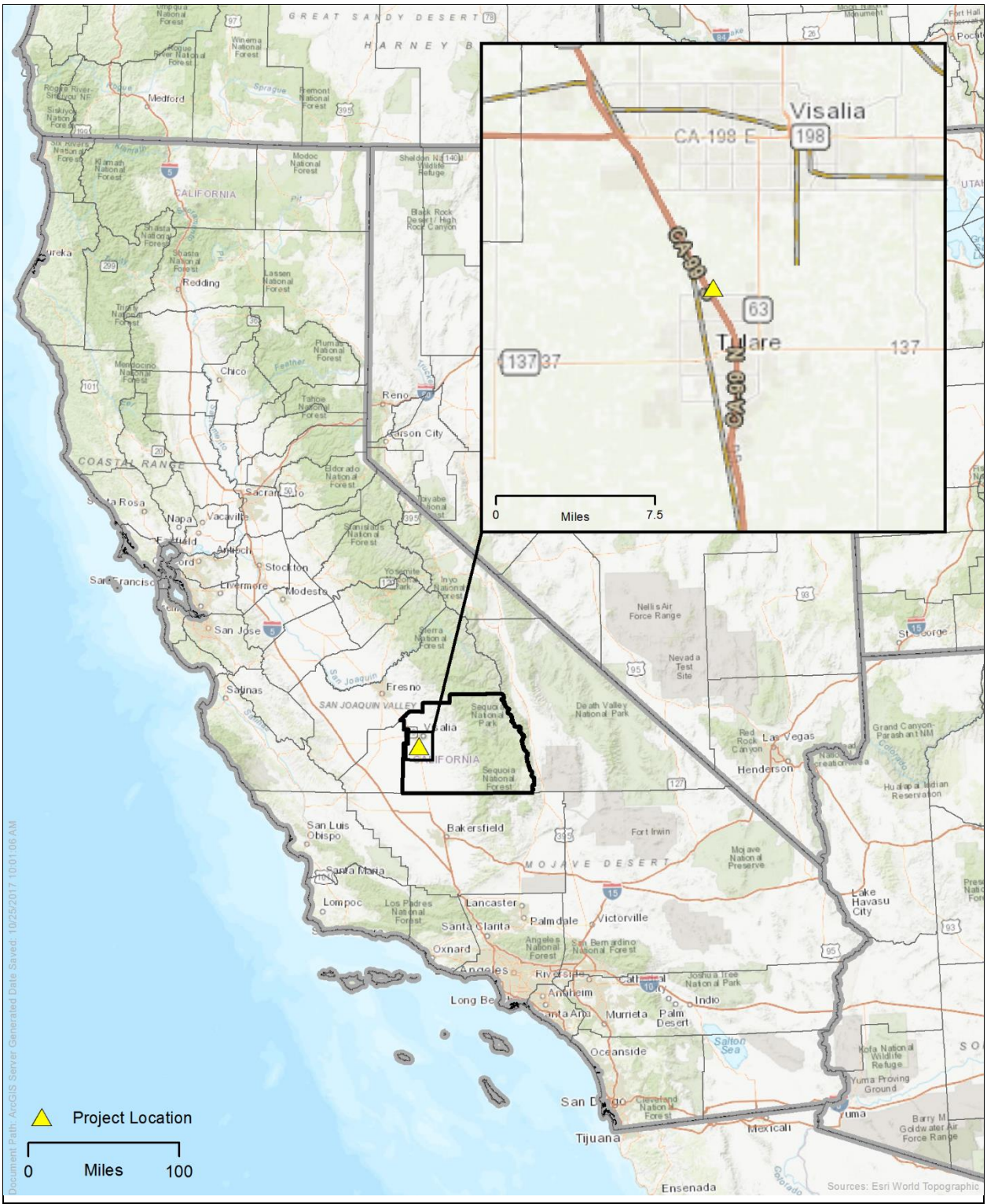


Figure 1
Vicinity Map



Figure 2
Project Site

The climate of the Project area is characteristic of that of the Southern San Joaquin Valley (Valley). The summer climate is hot and dry, while the winters are cool and periodically humid. Mean daily maximum temperatures range from a low of approximately 57 degrees F in December and January to a high of about 99 degrees F in July.

Rainfall is concentrated during the six months from November to April. December and January typically experience heavy fog in the Valley, mostly nocturnal, caused when moist cool air is trapped in the valley by high-pressure systems. In extreme cases, this fog may last continuously for two or three weeks. Its depth is usually less than 3,000 feet.

The Project area is subject to characteristic seasonal airflows. During the summer, air currents from the Pacific Ocean enter the Valley through the San Francisco Bay and Delta region and are forced down the Valley. Airflows move primarily to the southeast at velocities of six to ten miles per hour. During the winter, cold air flowing off the surrounding mountains results in currents toward the northwest and velocities ranging from zero to five miles per hour. These airflows result in extensive horizontal mixing of air masses in the Valley. However, vertical dispersion is constrained by temperature inversions, an increase in air temperature in a stable atmospheric layer, which may occur throughout the year.

The Project lies within the Tulare County portion of the San Joaquin Valley Air Basin (SJVAB) and under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The air quality of the Valley is directly related to the ability of the atmosphere to dilute and transport pollutants. The climate and meteorology within the Valley are conducive to the creation and entrapment of air pollution. Air pollution within the Valley is, in part, a result of the enclosed air basins, which experience long periods of inversion, a relatively light wind flow, and a generous amount of sunlight. The SJVAB is comprised of eight counties: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and central and western Kern. The Basin periodically exceeds State and/or federal standards for levels of ozone and fine particulate matter.

The San Joaquin Valley, approximately 25,000 square miles, is a broad structural trough bordered by the Sierra Nevada Mountains on the east, the Coast Ranges on the west, and the Transverse Range on the south. Groundwater occurrence is directly related to the regional geology and soils. Fresh groundwater is principally contained in the unconsolidated continental deposits of the Pliocene to the Holocene age, which extend to depths ranging from less than 100 to more than 3,000 feet.

The ultimate source of groundwater in the San Joaquin Valley is precipitation on the Valley floor and its tributary drainage basins. Replenishment of the unconfined and semi-confined groundwater bodies can be by seepage from streams and by underflow in permeable materials flooring the river and stream canyons that border the valley.

The groundwater basin in the southern San Joaquin Valley is the Tulare Lake Hydrologic Region which covers the area south of the San Joaquin River and includes Kings County and the western (valley) portions of Fresno, Tulare, and Kern Counties.

The SR 99/Cartmill Avenue interchange was recently expanded to accommodate future planned uses in the surrounding area, including this Project site. The City of Tulare is currently designing a project that would expand Cartmill Avenue to four lanes between Akers Street (named Road 100 in Tulare County) and Hillman Street (named Road 108 in Tulare County). This City project would also extend municipal water and sewer lines westward in Cartmill Avenue to Akers Street and is expected to be completed prior to the proposed project construction.

1.3 - General Plan and Zoning Designations

1.3.1 - CITY OF TULARE GENERAL PLAN LAND USE DESIGNATION

The Project site is designated Regional Commercial by the City of Tulare General Plan Land Use Map. The Regional Commercial designation establishes areas for regional retail centers capable of drawing consumers from outside the urban development boundary. Uses typically allowed include regional malls and outlet centers that contain department stores, comparison, and specialty retail uses with direct and visual arterial and highway access. Developments in this designation typically contain 500,000 or more square feet of commercial space on approximately 20 to 50 acres, although larger sites are possible depending on the uses proposed. The City's General Plan Land Use Map designations for the Project site and surrounding area is shown on Figure 3.

1.3.2 - COUNTY OF TULARE ZONING DESIGNATION

The Project site is currently within the Exclusive Agriculture (AE-20) zone district by Tulare County Zoning Code. The purpose of the AE-20 District is to protect the general welfare of the agricultural community from encroachments of unrelated agricultural uses which, by their nature, would be injurious to the physical and economic well- being of the agricultural community. It is also the purpose of this zone to prevent or to minimize the negative interaction between various agricultural uses. The site will be pre-zoned consistent with the proposed City General Plan Amendment as shown in Table 1.

1.4 - Project Objectives

The objective of the Project is to build and operate an economically viable and competitive development with a mix of commercial and residential uses in compliance with applicable laws and regulations, optimally utilizing the available land resource while minimizing environmental impacts to the extent feasible. The site plan layout and proposed land uses is shown on Figure 4.

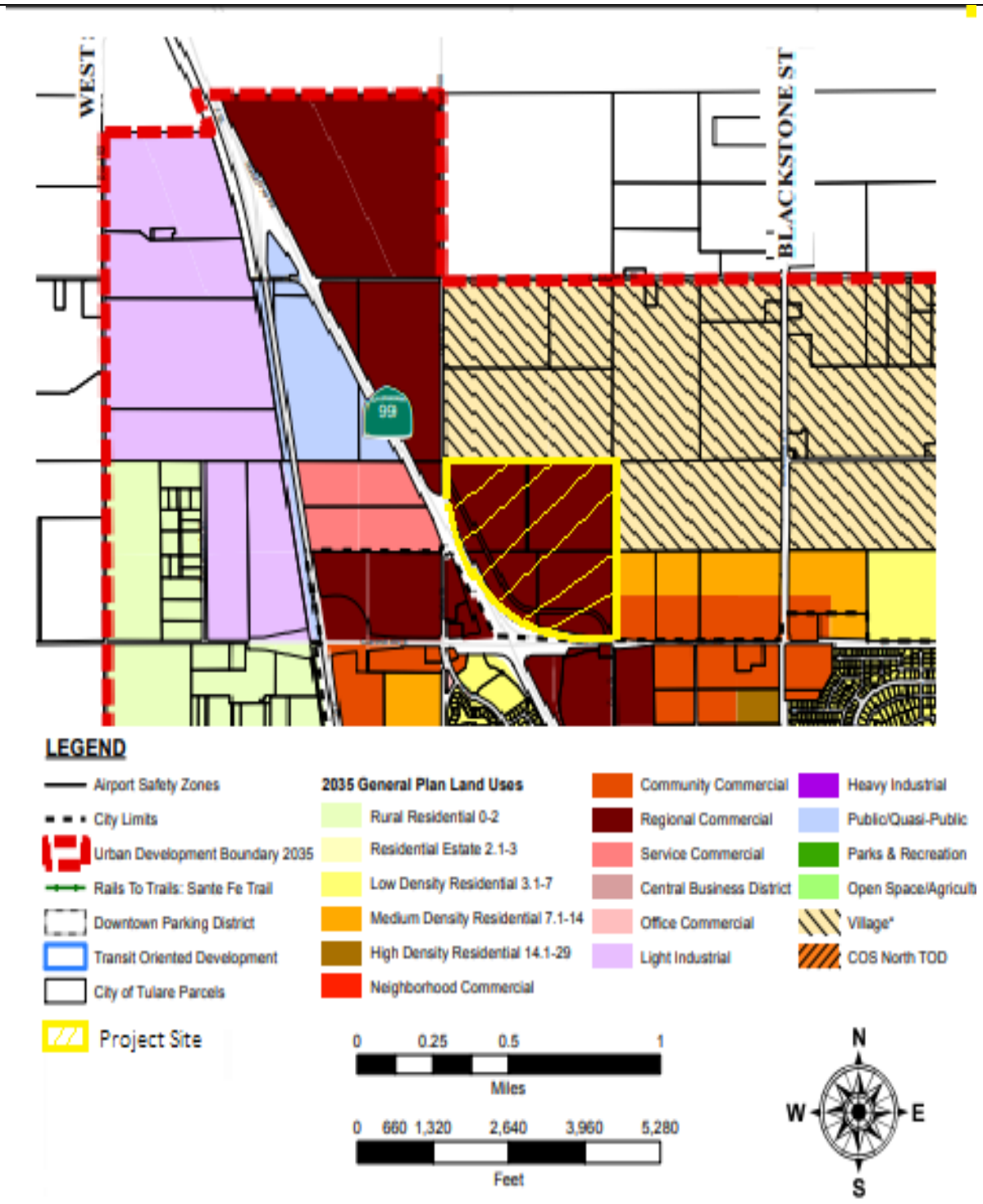


Figure 3
Existing Tulare General Plan Land Use

Table 1
Land Use Summary

Land Use Designation	Allowed Units per Gross Acre	Maximum Allowed FAR / Lot Coverage*	Acreage	Maximum Gross Leasable Area	Estimated Number of Units
Regional Commercial (Phase 1)	N/A	.27 FAR	15.0	176,000 SF	N/A
Regional Commercial (Phase 4)	N/A	.27 FAR	53.6	630,400 SF	N/A
Low Density Residential (Phase 2)	3.1-7.0	50% Lot Coverage	30.3	N/A	132
Medium Density Residential (Phase 3)	7.1-14	50% Lot Coverage	4.4	N/A	40
High Density Residential (Phase 3)	14.1-29	50% Lot Coverage	7.7	N/A	170**
Parks & Recreation (pond-Phase 1, park-Phase 2)	N/A	N/A	7.0	N/A	N/A
Arterial and Collector Right of Way	N/A	N/A	8.8	N/A	N/A

FAR=floor area ratio SF=square feet N/A=not applicable
* Maximum Allowed FAR and Lot Coverage per City of Tulare General Plan
**Estimated units based on 22 units per acre

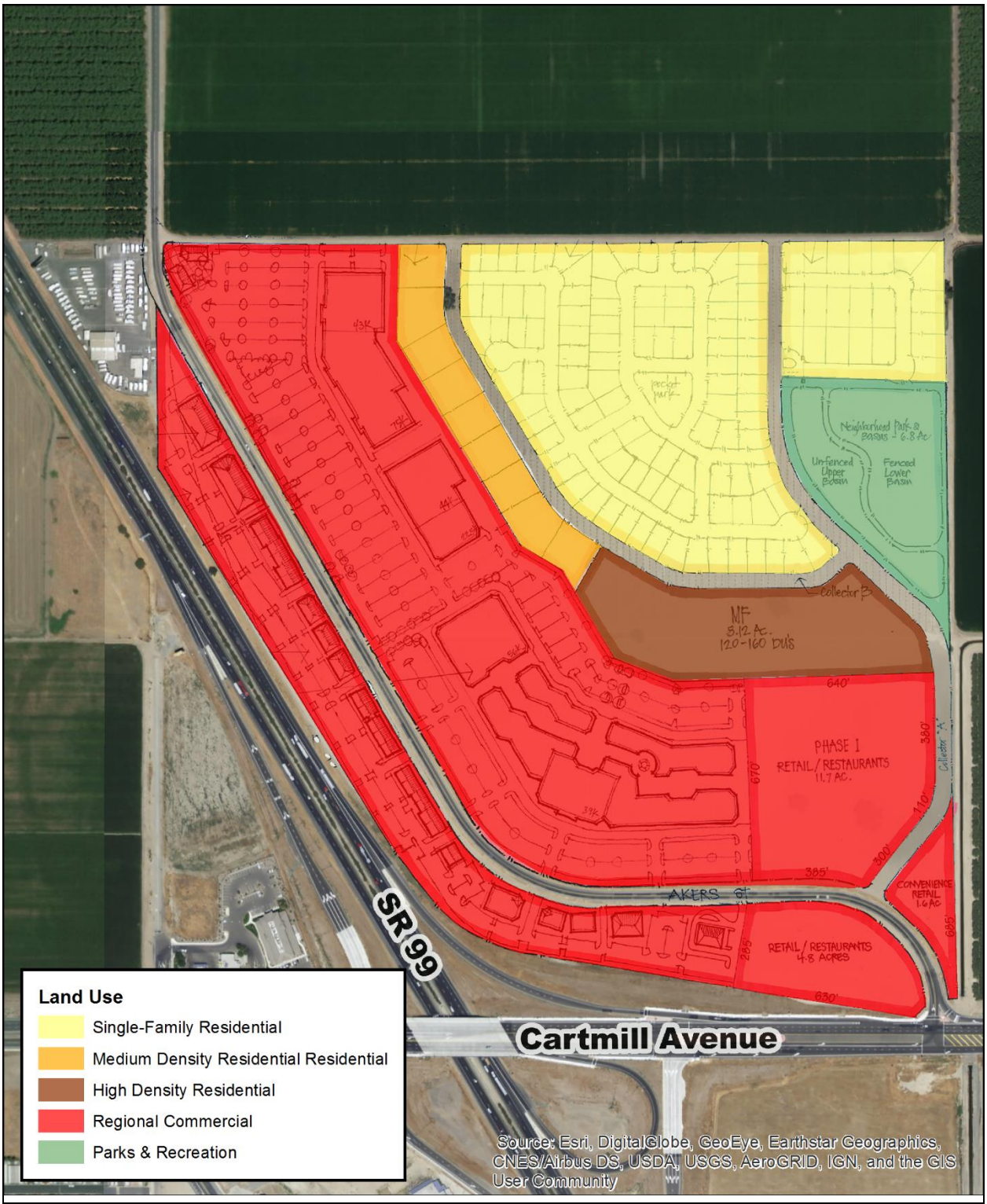


Figure 4
Proposed General Plan Land Use and Site Plan

SECTION 2 - PROJECT DESCRIPTION

The proposed Project is the construction of a multi-use commercial and residential development. Table 1 illustrates the various proposed land uses of the Project. Approximately 68.6 acres of commercial businesses on both sides of Akers Street will be developed in accordance with the permitted uses of the C-3 zone district. Examples of permitted uses include restaurants, fast food restaurants, retail stores, hotels, and fuel stations. The northeastern portion of the Project site will consist of approximately 30 acres of low density single-family residential homes with lots no smaller than 6,000 sq. ft. West of the low-density residential development will be approximately 4.4 acres of medium density residential development, which will likely consist of fourplex residences. Southeast of the medium density area will be approximately 7.7 acres of high density multi-family development, which will likely consist of an apartment complex. Northeast of the multi-family development will be a 7-acre park.

The park will be located on the eastern border of the property line and will be designed with a retention basin/pond to hold storm drain runoff of the site. It will also be designed to allow for expansion by the City to accommodate planned future development to the east of the site. The park will be acquired and maintained by the City. The City may also acquire a well site for a new City-maintained water well on the site. If approved, the proposed Project would be designed to connect to the City of Tulare sewer and water systems with the addition of new sewer and water lines.

As proposed, the Project would consist of five (5) different land use designations: Regional Commercial, Low Density Residential, Medium Density Residential, High Density Residential, and Parks and Recreation by the City of Tulare General Plan. The Pre-Zoning for the site will be consistent with the General Plan Land Use designations: Retail Commercial (C-3), Single-Family Residential (R-1-6), Multiple-Family Residential 3,000 square feet per unit (R-M-2), Multiple-Family Residential 1,500 square feet per unit (R-M-4), and Public Lands (P-L).

While the general layout of land uses of the Project has been determined, a specific site plan has yet to be prepared. It is anticipated that full build-out of the site will roughly 20 years, during which time preferences for commercial building layout may change. Therefore, this Project description is based upon the anticipated densities of development.

The Project will be developed in phases. The largest area will be for regional commercial development. Phase 1 will include 176,000 square feet of regional commercial uses in the southeastern most corner of the Project site, as well as a retention basin to the north. Estimated construction timeline is from 2019 to 2020. Phase 2, estimated to be developed between 2022 and 2025, will include 132 single-family residential homes and a park that will be integrated into the basin site, along with a multi-family component (R-M-2 and R-M-4) that is anticipated for development from 2028 to 2029. Phase 3 will include the rest of the Regional Commercial development, approximately 630,400 square feet, projected to be completed by 2039. Table 1 illustrates the density, size, and estimated number of units of the proposed Project area. The maximum gross leasable area for the commercial uses is based on the maximum floor area ration (FAR) allowed by the Cite of Tulare General Plan. The

estimated numbers of residential units for low density and medium density land use designations are based on the conceptual plan map (Figure 6) plus 10% to allow for flexibility of design. The estimated number of residential units for the high density residential land use designation is based on an estimated apartment complex at a density of 22 units per acre.

2.1 - Permits and Approvals

The City of Tulare, as lead agency for the Project, has discretionary authority over the primary project proposal. To implement this Project, the proponents would need to obtain, at a minimum, the following discretionary permits/approvals:

- Consideration and certification of a final EIR with appropriate findings (15091), a statement of overriding considerations (15093), and a mitigation measures monitoring program;
- A General Plan Amendment from Regional Commercial to Regional Commercial, Low Density Residential, Medium Density Residential, High Density Residential, and Parks & Recreation;
- Pre-Zoning of the site with zoning districts consistent with the new General Plan land use designations;
- Annexation of the Project area into the City of Tulare, along with detachment from the Tulare Irrigation District. The area to be annexed would include adjacent portions of SR 99 that are not already within the city limits;
- Annexation must be initiated by the City of Tulare and approved by Tulare County Local Agency Formation Commission (LAFCo); and
- Subdivision or parcel maps.

2.2 - Circulation

The Project would attract automobiles and truck traffic from State Route 99 to the Project site via the Cartmill Avenue exit. The arterial street of Akers Street runs through the site and will provide access to the proposed retail commercial businesses. This street will be widened to four lanes per the Circulation Element of the City General Plan. Two more streets will be built north of Akers Street. The first collector street (Collector A) will be constructed to cut through Phase 1 of the commercial development and continue north through the low density residential development. The second collector street (Collector B) will be constructed north of the medium-density and high-density residential development and south of the low-density residential development. A third collector street (Collector C) will run along the north boundary of the site and connect to Akers Street at the Project site's northwest corner. Figure 4 displays the proposed site plan layout.

2.3 - Infrastructure and Improvements

The construction of onsite and offsite infrastructure improvements would be required to accommodate development of the proposed Project. Along Cartmill Avenue, the following

off-site improvements are planned to be completed by the City of Tulare: street widening, curbs, gutters, light poles, storm water drains, and public sewer and water. Along Akers Street, no offsite improvements have been installed. The Project will include extending city services to all Project parcels. Off site improvements will be installed on all roads within the Project area as required by the City.

SECTION 3 - INITIAL STUDY

3.1 - Environmental Checklist

1. **Project Title:**

   Cartmill Crossings

2. **Lead Agency Name and Address:**
   City of Tulare
   411 East Kern Ave.
   Tulare, CA 93274

3. **Contact Person and Phone Number:**

   Mario Anaya, Principal Planner
   (559) 684-4223

4. **Project Location:**

   Please see *Section 2 – Project Description*

5. **Project Sponsor's Name and Address:**
   Bill Morgan
   West Coast Construction
   4930 W. Kaweah Court, #103
   Visalia, CA 93277
   (559) 739-2927

6. **General Plan Designation:**

   Regional Commercial

7. **Zoning:**

   AE-20 (Exclusive Agriculture)

8. **Description of Project:**

   Please see *Section 2 – Project Description*

9. **Surrounding Land Uses and Setting:** Please see *Section*

   2 – Project Description

10. Other Public Agencies Whose Approval May be Required:

- Tulare County LAFCo
- Tulare County: Compliance with ALUCP
- Central Valley Regional Water Quality Control Board (CVRWQCB 5F)) - Storm Water Pollution Prevention Plan (SWPPP) approval prior to construction activities.
- San Joaquin Valley Air Pollution Control District (SJVAPCD) - Approval of construction- related air quality permits.

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?

No California Native American tribes traditionally and culturally affiliated with the Project area have provided their contact information to the City (Lead Agency) requesting consultation of proposed projects pursuant to AB 52, Public Resources Code (PRC) Section 21080.3.1. However, letters of consultation were sent to the list of tribal groups in the area provided by the Native American Heritage Commission.

NOTE: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and Project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

3.2 - Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☒ Aesthetics	☒ Agriculture and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Geology and Soils
☒ Greenhouse Gas Emissions	☒ Hazards and Hazardous Materials	☒ Hydrology and Water Quality
☒ Land Use and Planning	☐ Mineral Resources	☒ Noise
☒ Population and Housing	☒ Public Services	☒ Recreation
☒ Transportation and Traffic	☒ Utilities and Service Systems	☒ Mandatory Findings of Significance

3.3 - Determination

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENT IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed

adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

/S/	November 19, 2018
Signature	Date
Mario Anaya	
Printed Name	For

3.4 - Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a. Earlier Analysis Used. Identify and state where they are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a

previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:

    a. the significance criteria or threshold, if any, used to evaluate each question; and
    b. the mitigation measure identified, if any, to reduce the impact to less than significance.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
3.4.1 - AESTHETICS					
Would the project:					
a.	Have a substantial adverse effect on a scenic vista?	☒	☐	☐	☐
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☒	☐	☐	☐
c.	Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐
d.	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☒	☐	☐	☐

Discussion

Impacts #3.4.1a, #3.4.1b, #3.4.1c, and 3.4.1d – Would the Project have a substantial adverse effect on a scenic vista; substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

It has been determined that the potential impacts on aesthetics caused by the proposed Project will require a more detailed analysis. As such, the lead agency will examine each of the four environmental issues listed in the checklist above in the environmental impact report and will decide whether the proposed Project will have a potentially significant impact on aesthetics.

The analysis will provide a discussion of viewsheds, proximity to scenic roadways and scenic vistas, existing lighting standards, thresholds of significance, a consistency analysis, cumulative impact analysis, and a discussion of feasible mitigation measures that should be implemented to reduce impacts on aesthetics. This section of the environmental impact report will identify applicable General Plan policies that protect the visual values located along public roadways and surrounding land uses and will also address the potential for the Project to substantially change the visual character of the Project vicinity. The analysis will address the proposed design and landscaping plans developed by the applicant and provide a narrative description of the anticipated changes to the visual characteristics of the Project

area as a result of Project implementation and the conversion of the existing on-site land uses to travel serving uses. The analysis will address potential impacts associated with light spillage onto adjacent properties during nighttime activities.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact

3.4.2 - AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	☒	☐	☐	☐
b.	Conflict with existing zoning for agricultural use or a Williamson Act Contract?	☐	☐	☐	☒
c.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d.	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e.	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☒	☐	☐	☐

Discussion

Impacts #3.4.2a, #3.4.2b, and #3.4.2e – Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use; conflict with existing zoning for agricultural use or a Williamson Act Contract; or involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

The Project site is currently zoned AE-20 for agricultural use. The Project site is not subject to a Williamson Act contract. There are several properties adjacent to the Project that are under contract. Based on the current agricultural uses in the Project area, it has been determined that the potential impacts on agricultural resources caused by the proposed Project will require a detailed analysis in the EIR to determine whether the proposed Project has the potential to have a significant impact.

Impacts #3.4.2d, and #3.4.2d – Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)); or result in the loss of forest land or conversion of forest land to non-forest use?

There are no forest resources or zoning for forest lands located on the Project site, or nearby within the City of Tulare. Therefore, Project impacts to forest lands would not occur, and does not warrant further analysis in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact

3.4.3 - AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

a.	Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐
b.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐	☐	☐
c.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☒	☐	☐	☐
d.	Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
e.	Create objectionable odors affecting a substantial number of people?	☒	☐	☐	☐

Discussion

Impacts #3.4.3a, #3.4.3b, #3.4.3c, #3.4.3d, and #3.4.3e – Would the Project conflict with or obstruct implementation of the applicable air quality plan; violate any air quality standard or contribute substantially to an existing or projected air quality violation; result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors); expose sensitive receptors to substantial pollutant concentrations; or create objectionable odors affecting a substantial number of people?

Based on the current air quality conditions in the air basin it has been determined that the potential impacts on air quality caused by the proposed Project will require a detailed analysis. As such, the lead agency will examine each of the five environmental issues listed in the checklist above om the EIR to decide whether the proposed Project has the potential to have a significant impact on air quality.

The air quality analysis that presents the methodology, thresholds of significance, a consistency analysis, cumulative impact analysis, and a discussion of feasible mitigation

measures that should be implemented to reduce impacts on air quality. The Project site is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The air quality analysis will include the following:

- Regional air quality and local air quality in the vicinity of the project site will be described. Meteorological conditions in the vicinity of the project site that could affect air pollutant dispersal or transport will be described. Applicable air quality regulatory framework, standards, and significance thresholds will be discussed.
- Short-term (i.e., construction) increases in regional criteria air pollutants will be quantitatively assessed. The ARB-approved CalEEMod computer model will be used
- to estimate regional mobile source and particulate matter emissions associated with the construction of the proposed project.
- Long-term (operational) increases in regional criteria air pollutants will be quantitatively assessed for area source, mobile sources, and stationary sources. The ARB-approved CalEEMod computer model will be used to estimate emissions associated with the proposed project. Exposure to odorous or toxic air contaminants will be assessed through a screening method as recommended by the SJVAPCD.
- Local mobile-source CO concentrations will be assessed through a CO screening method as recommended by the SJVAPCD.
- Diesel Particulate Matter (DPM), and Benzene refueling emissions will be assessed through a Health Risk Assessment screening method which will include The Hotspots Analysis and Reporting Program Version 2 (HARP 2) and AERMOD View. Modeling will be as recommended by the SJVAPCD.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
3.4.4 - BIOLOGICAL RESOURCES					
Would the project:					
a.	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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
b.	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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
c.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐
d.	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?	☒	☐	☐	☐
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☒	☐	☐	☐
f.	Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	☒	☐	☐	☐

Discussion

Impacts #3.4.4a, #3.4.4b, #3.4.4c, #3.4.4d, #3.4.4e, and #3.4.4f – Would the Project 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service; 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service; have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (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; or conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?

Based on the documented special status species, sensitive natural communities, wetlands, and other biological resources in the region, it has been determined that the potential impacts on biological resources caused by the proposed Project will require a detailed analysis. As such, the lead agency will examine each of the environmental issues listed in the checklist above to determine whether the proposed Project has the potential to have a significant impact on biological resources.

A summary of local biological resources, including descriptions and mapping of plant communities, the associated plant and wildlife species, and sensitive biological resources known to occur, or with the potential to occur in the Project vicinity. The analysis will conclude with a consistency analysis, cumulative impact analysis, and a discussion of feasible mitigation measures that should be implemented in order to reduce impacts on biological resources and to ensure compliance with the federal and State regulations.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
3.4.5 - CULTURAL RESOURCES				
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?	☒	☐	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	☒	☐	☐	☐
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐
d. Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐

Discussion

Impacts #3.4.5a, #3.4.5b, #3.4.5c, and #3.4.5d – Would the Project cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5; cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5; directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; disturb any human remains, including those interred outside of formal cemeteries?

Based on known historical and archaeological resources in the region, and the potential for undocumented underground cultural resources in the region, it has been determined that the potential impacts on cultural resources caused by the proposed Project will require a detailed analysis in the environmental impact report. As such, the lead agency will examine each of the four environmental issues listed in the checklist above in the EIR to determine whether the proposed Project has the potential to have a significant impact on cultural resources.

The EIR will include an overview of the prehistory and history of the area, the potential for surface and subsurface cultural resources to be found in the area, the types of cultural resources that may be expected to be found, a review of existing regulations and policies that protect cultural resources, an impact analysis, and mitigation that should be implemented in order to reduce potential impacts to cultural resources.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
3.4.6 - GEOLOGY AND SOILS				
Would the project:				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☒	☐	☐	☐
ii. Strong seismic ground shaking?	☒	☐	☐	☐
iii. Seismic-related ground failure, including liquefaction?	☒	☐	☐	☐
iv. Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☒	☐	☐	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	☒	☐	☐	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☒	☐	☐	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Discussion

Impacts #3.4.6a(i-iv), #3.4.6b, #3.4.6c, and #3.4.6d – Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides; result in substantial soil erosion or the loss of topsoil; be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse; or be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

It has been determined that the potential impacts from geology and soils will require a detailed analysis in the EIR. As such, the lead agency will examine each of the environmental issues listed in the checklist above to determine whether the proposed Project has the potential to have a significant impact from geology and soils.

The EIR will include a review of existing geotechnical reports, published documents, aerial photos, geologic maps and other geological and geotechnical literature pertaining to the site and surrounding area to aid in evaluating geologic resources and geologic hazards that may be present. The environmental impact report will include a description of the applicable regulatory setting, a description of the existing geologic and soils conditions on and around the Project site, an evaluation of geologic hazards, a description of the nature and general engineering characteristics of the subsurface conditions within the Project site, and the provision of findings and potential mitigation strategies to address any geotechnical concerns or potential hazards.

The Project is located in a relatively flat-lying plain, does not contain any steep slopes, and the likelihood of landslides is very low. Therefore, impacts related to landslides are not anticipated to occur or pose a hazard to the project or surrounding area and further analysis of this issue is not warranted in the EIR.

This section will provide an analysis including thresholds of significance, a consistency analysis, cumulative impact analysis, and a discussion of feasible mitigation measures that should be implemented to reduce impacts associated with geology and soils.

Impact #3.4.6e – Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?

The proposed Project would connect to the municipal sewer system for wastewater disposal. Septic tanks or septic systems are not proposed as part of the Project. Therefore, further evaluation in the EIR is not warranted.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
3.4.7 - GREENHOUSE GAS EMISSIONS				
Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐	☐	☐
b. Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐	☐	☐

Discussion

Impacts #3.4.7a, and #3.4.7b – Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Implementation of the proposed Project could generate greenhouse gases (GHG) from a variety of sources, including but not limited to vehicle trips, vehicle idling, electricity consumption, water use, and solid waste generation. It has been determined that the potential impacts from greenhouse gas emissions by the proposed Project will require a detailed analysis in the EIR. As such, the lead agency will examine each of the environmental issues listed in the checklist above to decide whether the proposed Project has the potential to have a significant impact from GHG emissions.

The EIR will include a GHG emissions analysis pursuant to the requirements of Executive Order S-3-05 and The Global Warming Solutions Act of 2006 (AB 32). The analysis will follow the California Air Pollution Control Officers Association (CAPCOA) white paper methodology and recommendations presented in Climate Change & CEQA, which was prepared in coordination with the California Air Resources Board and the Governor's Office of Planning and Research as a common platform for public agencies to ensure that GHG emissions are appropriately considered and addressed under CEQA. This analysis will consider a regional approach toward determining whether GHG emissions are significant and will present mitigation measures to reduce impacts. The discussion and analysis will include quantification of GHGs generated by the Project as well as a qualitative discussion of the Project's consistency with any applicable state and local plans to reduce the impacts of climate change.

The EIR will provide an analysis including the methodology, thresholds of significance, a consistency analysis, cumulative impact analysis, and a discussion of feasible mitigation

measures that should be implemented to reduce impacts associated with greenhouse gas emissions.

3.4.8 - HAZARDS AND HAZARDOUS MATERIALS

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:					
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☒	☐	☐	☐
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☒	☐	☐	☐
c.	Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☒	☐	☐	☐
d.	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
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, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f.	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g.	Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	☒	☐	☐	☐
h.	Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☒	☐	☐	☐

Discussion

Impacts #3.4.8a, #3.4.8b, #3.4.8c, #3.4.8g, and #3.4.8h – Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; for a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area; impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan; or expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

It has been determined that the potential impacts from hazards and/or hazardous materials by the proposed Project will require a detailed analysis in the EIR. As such, the lead agency will examine each of the environmental issues listed in the checklist above to determine whether the proposed Project has the potential to have a significant impact from hazards and/or hazardous materials.

The EIR will include a review of existing environmental site assessments and any other relevant studies for the Project site to obtain a historical record of environmental conditions. The analysis will also include a review of recent records and aerial photographs. A site reconnaissance will be performed to observe the site and potential areas of interest. Property owners/managers will be interviewed to gather information on the current and historical use of the properties, and the potential for Project implementation to introduce hazardous materials to and from the area during construction and operation. If environmental conditions are identified, mitigation measures, as applicable, will be identified to address the environmental conditions.

This section will provide an analysis including the methodology, thresholds of significance, a consistency analysis, cumulative impact analysis, and a discussion of feasible mitigation measures that should be implemented to reduce impacts associated with hazards and hazardous materials.

Impacts #3.4.8d, #3.4.8e, and #3.4.8f – Would the Project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment; for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area; or for a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

The site is not listed on the Department of Toxic Substance Controls Hazardous Waste and Substances Site List. The site is not located within two miles of an airport and is not located within the boundaries of an adopted Airport Land Use Plan. There are no private airports or airstrips within the vicinity of the Project site. As such, further evaluation in the EIR is not warranted.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
3.4.9 - HYDROLOGY AND WATER QUALITY					
Would the project:					
a.	Violate any water quality standards or waste discharge requirements?	☒	☐	☐	☐
b.	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☒	☐	☐	☐
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?	☒	☐	☐	☐
d.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site?	☒	☐	☐	☐
e.	Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☒	☐	☐	☐
f.	Otherwise substantially degrade water quality?	☒	☐	☐	☐
g.	Place housing within a 100-year flood hazard area as mapped on a federal flood hazard boundary or flood insurance rate map or other flood hazard delineation map?	☐	☐	☐	☒
h.	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☒

i.	Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☒	☐	☐	☐
j.	Contribute to inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion

Impacts #3.4.9a, #3.4.9b, #3.4.9c, #3.4.9d, #3.4.9e, #3.4.9f, #3.4.9i – Would the Project violate any water quality standards or waste discharge requirements; substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted); substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site; substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site; create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; otherwise substantially degrade water quality; or expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

Flood hazards can result from failure of a water impoundment structure, such as a dam. Additionally, Human activities have an effect on water quality when chemicals, heavy metals, hydrocarbons (auto emissions and car crank case oil), and other materials are transported with stormwater into drainage systems. Construction activities can increase sediment runoff, including concrete waste and other pollutants.

It has been determined that the potential impacts on hydrology and water quality caused by the proposed Project will require a detailed analysis in the EIR. As such, the lead agency will examine the potentially significant environmental issues listed in the checklist above in the EIER to determine whether the proposed Project has the potential to have a significant impact on hydrology and water quality.

The EIR will evaluate the potential construction and operational impacts of the proposed Project on water quality. This section will describe the surface drainage patterns of the Project area and adjoining areas and identify surface water quality in the Project area based on existing and available data. Conformity of the proposed Project to water quality regulations will also be discussed. Mitigation measures will be developed to incorporate Best Management Practices (BMPs), consistent with the requirements of the Central Valley Regional Water Quality Control Board (CVRWQCB) to reduce the potential for site runoff.

This section will provide an analysis including the methodology, thresholds of significance, a consistency analysis, cumulative impact analysis, and a discussion of feasible mitigation measures that should be implemented to reduce impacts associated with hydrology and water quality.

Impacts #3.4.9g, and #3.4.9h – Would the Project place housing within a 100-year flood hazard area as mapped on a federal flood hazard boundary or flood insurance rate map or other flood hazard delineation map; or place within a 100-year flood hazard area structures that would impede or redirect flood flows?

The Project site is not located within the 100-year floodplain as delineated by the FEMA FIRM. As such, there is no potential for the proposed Project to place housing, or structures which would impede or redirect flood flows within the 100-year floodplain. Therefore, further evaluation in the EIR is not warranted.

Impact #3.4.9j – Would the Project contribute to inundation by seiche, tsunami, or mudflow?

There are no significant bodies of water near the Project site that could be subject to a seiche or tsunami. Additionally, the Project site and the surrounding areas are essentially flat, which precludes the possibility of mudflows occurring on the Project site. Therefore, further evaluation in the EIR is not warranted.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
3.4.10 - LAND USE AND PLANNING					
Would the project:					
a.	Physically divide an established community?	☐	☐	☐	☒
b.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal Program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☒	☐	☐	☐
c.	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Discussion

Impacts #3.4.10a, and #3.4.10c – Would the Project physically divide an established community or conflict with any applicable habitat conservation plan or natural community conservation plan?

As discussed previously, the Project site is located within an area of agricultural, commercial and industrial activities. The Project does not include, or propose development within an area containing residential uses, and would not inhibit the circulation patterns of an established community. The proposed Project characteristics are generally consistent with surrounding uses and activities. Therefore, further evaluation in the EIR is not warranted.

There are no applicable habitat conservation plans or community conservation plans that cover land on or in the vicinity of the site. Therefore, further evaluation in the EIR is not warranted.

Impact #3.4.10b – Would the Project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal Program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Potential land use and planning impacts caused by the proposed Project will require analysis in the EIR. As such, the lead agency will examine each of these environmental issues to determine whether the proposed Project has the potential to have a significant impact. A

The EIR will include a detailed discussion of the Project as it relates to the existing General Plan, zoning, and other local regulations. The local, regional, State, and federal jurisdictions potentially affected by the Project will be identified, as well as their respective plans, policies, laws, and regulations (including zoning), and potentially sensitive land uses. The proposed Project will be evaluated for consistency the City of Tulare General Plan, the Zoning Ordinance, and other local planning documents. Planned development and land use trends in the region will be identified based on currently available plans. Reasonably foreseeable future development projects within the region will be noted, and the potential land use impacts associated with the Project will be presented.

This section will provide an analysis including the thresholds of significance, a consistency analysis, cumulative impact analysis, and a discussion of feasible mitigation measures that should be implemented to ensure consistency with the existing and planned land uses.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less–than-Significant Impact	No Impact
3.4.11 - MINERAL RESOURCES					
Would the project:					
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Discussion

Impacts #3.4.11a, and #3.4.11b – Would the result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

There are no significant deposits of mineral resources located on the Project site, as delineated by the Mineral Resources and Mineral Hazards Mapping Program (MRMHMP). Therefore, further evaluation in the EIR is not warranted.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
3.4.12 - NOISE					
Would the project result in:					
a.	Exposure of persons to, or generate, noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?	☒	☐	☐	☐
b.	Exposure of persons to or generate 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, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f.	For a project located within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion

Impacts #3.4.12a, #3.4.12b, #3.4.12c, and #3.4.12d – Would the Project result in exposure of persons to, or generate, noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies; exposure of persons to or generate excessive groundborne vibration or groundborne noise levels; a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Based on existing and projected noise levels along roadways and airports, adjacent rail lines, and the potential for noise generated during Project construction and operational activities,

it has been determined that the potential impacts from noise caused by the proposed Project will require analysis in the EIR. As such, the lead agency will examine the potentially significant environmental issues listed in the checklist above in the EIR to decide whether the proposed Project has the potential to have a significant noise impact.

The EIR will i identify the noise level standards contained in the City of Tulare General Plan Noise Elements which are applicable to this Project, as well as any germane State and federal standards. An assessment of construction noise impacts and potential mitigation measures will also be provided.

The EIR will include thresholds of significance, a consistency analysis, cumulative impact analysis, and a discussion of feasible mitigation measures that should be implemented to reduce impacts associated with noise.

Impacts #3.4.14e, and #3.4.14f – Would the Project result in 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, would the project expose people residing or working in the project area to excessive noise levels; or for a project located within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

The site not located within two miles of an airport and is not located within the boundaries of an adopted Airport Land Use Plan. There are no private airports or airstrips located within the immediate vicinity of the Project site. As such, there is no potential for the Project to expose people to excessive noise levels from private airport operations. Therefore, further evaluation in the EIR is not warranted.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less- than Significant Impact	No Impact

3.4.13 - POPULATION AND HOUSING

Would the project:

a.	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☒	☐	☐	☐
b.	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c.	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

Impact #3.4.13a – Would the Project Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The construction of multi-family and single-family homes are proposed. It has been determined that the potential population and housing impacts caused by the proposed Project will require analysis in the EIR. As such, the lead agency will examine these environmental issues and determine whether the proposed Project has the potential to have a significant impact.

Impacts #3.4.13b, and #3.4.13c – Would the Project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

There is no existing housing located on the Project site. Therefore, the Project would not result in the displacement of people or housing. Therefore, further evaluation in the EIR is not warranted.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact

3.4.14 - PUBLIC SERVICES

Would the project:

a.	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services:				
	i. Fire protection?	☒	☐	☐	☐
	ii. Police protection?	☒	☐	☐	☐
	iii. Schools?	☒	☐	☐	☐
	iv. Parks?	☒	☐	☐	☐
	v. Other public facilities?	☒	☐	☐	☐

Discussion

Impacts #3.4.14a(i-v) – Would the Project Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services: fire protection; police protection; schools; parks; or other public facilities?

Implementation of the proposed Project could result in increased demand for police and fire protection in the Plan Area. The Project may also increase demand for other public services and facilities. It has been determined that the potential impacts from increased demands on public services caused by the proposed Project will require analysis in the EIR. As such, the lead agency will examine each of these environmental issues listed in the checklist above to determine whether the proposed Project has the potential to have a significant impact on public services.

The EIR will provide an analysis including the thresholds of significance, a consistency analysis, cumulative impact analysis, and a discussion of feasible mitigation measures that should be implemented reduce impacts associated with public services.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less–than-Significant Impact	No Impact

3.4.15 - RECREATION

Would the project:

a.	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☒	☐	☐	☐
b.	Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☒	☐	☐	☐

Discussion

Impacts #3.4.15a, and #3.4.15b – Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

The Project proposes construction of a park along with the residential development. However, it has been determined that the potential recreation impacts caused by the proposed Project will require analysis in the EIR. The lead agency will examine these environmental issues todecide whether the proposed Project has the potential to have a significant impact.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
3.4.16 - TRANSPORTATION AND TRAFFIC					
Would the project:					
a.	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness 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?	☒	☐	☐	☐
b.	Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☒	☐	☐	☐
c.	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☒	☐	☐	☐
d.	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☒	☐	☐	☐
e.	Result in inadequate emergency access?	☒	☐	☐	☐
f.	Conflict with adopted policies, plans, or Programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☒	☐	☐	☐

Discussion

Impacts #3.4.16a, #3.4.16b, #3.4.16c, #3.4.16d, #3.4.16e, and #3.4.16f – Would the Project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness 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; conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways; result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks; 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; or conflict with adopted policies, plans, or Programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Based on existing and projected traffic volume levels along roadways, it has been determined that the potential traffic impacts caused by the proposed Project will require analysis in the EIR report. As such, the City of Tulare will examine each of the environmental issues listed in the checklist above in the EIR and will determine whether the proposed Project has the potential to have a significant impact from traffic.

The EIR will include a traffic impact study that will describe existing and future traffic conditions, identify the trips that will be generated by the Project and the projected distribution of those trips on the roadway system. The EIR will analyze traffic impacts associated with the Project under existing and cumulative conditions. Potential impacts associated with site access, on-site circulation, and parking will also be addressed in the EIR. The following facilities will be analyzed under existing facilities (subject to further input by Caltrans and/or City of Tulare staff):

The EIR will describe AM peak period (6:30 AM to 8:30 AM) and PM peak period (4:30 PM to 6:30 PM) turning movement counts during a typical weekday for study intersections. The Project's trip generation will be estimated using a combination of trip generation rates from *Trip Generation, 9th Edition*, Institute of Transportation Engineers (2012), and observed trip generation for other similar projects throughout California's Central Valley.

Impacts to the bicycle, pedestrian, rail, and transit facilities and services will be also evaluated. Significant impacts will be identified in accordance with the established criteria. Mitigation measures will be identified to lessen the significance of impacts.

The EIR will provide an analysis including the thresholds of significance, a consistency analysis, cumulative impact analysis, and a discussion of feasible mitigation measures that should be implemented to reduce impacts associated with transportation/traffic.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
3.4.17 - UTILITIES AND SERVICE SYSTEMS				
Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☒	☐	☐	☐
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☒	☐	☐	☐
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☒	☐	☐	☐
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?	☒	☐	☐	☐
e. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☒	☐	☐	☐
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☒	☐	☐	☐
g. Comply with federal, state, and local statutes and regulations related to solid waste?	☒	☐	☐	☐

Discussion

Impacts #3.4.17a, #3.4.17b, #3.4.17c, #3.4.17d, #3.4.17e, #3.4.17f, and #3.4.17g – Would the Project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board; require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; require or result in the construction of new stormwater drainage

facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; save sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed; result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments; be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; or comply with federal, state, and local statutes and regulations related to solid waste?

Implementation of the proposed Project would result in increased demands for utilities to serve the Project. As such, the lead agency will examine each of the environmental issues listed in the checklist to determine whether the proposed Project has the potential to have a significant impact to utilities and service systems.

The EIR will analyze wastewater, water, and storm drainage infrastructure, as well as other utilities (i.e. solid waste, gas, electric, etc.), that are needed to serve the proposed Project. The wastewater assessment will include a discussion of the proposed collection and conveyance system, treatment methods and capacity at the treatment plants, disposal location(s) and methods, and the potential for recycled water use for irrigation. The environmental impact report will provide a discussion of the wastewater treatment plants that are within proximity to the Project site, including current demand and capacity at these plants. The analysis will discuss the disposal methods and location, including environmental impacts and permit requirements associated with disposal of treated wastewater.

The storm drainage assessment will include a discussion of the proposed drainage collection system including impacts associated with the storm drainage system. The EIR will identify permit requirements and mitigation needed to minimize and/or avoid impacts.

The EIR will include an assessment for consistency with the City's 2015 Urban Water Management Plan. The Urban Water Management Plan serves as the basis for determining the available water supplies to meet the demands under normal, single-dry, and multiple-dry year conditions.

The EIR will also address solid waste collection and disposal services for the proposed Project. This will include an assessment of the existing capacity and Project's demands. The assessment will identify whether there is sufficient capacity to meet the Project demands.

The EIR will provide thresholds of significance, a consistency analysis, cumulative impact analysis, and a discussion of feasible mitigation measures that should be implemented to reduce impacts associated with utilities and service systems.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.4.18 - MANDATORY FINDINGS OF SIGNIFICANCE					
a.	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b.	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐
c.	Does the project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

Discussion

Impact #3.4.18a, #3.4.18b, and #3.4.18c - Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory; does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.); or does the project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?

It has been determined that there is a potential for the proposed Project to degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce the number or restrict the range of a rare or endangered plant or animal; eliminate important examples of the major periods of California history or prehistory; create cumulatively considerable impacts; or adversely affect human beings will require more detailed analysis in an EIR. As such, the lead agency will examine each of these environmental issues it determine whether the proposed Project has the potential to have a significant impact on these environmental issues. At this point a definitive impact conclusion for each of these environmental topics will not be made, rather all are considered potentially significant until a detailed analysis is prepared in the EIR.

SECTION 4 - LIST OF PREPARERS

This document was prepared by Quad Knopf , Inc (QK) under the direction of the City of Tulare. QK staff participating in document preparation included the following:

- Steve Brandt, AICP, Principal Planner
- Kira Noguera, Senior Planner
- Jessica Bispels, Assistant Planner
- Jaymie Brauer, Principal Planner

SECTION 5 - REFERENCES

California Department of Conservation Division of Mines and Geology. 2000. Publications of the SMARA Mineral Land Classification Project Dealing with Mineral Resources in California.

California Department of Conservation Division of Mines and Geology. 2012 AB 3098 SMARA Eligible List. Accessed online at www.conservation.ca.gov on January 9, 2013.

California Important Farmlands 2014 Map (California Department of Conservation, 2014) California Important Farmlands. Tulare County Williamson Act Contracts map 2012/2013. City of Tulare. Comprehensive General Plan.

City of Tulare. Municipal Code Title 10 Zoning Code.

FEMA Flood Insurance Rate Map (FIRM) flood Hazzard Areas.

Hazardous Waste and Substance Site List (Cortese) (California Department of Toxic Substances Control, 2018)

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*
Department of Conservation
Division of Oil, Gas, and Geothermal Resources
Inland District
4800 Stockdale Highway • Suite 100
Bakersfield, CA 93309
(661) 322-4031 • FAX (661) 861-0279

December 5, 2018

City of Tulare
Attn: Mr. Mario Anaya
411 East Kern Ave.
Tulare, CA 93274

Subject: EIR Cartmill Crossing

SCH#: 2018111038

Dear Mr. Anaya:

The Department of Conservation, Division of Oil, Gas, and Geothermal Resources (Division) regulates oil and gas production facilities in addition to supervising the drilling, maintenance, and plugging and abandonment of oil, gas, and geothermal wells in California. All oil and gas well operations are subject to the Division's well permitting process, and all oil and gas operations must abide by any pertinent Division statute or regulation. The Division has received and reviewed the above referenced Notice of Public Hearing and submits the following evaluation.

The project is located in Tulare County, outside of any of the Division's oil field administrative boundaries. Division records indicate there are no known oil, gas, or geothermal wells located within the project boundary as identified in the notice, and therefore, no further review by the Division is required.

If during project operations any unrecorded wells are encountered, the project developer or property owner shall immediately notify the Division's Inland District office for consultation. Remedial plugging and abandonment operations may be required.

Thank you for the opportunity to comment on this project. Should you have any questions, please contact Rohit Sharma (Inspections Field Engineering Unit Senior Oil and Gas Engineer) at the Division's Inland District office in Bakersfield at **(661) 334-3665**.

Sincerely,

Cameron D. Campbell
Deputy, Inland District
Division of Oil, Gas & Geothermal Resources

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
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December 3, 2018

Mario Anaya
City of Tulare
411 East Kern Avenue
Tulare, CA 93274

RE: SCH# 2018111038 Cartmill Crossings, Tulare County

Dear Mr. Anaya:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
   a. A brief description of the project.
   b. The lead agency contact information.
   c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
   d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
   a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
   a. Alternatives to the project.
   b. Recommended mitigation measures.
   c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.
   d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
   a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
   b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
    a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
    b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
        i. Planning and construction to avoid the resources and protect the cultural and natural context.
        ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
        i. Protecting the cultural character and integrity of the resource.
        ii. Protecting the traditional use of the resource.
        iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
    a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
    b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
    a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
    b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
    c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Sharaya.Souza@nahc.ca.gov.

Sincerely,

for

Sharaya Souza
Staff Services Analyst

cc: State Clearinghouse

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

December 13, 2018

Mario Anaya
City of Tulare
Community & Economic Development Department
411 East Kern Avenue
Tulare, California 93274

Project: Notice of Preparation for Cartmill Crossings

District CEQA Reference No: 20181314

Dear Mr. Anaya:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the Notice of Preparation (NOP) for the Cartmill Crossings project. The proposed project consists of: 1) 68.6 acres of commercial space; 2) 42.4 acres of residential space; 3) 7 acres of parks and recreational space; and 4) 8.8 acres of arterial and collector right of way (Project). The Project will be located on the northeast corner of State Route 99 and Cartmill Avenue interchange, bounded by State Route 99 to the west and Cartmill Avenue to the south in Tulare, California. The District offers the following comments:

Emissions Analysis

1) At the federal level for the National Ambient Air Quality Standards (NAAQS), the District is currently designated as extreme nonattainment for the 8-hour ozone standards; nonattainment for the PM2.5 standards; and attainment for the 1-Hour ozone, PM10 and CO standards. At the state level, the District is currently designated as nonattainment for the 8-hour ozone, PM10, and PM2.5 California Ambient Air Quality Standards (CAAQS). The District recommends that the Air Quality section of the Environmental Impact Report (EIR) include a discussion of the following impacts:

   a) **Criteria Pollutants:** Project related criteria pollutant emissions should be identified and quantified. The discussion should include existing and post-project emissions.

      i) Construction Emissions: Construction emissions are short-term emissions and should be evaluated separately from operational emissions. For reference, the District's annual criteria thresholds of significance for construction are: 100 tons per year of carbon monoxide (CO), 10 tons per year of oxides of nitrogen (NOx),

Samir Sheikh
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
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www.valleyair.org www.healthyairliving.com

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10 tons per year of reactive organic gases (ROG), 27 tons per year of oxides of sulfur (SOx), 15 tons per year of particulate matter of 10 microns or less in size (PM10), or 15 tons per year of particulate matter of 2.5 microns or less in size (PM2.5).

- *Recommended Mitigation Measure if needed:* To reduce impacts from construction related exhaust emissions, the District recommends feasible mitigation for the project to utilize off-road construction fleets that can achieve fleet average emissions equal to or cleaner than the Tier III emission standards, as set forth in §2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 Code of Federal Regulations. This can be achieved through any combination of uncontrolled engines and engines complying with Tier III and above engine standards.

- *Recommended Mitigation Measure if needed:* Should Project construction emissions exceed the District's annual criteria thresholds of significance, the District recommends full mitigation through implementation of a Voluntary Emission Reduction Agreement (VERA).

  A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of air emissions increase through a process that funds and implements emission reduction projects administered through the District's emission reduction incentive grant programs. The VERA can be implemented to address air quality impacts from construction phases associated with the Project.

ii) Operational Emissions: Permitted (stationary sources) and non-permitted (mobile sources) sources should be analyzed separately. For reference, the annual criteria thresholds of significance for operation of permitted and non-permitted sources each are: 100 tons per year of carbon monoxide (CO), 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), 27 tons per year of oxides of sulfur (SOx), 15 tons per year of particulate matter of 10 microns or less in size (PM10), or 15 tons per year of particulate matter of 2.5 microns or less in size (PM2.5).

- *Recommended Mitigation Measure if needed:* Project related impacts on air quality can be reduced through incorporation of design elements, for example, that increase energy efficiency, reduce vehicle miles traveled, and reduce construction exhaust related emissions.

- *Recommended Mitigation Measure if needed:* Should Project operational mobile source emissions exceed the District's annual criteria thresholds of

significance, the District recommends full mitigation through implementation of a Voluntary Emission Reduction Agreement (VERA).

A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of air emissions increase through a process that funds and implements emission reduction projects administered through the District's emission reduction incentive grant programs. The VERA can be implemented to address air quality impacts from operational phases associated with the Project.

iii) Recommended Model: Project related criteria pollutant emissions from construction and operation non-permitted (limited to equipment not subject to District permits) should be identified and quantified. Emissions analysis should be performed using CalEEMod (**Cal**ifornia **E**mission **E**stimator **Mod**el), which uses the most recent approved version of relevant Air Resources Board (ARB) emissions models and emission factors. CalEEMod is available to the public and can be downloaded from the CalEEMod website at: www.caleemod.com.

b) **Nuisance Odors:** The Project should be evaluated to determine the likelihood that the Project would result in nuisance odors. Nuisance orders are subjective, thus the District has not established thresholds of significance for nuisance odors. Nuisance odors may be assessed qualitatively taking into consideration of Project design elements and proximity to off-site receptors that potentially would be exposed objectionable odors.

c) **Health Risk Screening/Assessment:** A Health Risk Screening/Assessment identifies potential Toxic Air Contaminants (TAC's) impact on surrounding sensitive receptors such as hospitals, daycare centers, schools, work-sites, and residences. TAC's are air pollutants identified by the Office of Environmental Health Hazard Assessment/California Air Resources Board (OEHHA/CARB) (https://www.arb.ca.gov/toxics/healthval/healthval.htm) that pose a present or potential hazard to human health. A common source of TACs can be attributed to diesel exhaust emitted from both mobile and stationary sources. Industry specific TACs generated must also be identified and quantified.

The District recommends the Project be evaluated for potential health impacts to surrounding receptors (on-site and off-site) resulting from operational and multi-year construction TAC emissions.

i) The District recommends conducting a screening analysis that includes all sources of emissions. A screening analysis is used to identify projects which may have a significant health impact. A prioritization, using CAPCOA's

updated methodology, is the recommended screening method. A prioritization score of 10 or greater is considered to be significant and a refined Health Risk Assessment (HRA) should be performed. The prioritization calculator can be found at: http:www.valleyair.org/busind/pto/emission_factors/Criteria/Toxics/Utilities/PRIORITIZATION%20RMR%202016.XLS.

ii) The District recommends a refined HRA for projects that result in a prioritization score of 10 or greater. It is recommended that the Project proponent contact the District to review the proposed modeling protocol. The Project would be considered to have a significant health risk if the HRA demonstrates that the Project related health impacts would exceed the Districts significance threshold of 20 in a million for carcinogenic risk and 1.0 for the Acute and Chronic Hazard Indices.

Please provide the following information electronically to the District for review:

- HRA AERMOD model files
- HARP2 files
- Summary of emissions source locations, emissions rates, and emission factor calculations and methodology.

More information on toxic emission factors, prioritizations and HRAs can be obtained by:

- E-Mailing inquiries to: hramodeler@valleyair.org; or
- The District can be contacted at (559) 230-6000 for assistance; or
- Visiting the Districts website (Modeling Guidance) at http://www.valleyair.org/busind/pto/Tox_Resources/AirQualityMonitoring.htm

d) **Ambient Air Quality Analysis:** An ambient air quality analysis (AAQA) uses air dispersion modeling to determine if emissions increases from a project will cause or contribute to a violation of the ambient air quality standards. The District recommends that an AAQA be performed for the Project if emissions exceed 100 pounds per day of any pollutant.

If an AAQA is performed, the analysis should include emissions from both Project specific permitted and non-permitted equipment and activities. The District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis. Specific information for assessing significance, including screening tools and modeling guidance is available online at the District's website www.valleyair.org/ceqa.

2) In addition to the discussions on potential impacts identified above, if preliminary review indicates that an EIR should be prepared, the District recommends the EIR also include the following discussions:

   a) A discussion of the methodology, model assumptions, inputs and results used in characterizing the Project's impact on air quality. To comply with CEQA requirements for full disclosure, the District recommends that the modeling outputs be provided as appendices to the EIR. The District further recommends that the District be provided with an electronic copy of all input and output files for all modeling.

   b) A discussion of the components and phases of the Project and the associated emission projections, including ongoing emissions from each previous phase.

   c) A discussion of Project design elements and mitigation measures, including characterization of the effectiveness of each mitigation measure incorporated into the Project.

   d) A discussion of whether the Project would result in a cumulatively considerable net increase of any criteria pollutant or precursor for which the San Joaquin Valley Air Basin is in non-attainment. More information on the District's attainment status can be found online by visiting the District's website at: http://valleyair.org/aqinfo/attainment.htm.

District Rules and Regulations

3) The proposed Project may be subject to District rules and regulations, including: Regulation VIII (Fugitive PM10 Prohibitions), Rule 4102 (Nuisance), and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations). In the event an existing building will be renovated, partially demolished or removed, the Project may be subject to District Rule 4002 (National Emission Standards for Hazardous Air Pollutants).

4) This Project may be subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and will require District permits. Prior to construction, the Project proponent should submit to the District an application for an Authority to Construct (ATC). For further information or assistance, the project proponent may contact the District's Small Business Assistance (SBA) Office at (559) 230-5888.

5) Based on information provided, the proposed Project would equal or exceed the relevant District Rule 9510 (Indirect Source Review) applicability threshold of 2,000 square feet of commercial space. Therefore, the District concludes that the proposed Project is subject to District Rule 9510.

   Any applicant subject to District Rule 9510 is required to submit an Air Impact Assessment (AIA) application to the District no later than applying for final discretionary approval. If approval of the subject project constitutes the last discretionary approval by your agency, the District recommends that demonstration of compliance with District Rule 9510, including payment of all applicable fees before issuance of the first building permit, be made a condition of project approval. Information about how to comply with District Rule 9510 can be found online at: http://www.valleyair.org/ISR/ISRHome.htm.

6) Particulate Matter 2.5 microns or less in size (PM2.5) from under-fired charbroilers pose immediate health risk. Since the cooking of meat can release carcinogenic PM2.5 species like polycyclic aromatic hydrocarbons, controlling emissions from under-fired charbroilers will have a substantial positive impact on public health.

   Charbroiling emissions occur in populated areas, near schools and residential neighborhoods, resulting in high exposure levels for sensitive Valley residents. The air quality impacts on neighborhoods near restaurants with under-fired charbroilers can be significant on days when meteorological conditions are stable, when dispersion is limited and emissions are trapped near the surface within the surrounding neighborhoods. This potential for neighborhood-level concentration of emissions during evening or multi-day stagnation events raises environmental concerns.

   Furthermore, the latest photochemical modeling indicates that reducing commercial charbroiling emissions is critical to achieving attainment of multiple federal PM2.5 standards and associated health benefits in the Valley.

   Therefore, the District strongly recommends new restaurants that will operate under-fired charbroilers install emission control systems during the construction phase since installing charbroiler emissions control systems during construction of new facilities is likely to result in substantial economic benefit compared to costly retrofitting. To ease the financial burden for Valley businesses that wish to install control equipment before it is required by District Rule 4692 (Commercial Charbroiling), the District is currently offering substantial incentive funding that covers the full cost of purchasing, installing, and maintaining the system for up to two years. Please contact the District at (559) 230-5800 or technology@valleyair.org for more information.

7) The above list of rules is neither exhaustive nor exclusive. To identify other District rules or regulations that apply to this Project or to obtain information about District permit requirements, the applicant is strongly encouraged to contact the District's Small Business Assistance (SBA) Office at (559) 230-5888. Current District rules can be found online at the District's website at: www.valleyair.org/rules/1ruleslist.htm.

The District recommends that a copy of the District's comments be provided to the Project proponent. If you have any questions or require further information, please call Mark Montelongo at (559) 230-5905.

Sincerely,

Arnaud Marjollet
Director of Permit Services

Brian Clements
Program Manager

AM: mm

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December 19, 2018

06-TUL-99-32.36
NOP - CARTMILL CROSSINGS
SCH # 2018111038

Mr. Mario Anaya, Principal Planner
City of Tulare - Community & Economic Development Dept.
411 E. Tulare Street
Tulare, CA 93274

Dear Mr. Anaya:

Thank you for the opportunity to review the Notice of Preparation (NOP) for the Draft Environmental Impact Report (DEIR) for the Cartmill Crossings multi-use development (Project). The proposed 120-acre project site is located in the northeast quadrant of the State Route (SR) 99/Cartmill Avenue interchange.

The Project includes an Annexation, a General Plan Amendment, and a Pre-Zoning to allow a commercial shopping center with multi-family and single-family residential developments. Examples of uses include restaurants, fast food restaurants, retail stores, hotels, and fuel stations. The northeastern portion of the Project site will consist of approximately 30 acres for a low density single-family residential development, approximately 4.4 acres for a medium density residential development, approximately 7.7 acres for a high density multi-family development and will include a 7-acre park.

The Project will be developed in phases. Phase 1 will include 176,000 square feet of regional commercial uses with an estimated construction timeline from 2019 to 2020. Phase 2 will include 132 single-family residential homes with an estimated construction between 2022 and 2025 which also includes a multi-family component that is anticipated for construction in 2028. Phase 3 will include the remainder of the Regional Commercial development (approximately 630,400 square feet) and is projected to be completed by 2039.

The NOP states that the EIR will include a traffic impact study (TIS) that will analyze traffic impacts associated with the Project under existing and cumulative conditions. The TIS will analyze the AM peak period (6:30 AM to 8:30 AM) and PM peak period (4:30 PM to 6:30 PM) turning movement counts during a typical weekday for study intersections. The Project's trip generation will be estimated using a combination of trip generation rates from the Institute of Transportation Engineers(ITE), 9th Edition, and observed trip generation from other similar projects throughout California's Central Valley.

The mission of Caltrans is to provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability. To ensure a safe and efficient transportation system, we encourage early consultation and coordination with local jurisdictions and project proponents on all development projects that utilize the multimodal transportation network. Caltrans provides the *following comments* consistent with the State's smart mobility goals that support a vibrant economy and sustainable communities:

1. Alternative transportation policies should be applied to the development. An assessment of multi-modal facilities should be conducted. This assessment should be used to develop an integrated multi-modal transportation system to serve and help alleviate traffic congestion caused by the project and related development in this area of the City. The assessment should include the following:
   a. Pedestrian walkways should link this proposal to an internal project area walkway, transit facilities, as well as other walkways in the surrounding area.
   b. The project should consider bicycles as an alternative mode of transportation and offer internal amenities to encourage bicycle use which should include parking, security, lockers and possibly showers. However, internal bicycle paths should be coordinated with local and regional pathways to further encourage the use of bicycles for commuter and recreational purposes.
   c. If transit is not available within ¼-mile of the site, transit should be extended to provide services to what will be a high activity center.

2. Observed trip generation from other similar projects throughout California's Central Valley used in the TIS will need to be justified and substantiated.

3. The TIS should include a list of pending/approved projects and a queue analysis for all traffic movements that potentially impact operations at existing intersections.

4. TIS should provide the following scenarios:
   a. Proposed Project Only
   b. Cumulative Conditions
   c. Cumulative Conditions Plus Proposed Project
   d. 2020 Cumulative Conditions
   e. 2020 Cumulative Conditions Plus Proposed Project (Phase 1)
   f. 2029 Cumulative Conditions
   g. 2029 Cumulative Conditions Plus Proposed Project (Full Build, Phases 1 through 3)
   h. 2039 Cumulative Conditions Plus Proposed Project (Full Build, Phases 1 through 3)

5. The TIS should also include Freeway Segments analysis:
   a. SR 99 between Prosperity and Cartmill (south of Project);
   b. SR 99 between Cartmill and Ave 264 (north of Project).

6. The TIS should include Freeway-Ramp Junctions analysis at
   a. SR 99 Cartmill Ave interchange;
   b. SR 99 NB On-ramp from Oakdale Ave (Avenue 256)

If you have any other questions, please call me at (559) 488-7396.

Sincerely,



DAVID DEEL
Associate Transportation Planner
Transportation Planning - North

APPENDIX B

AIR QUALITY IMPACT ANALYSIS

AIR QUALITY IMPACT ANALYSIS

Cartmill Crossing Project
Tulare, California

Prepared For:

QK, Inc.
5080 California Avenue, Suite 220
Bakersfield, CA 93309

Prepared By:

INSIGHT ENVIRONMENTAL / TRINITY CONSULTANTS
5500 Ming Avenue, Suite 140
Bakersfield, CA 93309
661-282-2200

November 2018

Project 180505.0150

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Attachment E: Ambient Air Quality Assessment Modeling Files (Electronic)

1. EXECUTIVE SUMMARY

Insight Environmental Consultants, Inc., *a Trinity Consultants Company*, has completed an Air Quality Impact Analysis (AQIA) for the construction of the Cartmill Crossing Project (Project). This Project will be located northeast of the intersection of SR 99 and Cartmill Avenue, Tulare, California and will be a mixed-use development consisting of residential (single family and multi-family residences), commercial, retail, restaurants and office elements as well as a neighborhood park and a gas station.

The proposed Project's construction and operations would include the following criteria pollutant emissions: reactive organic gases (ROG), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and suspended particulate matter (PM_{10} and $PM_{2.5}$). Project operations would generate air pollutant emissions from mobile sources (automobile activity from employees, residents and customers) and area sources (incidental activities related to facility operation, delivery and maintenance). Project construction and operational activities would also generate greenhouse gas (GHG) emissions. Criteria and GHG emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 (California Air Pollution Control Officers Association (CAPCOA) 2017), which is the most current version of the model approved for use by the San Joaquin Valley Air Pollution Control District (SJVAPCD).

Table 4-3 presents the Project's construction emissions and provides substantial evidence to support a *less than significant* air quality impact on the San Joaquin Valley Air Basin. **Table 4-4a** presents the Project's operations emissions and provide substantial evidence to support a *less than significant* air quality impact on the San Joaquin Valley Air Basin. GHG emissions increases associated with this project will be mitigated by greater than 29%. Therefore, consistent with SJVAPCD Policy APR 2005, the GHG emissions increases associated with this Project would have a *less than significant* individual and cumulative impact on global climate change.

Cumulative impacts were also evaluated. Records search of the City of Tulare Planning Division's and Tulare County Community Development and Planning Department development file records identified eight projects within a one-mile radius of the proposed Project. Evaluation of the cumulative emissions supports a finding that the Project's contribution would not be cumulatively considerable because the proposed Project's increment does not exceed significance thresholds. Additionally, compliance with the SJVAPCD's Air Quality Attainment Plan (AQAP) is presumably required by all projects' located within the SJVAPCD's jurisdiction. Because projects that would have been included in the cumulative analysis presumably comply with the requirements of one or both of these plans, the Project's incremental contribution to a cumulative effect is considered *less than cumulatively considerable* (CEQA Guidelines Section 15064(h)(3); SJVAPCD 2015).

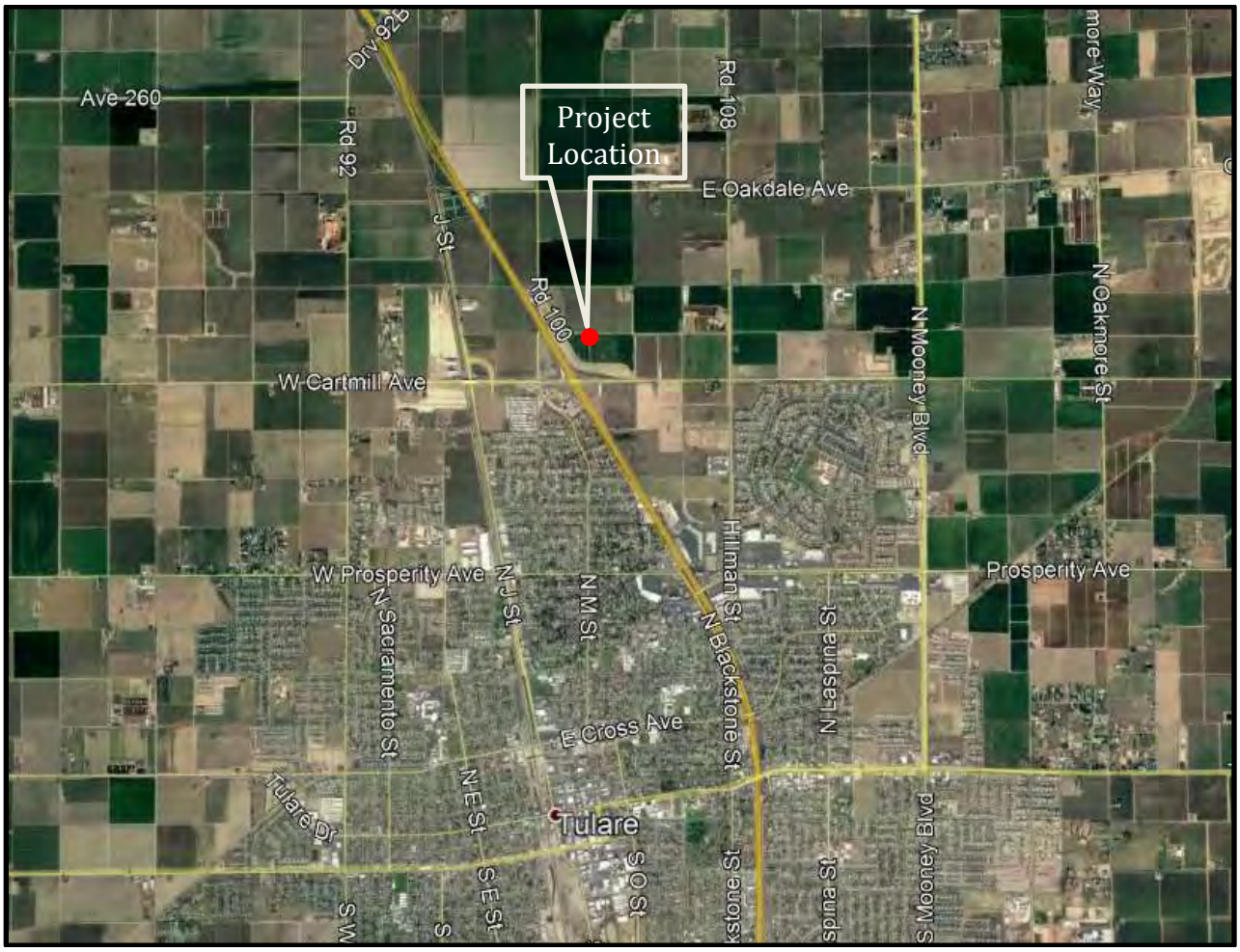
2.1. PURPOSE

This AQIA was prepared pursuant to the SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) (SJVAPCD 2015), and the California Environmental Quality Act (CEQA) Statute and Guidelines (CEQA 2016).

2.2. GENERAL PROJECT DESCRIPTION

The Cartmill Crossing (Project) will be a mixed-use development consisting of residential (single family and multi-family residences), commercial, retail, restaurants and office elements as well as a neighborhood park and a gas station. The Project would be located in Tulare County, CA, northeast of the intersection of SR 99 and Cartmill Avenue, Tulare CA approximately 60 miles north of Bakersfield and 45 miles south of Fresno. **Figure 2-1** depicts the regional location and **Figure 2-2** depicts a localized Project location. The preliminary Project design showing the basic layout of the facility is shown in **Figure 2-3**.

Figure 2-1 - Regional Location



Source: Google Earth 2018

Figure 2-2 - Project Location



Source: Google Earth 2018

Figure 2-3 – Preliminary Project Design



Source: QK, Inc. 2018

Figure 2-4 depicts the Project site's topography based on United States Geological Survey's (USGS) National Map (USGS 2015). The Project site is located at an elevation of approximately 300 feet above mean sea level, is surrounded by agricultural land with State Route 99 to the west, and is within the Tulare County, CA boundary.

Figure 2-4 – Project Site Topography



Source: USGS 2015

Protection of the public health is maintained through the attainment and maintenance of ambient air quality standards for various atmospheric compounds and the enforcement of emissions limits for individual stationary sources. The Federal Clean Air Act requires that the U.S. Environmental Protection Agency (EPA) establish National Ambient Air Quality Standards (NAAQS) to protect the health, safety, and welfare of the public. NAAQS have been established for ozone (O_3), CO, NO_2, SO_2, PM_{10} and $PM_{2.5}$, and lead (Pb). California has also adopted ambient air quality standards (CAAQS) for these "criteria" air pollutants. CAAQS are more stringent than the corresponding NAAQS and include standards for hydrogen sulfide (H_2S), vinyl chloride (chloroethene) and visibility reducing particles. The U.S. Clean Air Act Amendments of 1977 required each state to identify areas that were in non-attainment of the NAAQS and to develop State Implementation Plans (SIP's) containing strategies to bring these non-attainment areas into compliance. NAAQS and CAAQS designation/classification for Tulare County are presented in **Section 3.1** below.

Responsibility for regulation of air quality in California lies with the California Air Resources Board (CARB) and the 35 local air districts with oversight responsibility held by the EPA. CARB is responsible for regulating mobile source emissions, establishing CAAQS, conducting research, managing regulation development, and providing oversight and coordination of the activities of the 35 air districts. The air districts are primarily responsible for regulating stationary source emissions and monitoring ambient pollutant concentrations. CARB also determines whether air basins, or portions thereof, are “unclassified,” in “attainment”, or in “non-attainment” for the NAAQS and CAAQS relying on statewide air quality monitoring data.

3.1. AIR QUALITY STANDARDS

The Project area is located in the SJVAB in Tulare County, which is included among the eight counties that comprise the SJVAPCD. The SJVAPCD acts as the regulatory agency for air pollution control in the Basin and is the local agency empowered to regulate air pollutant emissions for the plan area. **Table 3-1** provides the NAAQS and CAAQS.

Table 3-1 - Federal & California Standards

		NAAQS	CAAQS
Pollutant	**Averaging Time**	**Concentration**	
O_3	8-Hour	0.070 ppm (137 µg/m³) [a]	0.070 ppm (137 µg/m³)
	1-Hour		0.09 ppm (180 µg/m³)
CO	8-Hour	9 ppm (10 mg/m³)	9 ppm (10 mg/m³)
	1-Hour	35 ppm (40 mg/m³)	20 ppm (23 mg/m³)
NO_2	Annual Average	53 ppb (100 µg/m³)	0.030 ppm (57 µg/m³)
	1-Hour	100 ppb (188.68 µg/m³)	0.18 ppm (339 µg/m³)
SO_2	3-Hour	0.5 ppm (1,300 µg/m³)	
	24 Hour	0.14 ppm (365 µg/m³)	0.04 ppm (105 µg/m³)
	1-Hour	75 ppb (196 µg/m³)	0.25 ppm (655 µg/m³)
Particulate Matter (PM_{10})	Annual Arithmetic Mean		20 µg/m³
	24-Hour	150 µg/m³	50 µg/m³
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m³	12 µg/m³
	24-Hour	35 µg/m³	
Sulfates	24-Hour		25 µg/m³
Pb [d]	Rolling Three-Month Average	0.15 µg/m³	
	30 Day Average		1.5 µg/m³
H_2S	1-Hour		0.03 ppm (42 µg/m³)
Vinyl Chloride (chloroethene)	24-Hour		0.010 ppm (26 µg/m³)
Visibility Reducing particles	8 Hour (1000 to 1800 PST)		[b]

ppm = parts per million mg/m3 = milligrams per cubic meter µg/m ³= micrograms per cubic meter
ppb = parts per billion

Source: CARB 2016

a On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm

b In 1989, the CARB converted both the general statewide 10-mile visibility standards 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.

Under the provisions of the U.S. Clean Air Act, the Tulare County portion of the SJVAB has been classified as nonattainment/extreme, nonattainment/severe, nonattainment, attainment/unclassified, attainment, or unclassified under the established NAAQS and CAAQS for various criteria pollutants. **Table 3-2** provides the SJVAB's designation and classification based on the various criteria pollutants under both NAAQS and CAAQS.

Table 3-2 - SJVAB Attainment Status

Pollutant	NAAQS[a]	CAAQS[b]
O_3, 1-hour	No Federal Standard[f]	Nonattainment/Severe
O_3, 8-hour	Nonattainment/Extreme[e]	Nonattainment
PM_{10}	Attainment[c]	Nonattainment
$PM_{2.5}$	Nonattainment[d]	Nonattainment
CO	Attainment/Unclassified	Attainment/Unclassified
NO_2	Attainment/Unclassified	Attainment
SO_2	Attainment/Unclassified	Attainment
Pb (Particulate)	No Designation/Classification	Attainment
H_2S	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing particulates	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Source: SJVAPCD 2018a

Note:

a See 40 CFR Part 81

b See CCR Title 17 Sections 60200-60210

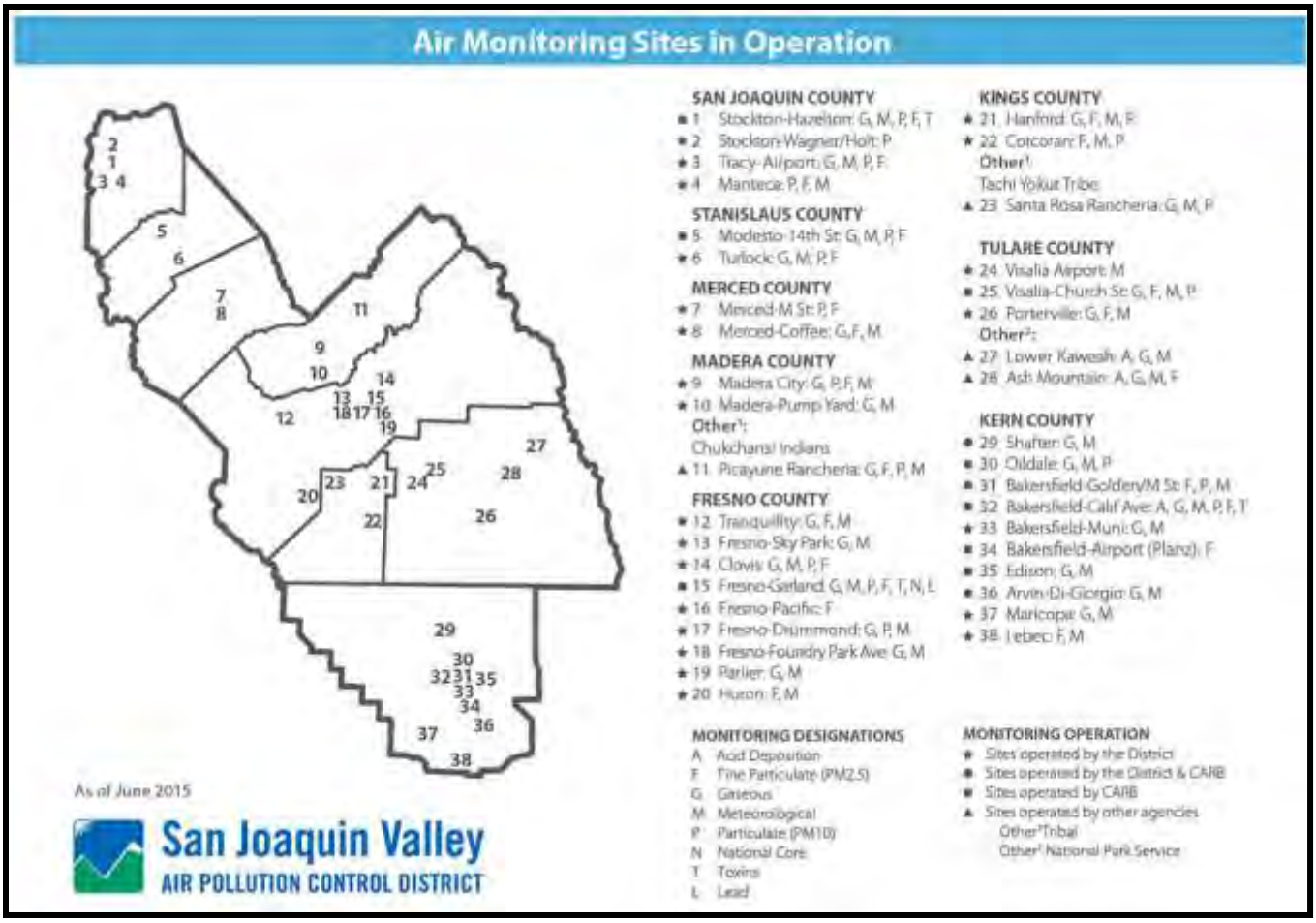
c On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan.

d The Valley is designated nonattainment for the 1997 PM2.5 NAAQS. EPA designated the Valley as nonattainment for the 2006 PM2.5 NAAQS on November 13, 2009 (effective December 14, 2009).

e Though the Valley was initially classified as serious nonattainment for the 1997 8-hour O3 standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).

f Effective June 15, 2005, the EPA revoked the federal 1-hour O3 standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour O3 nonattainment areas continue to apply to the SJVAB.

The SJVAPCD along with the CARB operates an air quality monitoring network that provides information on average concentrations of those pollutants for which state or Federal agencies have established NAAQS and CAAQS. The monitoring stations in the San Joaquin Valley are depicted in **Figure 3-1**.



Source: SJVAPCD 2017

Figure 3-1 – SJVAPCD Monitoring Network

3.2. EXISTING AIR QUALITY

For the purposes of background data and this air quality assessment, this analysis relied on data collected in the last three years for the CARB monitoring stations that are located in the closest proximity to the Project site. **Table 3-3** provides the background concentrations for O_3, particulate matter of 10 microns (PM_{10}), particulate matter of less than 2.5 microns ($PM_{2.5}$), CO, NO_2, SO_2, and Pb as of June 2015. Information is provided for the Visalia – N Church Street and Fresno – Garland monitoring stations for 2015 through 2017. No data is available for H_2S, Vinyl Chloride, or other toxic air contaminants in Tulare County or surrounding counties.

Table 3-3 - Existing Air Quality Monitoring Data in Project Area

Pollutant and Monitoring Station Location	Maximum Concentration			Days Exceeding Standard		
	2015	2016	2017	2015	2016	2017
O_3 – 1-hour CAAQS (0.09 ppm)						
Visalia – N Church Street	0.110	0.098	0.109	9	1	9
O_3 – 8-hour CAAQS (0.07 ppm)						
Visalia – N Church Street	0.091	0.083	0.092	52	19	65
O_3 – 8-hour NAAQS (0.070 ppm)						
Visalia – N Church Street	0.090	0.083	0.091	49	18	61
PM_{10} – 24-hour CAAQS (50 µg/m³)						
Visalia – N Church Street	140.3	132.5	145.7	*	*	135.9
PM_{10} – 24-hour NAAQS (150 µg/m³)						
Visalia – N Church Street	28.9	43.3	47.4	*	0	0
$PM_{2.5}$ - 24-hour NAAQS (35 µg/m³)						
Visalia – N Church Street	86.3	48.0	86.1	17.9	21.3	26.7
CO - 8-Hour CAAQS & NAAQS (9.0 ppm)						
No data collected	*	*	*	*	*	*
NO_2 - 1-Hour CAAQS (0.18 ppm)						
Visalia – N Church Street	0.062	0.057	0.058	0	0	0
NO_2 - 1-Hour NAAQS (0.10 ppm)						
Visalia – N Church Street	0.062	0.058	0.058	0	0	0
SO_2 – 24-hour Concentration - CAAQS (0.04 ppm) & NAAQS (0.14 ppm)						
No data collected	*	*	*	*	*	*
Pb - Maximum 30-Day Concentration CAAQS (1500 ng/m³)						
Fresno - Garland	8.3	12.1	8.4	0	0	0

Source: CARB 2018a

Notes: ppm= parts per million

* There was no data available to determine the value.

The following is a description of criteria air pollutants, typical sources, and health effects and the recently documented pollutant levels in the Project vicinity.

3.2.1. Ozone (O_3)

The most severe air quality problem in the San Joaquin Valley is high concentrations of O_3. High levels of O_3 cause eye irritation and can impair respiratory functions. High levels of O_3 can also affect plants and materials. Grapes, lettuce, spinach, and many types of garden flowers and shrubs are particularly vulnerable to O_3 damage. O_3 is not emitted directly into the atmosphere but is a secondary pollutant produced through photochemical reactions involving hydrocarbons and nitrogen oxides (NO_x). Significant O_3 generation requires about one to three hours in a stable atmosphere with strong sunlight. For this reason, the months of April through October comprise the "ozone season." O_3 is a regional pollutant because O_3 precursors are transported and diffused by wind concurrently with the reaction process. The data contained in **Table 3-3** shows that the Tulare area exceeded the 1-hour average ambient O_3 CAAQS and the 8-hour average ambient O_3 NAAQS and CAAQS for the 2015 through 2017 period.

3.2.2. Suspended Particulate Matter (PM_{10} and $PM_{2.5}$)

Both State and Federal particulate standards now apply to particulates under 10 microns (PM_{10}) rather than to total suspended particulate, which includes particulates up to 30 microns in diameter. Continuing studies have shown that the smaller-diameter fraction of TSP represents the greatest health hazard posed by the pollutant; therefore, EPA has recently established NAAQS for $PM_{2.5}$. The Project area is classified as attainment for PM_{10} and non-attainment for $PM_{2.5}$ for NAAQS.

Particulate matter consists of particles in the atmosphere resulting from many kinds of dust and fume-producing industrial and agricultural operations, from combustion, and from atmospheric photochemical reactions. Natural activities also increase the level of particulates in the atmosphere; wind-raised dust and ocean spray are two sources of naturally occurring particulates. The largest sources of PM_{10} and $PM_{2.5}$ in Tulare County are vehicle movement over paved and unpaved roads, demolition and construction activities, farming operations, and unplanned fires. PM_{10} and $PM_{2.5}$ are considered regional pollutants with elevated levels typically occurring over a wide geographic area. Concentrations tend to be highest in the winter, during periods of high atmospheric stability and low wind speed. In the respiratory tract, very small particles of certain substances may produce injury by themselves or may contain absorbed gases that are injurious. Aerosol size particulates suspended in the air can both scatter and absorb sunlight, producing haze and reducing visibility. They can also cause a wide range of damage to materials.

Table 3-3 shows that PM_{10} levels regularly exceeded the CAAQS but not the NAAQS at the monitoring station over the three-year period of 2015 through 2017. **Table 3-3** shows that $PM_{2.5}$ NAAQS were exceeded from 2015 through 2017. Similar levels can be expected to occur in the vicinity of the Project site.

3.2.3. Carbon Monoxide (CO)

Ambient CO concentrations normally correspond closely to the spatial and temporal distributions of vehicular traffic. Relatively high concentrations of CO would be expected along heavily traveled roads and near busy intersections. Wind speed and atmospheric mixing also influence CO concentrations; however, under inversion conditions prevalent in the San Joaquin Valley, CO concentrations may be more uniformly distributed over a broad area.

Internal combustion engines, principally in vehicles, produce CO due to incomplete fuel combustion. Various industrial processes also produce CO emissions through incomplete combustion. Gasoline-powered motor vehicles are typically the major source of this contaminant. CO does not irritate the respiratory tract, but passes through the lungs directly into the blood stream, and by interfering with the transfer of fresh oxygen to the blood, deprives sensitive tissues of oxygen, thereby aggravating cardiovascular disease, causing fatigue, headaches, and dizziness. CO is not known to have adverse effects on vegetation, visibility, or materials.

Table 3-3 reports no CO levels were recorded at any California monitoring stations during the three-year period from 2015 through 2017; historically Tulare data for CO has been below the CAAQS and NAAQS.

3.2.4. Nitrogen Dioxide (NO_2) and Hydrocarbons

Tulare County has been designated as an attainment area for the NAAQS for NO_2. NO_2 is the "whiskey brown" colored gas readily visible during periods of heavy air pollution. Mobile sources and oil and gas production account for nearly all of the county's NO_x emissions, most of which is emitted as NO_2. Combustion in motor vehicle engines, power plants, refineries, and other industrial operations are the primary sources in the region. Railroads and aircraft are other potentially significant sources of combustion air contaminants. Oxides of nitrogen are direct participants in photochemical smog reactions. The emitted compound, nitric oxide, combines with oxygen in the

atmosphere in the presence of hydrocarbons and sunlight to form NO_2 and O_3. NO_2, the most significant of these pollutants, can color the atmosphere at concentrations as low as 0.5 ppm on days of 10-mile visibility. NO_x is an important air pollutant in the region because it is a primary receptor of ultraviolet light, which initiates the reactions producing photochemical smog. It also reacts in the air to form nitrate particulates.

Motor vehicles are the major source of reactive hydrocarbons in the basin. Other sources include evaporation of organic solvents and petroleum production and refining operations. Certain hydrocarbons can damage plants by inhibiting growth and by causing flowers and leaves to fall. Levels of hydrocarbons currently measured in urban areas are not known to cause adverse effects in humans. However, certain members of this contaminant group are important components in the reactions, which produce photochemical oxidants.

Table 3-3 shows that the Federal or State NO_2 standards have not been exceeded at the Tulare County monitoring station in Visalia over the three-year period of 2015 through 2017. Hydrocarbons are not currently monitored.

3.2.5. Sulfur Dioxide (SO_2)

Tulare County has been designated as an attainment area for the NAAQS for SO_2. SO_2 is the primary combustion product of sulfur or sulfur containing fuels. Fuel combustion is the major source of this pollutant, while chemical plants, sulfur recovery plants, and metal processing facilities are minor contributors. Gaseous fuels (natural gas, propane, etc.) typically have lower percentages of sulfur containing compounds than liquid fuels such as diesel or crude oil. SO_2 levels are generally higher in the winter months. Decreasing levels of SO_2 in the atmosphere reflect the use of natural gas in power plants and boilers.

At high concentrations, SO_2 irritates the upper respiratory tract. At lower concentrations, when respired in combination with particulates, SO_2 can result in greater harm by injuring lung tissues. Sulfur oxides (SO_x), in combination with moisture and oxygen, results in the formation of sulfuric acid, which can yellow the leaves of plants, dissolve marble, and oxidize iron and steel. SO_x can also react to produce sulfates that reduce visibility and sunlight.

Table 3-3 shows no data has been reported over the three-year period in California.

3.2.6. Lead (Pb) and Suspended Sulfate

Ambient Pb levels have dropped dramatically due to the increase in the percentage of motor vehicles that run exclusively on unleaded fuel. Ambient Pb levels in Fresno are well below the ambient standard and are expected to continue to decline; the data reported in **Table 3-3** shows the highest concentration and the measured number of days exceeding the standards. Suspended sulfate levels have stabilized to the point where no excesses of the State standard are expected in any given year.

3.3. CLIMATE

The most significant single control on the weather pattern of the San Joaquin Valley is the semi-permanent subtropical high-pressure cell, referred to as the "Pacific High." During the summer, the Pacific High is positioned off the coast of northern California, diverting ocean-derived storms to the north. Hence, the summer months are virtually rainless. During the winter, the Pacific High moves southward allowing storms to pass through the San Joaquin Valley. Almost all of the precipitation expected during a given year occurs from December through April. During the summer, the predominant surface winds are out of the northwest. Air enters the Valley through the Carquinez Strait and flows toward the Tehachapi Mountains. This up-valley (northwesterly) wind flow is interrupted in early fall by the emergence of nocturnal, down-valley (southeasterly) winds which become

progressively more predominant as winter approaches. Wind speeds are generally highest during the spring and lightest in fall and winter. The relatively cool air flowing through the Carquinez Strait is warmed on its journey south through the Valley. On reaching the southern end of the Valley, the average high temperature during the summer is nearly 100 degrees Fahrenheit (°F). Relative humidity during the summer is quite low, causing large diurnal temperature variations. Temperatures during the summer often drop into the upper 60s. In winter, the average high temperatures reach into the mid-50s and the average low drops to the mid-30s. In addition, another high-pressure cell, known as the "Great Basin High," develops east of the Sierra Nevada Mountain Range during winter. When this cell is weak, a layer of cool, damp air becomes trapped in the basin and extensive fog results. During inversions, vertical dispersion is restricted, and pollutant emissions are trapped beneath the inversion and pushed against the mountains, adversely affecting regional air quality. Surface-based inversions, while shallow and typically short-lived, are present most mornings. Elevated inversions, while less frequent than ground-based inversions, are typically longer lasting and create the more severe air stagnation problems. The winter season characteristically has the poorest conditions for vertical mixing of the entire year.

Meteorological data for various monitoring stations is maintained by the Western Regional Climate Center. Meteorological data for the Project site is expected to be similar to the data recorded at the Visalia, California monitoring station. This data is provided in **Table 3-4 – Visalia Weather Data**, which contains average precipitation data recorded at the Visalia monitoring station. Over the 121-year period from February of 1895 through June of 2016 (the most recent data available), the average annual precipitation was 10.15 inches.

Table 3-4 – Visalia Weather Data

Period of Record Monthly Climate Summary for the Period 02/01/1895 to 6/10/2016													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
Avg. Maximum Temp (F)	56.0	62.6	68.0	74.6	82.6	91.1	97.5	96.2	90.1	80.2	67.3	56.8	76.9
Avg. Minimum Temp (F)	36.9	40.8	43.7	4705	53.1	59.0	63.5	61.6	57.3	50.2	41.6	36.8	49.3
Average Total Precip.(in.)	1.97	1.83	1.72	0.98	0.36	0.09	0.01	0.01	0.13	0.48	0.98	1.57	10.15
Average Snowfall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent of possible observations for period of record: Max. Temp.: 97.4% Min. Temp.: 97.4% Precipitation: 98.3% Snowfall: 97% Snow Depth: 96.8%													

Source: Western Regional Climate Center, 2018.

3.4. CLIMATE CHANGE AND GREENHOUSE GASES

3.4.1. Global Climate Change

Global climate change refers to change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms, lasting for decades or longer. The term “global climate change” is often used interchangeably with the term “global warming,” but “global climate change” is preferred by some scientists and policy makers to “global warming” because it helps convey the notion that in addition to rising temperatures, other changes in global climate may occur. Climate change may result from the following influences:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- Natural processes within the climate system (e.g., changes in ocean circulation); and/or
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, and desertification).

As determined from worldwide meteorological measurements between 1990 and 2005, the primary observed effect of global climate change has been a rise in the average global tropospheric temperature of 0.36 degree Fahrenheit (°F) per decade. Climate change modeling shows that further warming could occur, which could induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of California could include higher sea levels, drier or wetter weather, changes in ocean salinity, changes in wind patterns, or more energetic aspects of extreme weather (e.g., droughts, heavy precipitation, heat waves, extreme cold, and increased intensity of tropical cyclones). Specific effects from climate change in California may include a decline in the Sierra Nevada snowpack, erosion of California's coastline, and seawater intrusion in the Sacramento-San Joaquin River Delta.

Human activities, including fossil fuel combustion and land use changes, release carbon dioxide (CO_2) and other compounds cumulatively termed greenhouse gases. GHGs are effective at trapping radiation that would otherwise escape the atmosphere. This trapped radiation warms the atmosphere, the oceans, and the earth's surface (USGCRP, 2014). Many scientists believe "most of the warming observed over the last 50 years is attributable to human activities" (IPCC, 2017). The increased amount of CO_2 and other GHGs in the atmosphere is the alleged primary cause of human-induced warming.

GHGs are present in the atmosphere naturally, released by natural sources, or formed from secondary reactions taking place in the atmosphere. They include CO_2, methane (CH_4), nitrous oxide (N_2O), and O_3. In the last 200 years, substantial quantities of GHGs have been released into the atmosphere, primarily from fossil fuel combustion. These human-induced emissions are increasing GHG concentrations in the atmosphere, therefore enhancing the natural greenhouse effect. The GHGs resulting from human activity are believed to be causing global climate change. While human-made GHGs include CO_2, CH_4, and N_2O, some (like chlorofluorocarbons [CFCs]) are completely new to the atmosphere. GHGs vary considerably in terms of Global Warming Potential (GWP), the comparative ability of each GHG to trap heat in the atmosphere. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e).

Natural sources of CO_2 include the respiration (breathing) of humans and animals and evaporation from the oceans. Together, these natural sources release approximately 150 billion metric tons of CO_2 each year, far outweighing the 7 billion metric tons of GHG emissions from fossil fuel burning, waste incineration, deforestation, cement manufacturing, and other human activity. Nevertheless, natural GHG removal processes such as photosynthesis cannot keep pace with the additional output of CO_2 from human activities. Consequently GHGs are building up in the atmosphere (Environpedia, 2017).

Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources of CH_4 production include wetlands, termites, and oceans. Human activity accounts for the majority of the approximately 500 million metric tons of CH_4 emitted annually. These anthropogenic sources include the mining and burning of fossil fuels; digestive processes in ruminant livestock such as cattle; rice cultivation; and the decomposition of waste in landfills. The major removal process for atmospheric CH_4, the chemical breakdown in

the atmosphere, cannot keep pace with source emissions; therefore, CH_4 concentrations in the atmosphere are rising.

Worldwide emissions of GHGs in 2008 were 30.1 billion metric tons of CO_2e and have increased considerably since that time (United Nations, 2011). It is important to note that the global emissions inventory data are not all from the same year and may vary depending on the source of the data (U.S. EPA, 2016). Emissions from the top five emitting countries and the European Union accounted for approximately 55% of total global GHG emissions. The United States was the number two producer of GHG emissions. The primary GHG emitted by human activities in the United States was CO_2, representing approximately 84% of total GHG emissions (U.S. EPA, 2016).

In 2009, the United States emitted approximately 6.6 billion metric tons of CO_2e or approximately 25 tons per year (tpy) per person. Of the six major sectors nationwide (electric power industry, transportation, industry, agriculture, commercial, and residential), the electric power industry and transportation sectors combined account for approximately 62% of the GHG emissions; the majority of the electrical power industry and all of the transportation emissions are generated from direct fossil fuel combustion. Between 1990 and 2006, total United States GHG emissions rose approximately 14.7% (U.S. EPA, 2016).

Worldwide CO_2 emissions are expected to increase by 1.9% annually between 2001 and 2025 (U.S. Energy Information Center, 2017). Much of the increase in these emissions is expected to occur in the developing world where emerging economies, such as China and India, fuel economic development with fossil fuel energy. Developing countries' emissions are expected to grow above the world average at 2.7% annually between 2001 and 2025, and surpass emissions of industrialized countries around 2018.

CARB is responsible for developing and maintaining the California GHG emissions inventory. This inventory estimates the amount of GHGs emitted into and removed from the atmosphere by human activities within the state of California and supports the Assembly Bill (AB) 32 Climate Change Program. CARB's current GHG emission inventory covers the years 1990 through 2008 and is based on fuel use, equipment activity, industrial processes, and other relevant data (e.g., housing, landfill activity, and agricultural lands).

California's net emissions of GHG decreased 1.3% from 459 million metric tons (MMT) of CO_2e in 2000 to 453 MMT in 2009, with a maximum of 483.9 MMT in 2004. Driven by a noticeable drop in on-road transportation emissions, statewide GHG emissions dropped from 485 MMT CO_2e in 2008 to 457 MMT in 2009; 2009 also reflects the beginning of the economic recession and fuel price spikes. As the economy recovers, GHG emissions are likely to rise again without other mitigation actions. During the same period from 2000 to 2009, California's GHG emissions per person decreased by 9.7%, but the emissions reductions were offset by the state's population increase of 9.0%.

CARB estimates that transportation was the source of approximately 38% of California's GHG emissions in 2009, followed by electricity generation at 23%. Other sources of GHG emissions were industrial sources at 20%, residential plus commercial activities at 9%, and agriculture at 7%.

CARB has projected statewide GHG emissions for the year 2020, which represent the emissions that would be expected to occur with reductions anticipated from Pavley I and the Renewables Portfolio Standard (RPS) (38 MMT CO_2e total), will be 507 MMT of CO_2e (CARB, 2014a). GHG emissions from the transportation and electricity sectors as a whole are expected to increase at approximately 36% and 22% of total CO_2e emissions, respectively, as compared to 2009. The industrial sector consists of large stationary sources of GHG emissions and the percentage of the total 2020 emissions is projected to be 18% of total CO_2e emissions. The remaining sources of GHG emissions in 2020 are high global warming potential gases at 7%, residential and commercial activities at 9%, agriculture at 6%, and recycling and waste at 2%.

3.4.2. Effects of Global Climate Change

Changes in the global climate are assessed using historical records of temperature changes that have occurred in the past. Climate change scientists use this temperature data to extrapolate a level of statistical significance specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from past climate changes in rate and magnitude.

The Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. In its Fifth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100, could range from 1.1 degree Celsius (°C) to 6.4 °C (8 to 10.4 °Fahrenheit). Global average temperatures and sea levels are expected to rise under all scenarios (IPCC, 2014). The IPCC concluded that global climate change was largely the result of human activity, mainly the burning of fossil fuels. However, the scientific literature is not consistent regarding many of the aspects of climate change, the actual temperature changes during the 20th century, and contributions from human versus non-human activities.

Effects from global climate change may arise from temperature increases, climate sensitive diseases, extreme weather events, and degradation of air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems. Heat-related problems include heat rash and heat stroke, drought, etc. In addition, climate-sensitive diseases may increase, such as those spread by mosquitoes and other disease-carrying insects. Such diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding and hurricanes can displace people and agriculture. Global warming may also contribute to air quality problems from increased frequency of smog and particulate air pollution.

According to the 2006 California Climate Action Team (CAT) Report, several climate change effects can be expected in California over the course of the next century (CalEPA, 2006). These are based on trends established by the IPCC and are summarized below.

- A diminishing Sierra snowpack declining by 70% to 90%, threatening the state's water supply.
- A rise in sea levels, resulting in the displacement of coastal businesses and residences. During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Sea level rises of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. (Note: This condition would not affect the Proposed Project area as it is a significant distance away from coastal areas.)
- An increase in temperature and extreme weather events. Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- Increased risk of large wildfires if rain increases as temperatures rise. Wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30% toward the end of the 21st century because more winter rain will stimulate the growth of more plant fuel available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90% more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- Increasing temperatures from 8 to 10.4 °F under the higher emission scenarios, leading to a 25% to 35% increase in the number of days that ozone pollution levels are exceeded in most urban areas (see below).
- Increased vulnerability of forests due to forest fires, pest infestation, and increased temperatures.
- Reductions in the quality and quantity of certain agricultural products. The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.

- Exacerbation of air quality problems. If temperatures rise to the medium warming range, there could be 75 to 85% more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- A decrease in the health and productivity of California's forests. Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.
- Increased electricity demand, particularly in the hot summer months.
- Increased ground-level ozone formation due to higher reaction rates of ozone precursors.

3.4.3. Global Climate Change Regulatory Issues

In 1988, the United Nations established the Intergovernmental Panel on Climate Change to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United Nations Framework Convention on Climate Change established an agreement with the goal of controlling GHG emissions, including methane. As a result, the Climate Change Action Plan was developed to address the reduction of GHGs in the United States. The plan consists of more than 50 voluntary programs. Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete O_3 in the stratosphere (chlorofluorocarbons [CFCs], halons, carbon tetrachloride, and methyl chloroform) were phased out by 2000 (methyl chloroform was phased out by 2005).

On September 27, 2006, Assembly Bill 32 (AB32), the California Global Warming Solutions Act of 2006 (the Act) was enacted by the State of California. The legislature stated, "global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." The Act caps California's GHG emissions at 1990 levels by 2020. The Act defines GHG emissions as all of the following gases: carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. This agreement represents the first enforceable statewide program in the U.S. to cap all GHG emissions from major industries that includes penalties for non-compliance. While acknowledging that national and international actions will be necessary to fully address the issue of global warming, AB32 lays out a program to inventory and reduce GHG emissions in California and from power generation facilities located outside the state that serve California residents and businesses.

AB32 charges CARB with responsibility to monitor and regulate sources of GHG emissions in order to reduce those emissions. CARB has adopted a list of discrete early action measures that can be implemented to reduce GHG emissions. CARB has defined the 1990 baseline emissions for California, and has adopted that baseline as the 2020 statewide emissions cap. CARB is conducting rulemaking for reducing GHG emissions to achieve the emissions cap by 2020. In designing emission reduction measures, CARB must aim to minimize costs, maximize benefits, improve and modernize California's energy infrastructure, maintain electric system reliability, maximize additional environmental and economic co-benefits for California, and complement the state's efforts to improve air quality.

Global warming and climate change have received substantial public attention for more than 20 years. For example, the United States Global Change Research Program was established by the Global Change Research Act of 1990 to enhance the understanding of natural and human-induced changes in the Earth's global environmental system, to monitor, understand and predict global change, and to provide a sound scientific basis for national and international decision-making. Even so, the analytical tools have not been developed to determine the effect on worldwide global warming from a particular increase in GHG emissions, or the resulting effects on climate change

in a particular locale. The scientific tools needed to evaluate the impacts that a specific project may have on the environment are even farther in the future.

The California Supreme Court's most recent CEQA decision on the Newhall Ranch development case, *Center for Biological v. California Department of Fish and Wildlife* (November 30, 2015, Case No. 217763), determined that the project's Environmental Impact Report (EIR) did not substantiate the conclusion that the GHG cumulative impacts would be less than significant. The EIR determined that the Newhall Ranch development project would reduce GHG emissions by 31 percent from business as usual (BAU). This reduction was compared to the California's target of reducing GHG emissions statewide by 29 percent from business as usual. The Court determined that "the EIR's deficiency stems from taking a quantitative comparison method developed by the Scoping Plan as a measure of the greenhouse gas reduction effort required by the state as a whole, and attempting to use that method, without adjustments, for a purpose very different from its original design." In the Court's final ruling it offered suggestions that were deemed appropriate use of the BAU methodology:

1. Lead agencies can use the comparison to BAU methodology if they determine what reduction a particular project must achieve in order to comply with statewide goals,
2. Project design features that comply with regulations to reduce emissions may demonstrate that those components of emissions are less that significant, and
3. Lead agencies could also demonstrate compliance with locally adopted climate plans, or could apply specific numerical thresholds developed by some local agencies.

As discussed in Section 4.1, Significance Criteria, the SJVAPCD, a CEQA Commenting Agency for this Project, has developed thresholds to determine significance of a proposed project – either implement Best Performance Standards or achieve a 29% reduction from BAU (a specific numerical threshold). Therefore the 29% reduction from BAU is applied to the subject Project in order to determine significance. Therefore, the GHG analysis for this Project applies the guidance from the Court's ruling on the Newhall Ranch development project in order to determine significance using the project design features.

4.1. SIGNIFICANCE CRITERIA

To determine whether a proposed Project could create a potential CEQA impact, local, state, and federal agencies have developed various means by which a project's impacts may be measured and evaluated. Such means can generally be categorized as follows:

- Thresholds of significance adopted by air quality agencies to guide lead agencies in their evaluation of air quality impacts under the CEQA.
- Regulations established by air districts, CARB, and EPA for the evaluation of stationary sources when applying for Authorities to Construct, Permits to Operate, and other permit program requirements (e.g., New Source Review).
- Thresholds utilized to determine if a project would cause or contribute significantly to violations of the ambient air quality standards or other concentration-based limits.
- Regulations applied in areas where severe air quality problems exist.

Summary tables of these emission-based and concentration-based thresholds of significance for each pollutant are provided below along with a discussion of their applicability.

4.1.1. Thresholds Adopted for the Evaluation of Air Quality Impacts under CEQA

In order to maintain consistency with CEQA, the SJVAPCD (2015) adopted guidelines to assist applicants in complying with the various requirements. According to the SJVAPCD's GAMAQI, a project would have potentially significant air quality impacts when the project:

- Creates a conflict with or obstructs implementation of the applicable air quality plan;
- Causes a violation of any air quality standard or generates substantial contribution towards exceeding an existing or projected air quality standard;
- Results in a cumulatively considerable net increase of any criteria pollutant for which the project region is designated non-attainment under a NAAQS and CAAQS (including emissions which exceed quantitative thresholds for O_3 precursors);
- Exposes sensitive receptors to substantial pollutant concentrations; or
- Creates objectionable odors that affect a substantial number of people.

The SJVAPCD GAMAQI thresholds are designed to implement the general criteria for air quality emissions as required in the CEQA Guidelines, Appendix G, Paragraph III (Title 14 of the California Code of Regulations §15064.7) and CEQA (California Public Resources Code Sections 21000 et. al). SJVAPCD's specific CEQA air quality thresholds are presented in **Table 4-1**.

Table 4-1 SJVAPCD CEQA Thresholds of Significance

Criteria Pollutant	Significance Level	
	Construction	Operational
CO	100 tons/yr	100 tons/yr
NO_x	10 tons/yr	10 tons/yr
ROG	10 tons/yr	10 tons/yr
SO_x	27 tons/yr	27 tons/yr
PM_{10}	15 tons/yr	15 tons/yr
$PM_{2.5}$	15 tons/yr	15 tons/yr
Source: SJVAPCD 2015		

4.1.2. Thresholds for Ambient Air Quality Impacts

CEQA Guidelines – Appendix G (Environmental Checklist) states that a project that would "*violate any air quality standard or contribute substantially to an existing or projected air quality violation*" would be considered to create significant impacts on air quality. Therefore, an AQIA should determine whether the emissions from a project would cause or contribute significantly to violations of the NAAQS or CAAQS (presented above in **Table 3-1**) when added to existing ambient concentrations.

The EPA has established the federal Prevention of Significant Deterioration (PSD) program to determine what comprises "significant impact levels" (SIL) to NAAQS attainment areas. A project's impacts are considered less than significant if emissions are below PSD SIL for a particular pollutant. When a SIL is exceeded, an additional "increment analysis" is required. As the Project would not include modification to the stationary source under NSR, it would not be subject to either PSD or NSR review. The PSD SIL thresholds are used with ambient air quality modeling for a CEQA project to address whether the Project would "*violate any air quality standard or contribute substantially to an existing or projected air quality violation.*" Ambient air quality emissions estimates below the PSD SIL thresholds would result in less than significant ambient air quality impacts on both a project and cumulative CEQA impact analysis. The SJVAB is classified as non-attainment for the O_3 NAAQS and, as such, is subject to "non-attainment new source review" (NSR). PSD SILs and increments are more stringent than the CAAQS or NAAQS and represent the most stringent thresholds of significance.

4.1.3. Thresholds for Hazardous Air Pollutants

The SJVAPCD's GAMAQI states, "From a health risk perspective there are basically two types of land use projects that have the potential to cause long-term public health risk impacts:

- Type A Projects: Land use projects that will place new toxic sources in the vicinity of existing receptors, and
- Type B Projects: Land use projects that will place new receptors in the vicinity of existing toxics sources" (SJVAPCD 2015).

Table 4-2 presents the thresholds of significance uses with toxic air contaminants when evaluating hazardous air pollutants (HAPs).

Table 4-2 Measures of Significance – Toxic Air Contaminants

Agency	Level	Description
Significance Thresholds Adopted for the Evaluation of Impacts Under CEQA		
SJVAPCD	Carcinogens	Maximally Exposed Individual risk **equals or exceeds** 20 in one million.
	Non-Carcinogens	**Acute**: Hazard Index **equals or exceeds** 1 for the Maximally Exposed Individual.
		Chronic: Hazard Index **equals or exceeds** 1 for the Maximally Exposed Individual.
Source: SJVAPCD 2015		

4.1.4. Global Climate Change Thresholds of Significance

On December 17, 2009, SJVAPCD adopted *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (APR 2005)* (SJVAPCD 2009), which outlined the SJVAPCD's methodology for assessing a project's significance for GHGs under CEQA. The following criteria was outlined in the document to determine whether a project could have a significant impact:

- Projects determined to be exempt from the requirements of CEQA would be determined to have a less than significant individual and cumulative impact for GHG emissions and would not require further

environmental review, including analysis of project specific GHG emissions. Projects exempt under CEQA would be evaluated consistent with established rules and regulations governing project approval and would not be required to implement Best Performance Standards (BPS).

- Projects complying with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less than significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the lead agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the lead agency. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement BPS.
- Projects implementing Best Performance Standards would not require quantification of project specific GHG emissions. Consistent with CEQA Guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.
- Projects not implementing Best Performance Standards would require quantification of project specific GHG emissions and demonstration that project specific GHG emissions would be reduced or mitigated by at least 29%, compared to Business-as-Usual (BAU*), including GHG emission reductions achieved since the 2002-2004 baseline period. Projects achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.
- Notwithstanding any of the above provisions, projects requiring preparation of an Environmental Impact Report for any other reason would require quantification of project specific GHG emissions. Projects implementing BPS or achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.

4.2. PROJECT RELATED EMISSIONS

This document was prepared pursuant to the SJVAPCD's GAMAQI. The GAMAQI identifies separate thresholds for a project's short-term (construction) and long-term (operational) emissions.

Project emissions were estimated for the following development stages:

- Short-term (Construction and Demolition) – Construction emissions of the proposed Project were estimated in CalEEMod using applicant assumptions for equipment and construction schedule for the development of the Project in three phases on 118 acres.
- Long-term (Operations) – Long term emissions were also estimated using CalEEMod for operations of a regional shopping center and residential areas using both default and non-default input.

4.2.1. Short-Term Emissions

Short-term emissions are primarily from the construction phase of a project, and would have temporary impacts on air quality.

The Project applicant did not provide a list of specific construction equipment; the construction emissions were therefore based on the default CalEEMod equipment list accordingly for the proposed Project's land use type and development intensity. Applying model defaults as well as a conservative analysis approach, construction emissions were estimated as if Phase 1 started in January of 2019, Phase 2 in January of 2022, and Phase 3 in January of 2024. Phase 1 is estimated to take 17 months, with operations starting in 2020, Phase 2 is estimated to take 43 months occurring intermittently from 2022 through 2029, however, in order to be conservative construction emissions were estimated to occur during the first 43 months with operational emissions starting in 2025, and Phase 3 is estimated to take 69 months occurring intermittently from 2024 through 2039, however, in

order to be conservative construction emissions were estimated to occur during the first 69 months with operational emissions starting in 2029. The dates entered into the CalEEMod program may not represent the actual dates the equipment will operate; however, the total construction time is accurate, and therefore, all estimated emission totals are conservative and a reasonable and legally sufficient estimate of potential impacts. All construction equipment activity levels were the defaults CalEEMod specifies for type and number of equipment, hours per day, and horsepower.

SJVAPCD's required measures for all projects were also applied:

- Water exposed area 3 times per day; and
- Reduce vehicle speed to less than 15 miles per hour.

Table 4-3 presents the Project's short-term emissions based on the anticipated construction period.

Table 4-3 – Short-Term Project Emissions

Emissions Source	**Pollutant (tons/year)**					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Unmitigated						
2019	0.40	3.83	2.84	0.01	0.49	0.31
2020	1.34	1.06	0.94	0.00	0.08	0.06
2022	0.44	3.94	3.47	0.01	1.00	0.49
2023	0.39	2.89	3.30	0.01	0.51	0.20
2024	0.73	6.35	6.38	0.02	1.61	0.75
2025	4.61	3.66	4.06	0.01	0.52	0.21
2026	0.28	2.75	2.77	0.01	0.37	0.15
2027	0.28	2.73	2.73	0.01	0.37	0.15
2028	0.27	2.71	2.68	0.01	0.37	0.15
2029	4.46	0.64	0.91	0.00	0.07	0.04
Maximum Annual Emission	**4.61**	**6.35**	**6.38**	**0.02**	**1.61**	**0.75**
Mitigated						
2019	0.40	3.83	2.84	0.01	0.35	0.24
2020	1.34	1.06	0.94	0.00	0.08	0.06
2022	0.44	3.94	3.47	0.01	0.64	0.32
2023	0.39	2.89	3.30	0.01	0.51	0.20
2024	0.73	6.35	6.38	0.02	1.10	0.51
2025	4.61	3.66	4.06	0.01	0.67	0.27
2026	0.28	2.75	2.77	0.01	0.37	0.15
2027	0.28	2.73	2.73	0.01	0.37	0.15
2028	0.27	2.71	2.68	0.01	0.37	0.15
2029	4.46	0.64	0.91	0.00	0.07	0.04
Maximum Annual Emission	**4.61**	**6.35**	**6.38**	**0.02**	**1.10**	**0.51**
Significance Threshold	10	10	100	27	15	15
Is Threshold Exceeded For a Single Year After Mitigation?	NO	NO	NO	NO	NO	NO
Source: Insight Environmental Consultants 2018						

As calculated with CalEEMod, the estimated short-term construction-related emissions would not exceed SJVAPCD significance threshold levels during a given year and would therefore be *less than significant*.

4.2.2. Long-Term Operations Emissions

Long-term emissions are caused by operational mobile, area, and stationary sources. Long-term emissions would consist of the following components.

4.2.2.1. Fugitive Dust Emissions

Operation of the Project site at full build-out is not expected to present a substantial source of fugitive dust (PM_{10}) emissions. The main source of PM_{10} emissions would be from vehicular traffic associated with the Project site.

PM_{10} on its own as well as in combination with other pollutants creates a health hazard. The SJVAPCD's Regulation VIII establishes required controls to reduce and minimizing fugitive dust emissions. The following SJVAPCD Rules and Regulations apply to the proposed Project (and all projects):

- Rule 4102 - Nuisance
- Regulation VIII – Fugitive PM_{10} Prohibitions
  - Rule 8011 - General Requirements
  - Rule 8021 - Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities
  - Rule 8041 - Carryout and Trackout
  - Rule 8051 - Open Areas

The Project would comply with applicable SJVAPCD Rules and Regulations, the local zoning codes, and additional emissions reduction measures recommended later in this analysis, in Section 7, Mitigation and Other Recommended Measures.

4.2.2.2. Exhaust Emissions

Project-related transportation activities from employees, residents, deliveries and maintenance would generate mobile source ROG, NO_x, SO_x, CO, PM_{10} and $PM_{2.5}$ exhaust emissions. Exhaust emissions would vary substantially from day to day but would average out over the course of an operational year. The variables factored into estimating total Project emissions include: level of activity, site characteristics, weather conditions, and number of employees. As the Project is not expected to generate an adverse change in current activity levels, substantial emissions are not anticipated.

4.2.2.3. Projected Emissions

The proposed project is expected to have long-term air quality impacts as shown in **Table 4-4a**. Emission calculations are available in Attachment B.

Table 4-4a – Post-Project (Operational) Emissions

Emissions Source	Pollutant (tons/year)					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Unmitigated Emissions						
Phase 1 (Operational Year 2020)	2.58	4.46	17.14	0.04	3.62	1.01
Phases 1-2 (Operational Year 2025)	6.01	6.18	30.90	0.09	6.72	1.84
Phases 1-3 (Operational Year 2029)	11.56	12.45	55.15	0.19	20.85	6.65
Mitigated Emissions						
Phase 1 (Operational Year 2020)	2.42	3.42	13.02	0.03	2.34	0.65
Phases 1-2 (Operational Year 2025)	4.54	4.22	14.75	0.03	3.05	0.87
Phases 1-3 (Operational Year 2029)	9.50	8.96	29.40	0.08	8.77	2.44
SJVAPCD Threshold	10	10	100	27	15	15
Is Threshold Exceeded After Mitigation?	NO	NO	NO	NO	NO	NO

Source: Insight Environmental Consultants 2018

As shown in **Table 4-4a**, operations-related emissions, as calculated in Attachment B, would be less than the SJVAPCD significant threshold levels. Therefore, the proposed Project would have a less than significant impact during Project operations.

Table 4-4b – Post-Project (Operational plus Construction) Emissions

Emissions Source	Pollutant (tons/year)					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Mitigated Emissions						
Phase 1 (Operational) + Phase 2 (Const.)[1]	6.74	7.36	16.49	0.04	2.98	0.97
Phase 1 (Operational) + Phase 2-3 (Const.)[1]	7.03	9.77	19.40	0.05	3.95	1.40
Phase 1-2 (Operational) + Phase 3 (Const.)[1]	9.00	6.98	17.57	0.04	3.42	1.02
SJVAPCD Threshold	10	10	100	27	15	15
Is Threshold Exceeded After Mitigation?	NO	NO	NO	NO	NO	NO

1) Construction emission are the max annual on a pollutant by pollutant basis

Source: Insight Environmental Consultants 2018

As shown in **Table 4-4b**, operations plus construction-related emissions, as calculated in Attachment B, would be less than the SJVAPCD significant threshold levels. Therefore, the proposed Project would have a less than significant impact during Project operations plus construction activities.

4.3. POTENTIAL IMPACTS ON SENSITIVE RECEPTORS

Sensitive receptors are defined as locations where young children, chronically ill individuals, the elderly, or people who are more sensitive than the general population reside, such as schools, hospitals, nursing homes, and daycare centers. There are agricultural residences scattered in the surrounding area to the Project site. These farm homes represent the nearest sensitive receptors to the proposed Project site with the closest approximately 0.11 miles southeast and 0.53 miles northwest of the Project. There are twenty-two known non-residential sensitive receptors within 2 miles of the Project site. **Table 4-5** summarizes the location of the non-residential sensitive receptors.

Table 4-5 – Non-Residential Sensitive Receptors

Sensitive Receptor Name	Address	Distance From Project
Happy Bear Surgery Center	1979 Hillman St, Tulare, CA	0.6 miles SE
Altura General Hospital	1186 Leland Ave, Tulare, CA	0.97 miles SE
Liberty Elementary School	1771 E Pacific Ave, Tulare, CA	1.0 miles E
Mission Valley Elementary School	1695 Bella Oaks Drive, Tulare, CA	1.0 miles SE
Altura Centers for Health	1101 N Cherry St, Tulare, CA	1.18 miles S
Los Tules Middle School	801 W Gail Ave, Tulare, CA	1.21 miles SW
Palm Occupational Medicine & Walk-In	1068 N Cherry St, Tulare, CA	1.22 miles S
Tulare Family Practice Medical Group	1070 N Cherry St, Tulare, CA	1.22 miles S
Tulare Pediatrics	1062 N Cherry St, Tulare, CA	1.22 miles S
Tulare Nursing & Rehabilitation Center	680 E Merritt Ave, Tulare, CA	1.24 miles S
Merritt Manor Convalescent Hospital	604 E Merritt Ave, Tulare, CA	1.24 miles S
Family HealthCare Network	1008 N Cherry St, Tulare, CA	1.26 miles S
Tulare District Hospital Rehab	1425 E. Prosperity Ave, Tulare, CA	1.27 miles SE
Heritage Elementary School	895 W Gail Ave, Tulare, CA	1.31 miles SW
Tulare Regional Medical Center	869 N Cherry St, Tulare, CA	1.3 miles S
Valley Industrial Medical Group	755 E. Terrace Ave, Tulare, CA	1.4 miles S
Garden School	640 E Pleasant Ave, Tulare, CA	1.47 miles S
St. Aloysius Parochial School	627 N Beatrice Drive, Tulare, CA	1.61 miles SW
Cherry Avenue Middle School	540 N Cherry St, Tulare, CA	1.61 miles SW
Live Oak Middle School	980 N Laspina St, Tulare, CA	1.73 miles SE
Tulare Western High School	824 W Maple Ave, Tulare, CA	1.86 miles SW
Sierra Vista High School	351 N K St, Tulare, CA	2.0 miles SW

4.4. POTENTIAL IMPACTS TO VISIBILITY TO NEARBY CLASS 1 AREAS

Visibility impact analyses are intended for stationary sources of emissions which are subject to the Prevention of Significant Deterioration (PSD) requirements in 40 CFR Part 60; they are not usually conducted for area sources. Because the Project's PM_{10} ambient air concentrations are predicted to be less than significant, an impact at any Class 1 area within 100 kilometers of the Project is extremely unlikely. Although Sequoia National Park is approximately 50 miles due east of the Project, based on the Project's predicted less-than significant PM_{10} concentrations, the Project would be expected to have a less than significant impact to visibility at any Class 1 Area.

4.5. POTENTIAL IMPACTS FROM CARBON MONOXIDE

Ambient CO concentrations normally correspond closely to the spatial and temporal distributions of vehicular traffic. Relatively high concentrations of CO would be expected along heavily traveled roads and near busy intersections. CO concentrations are also influenced by wind speed and atmospheric mixing. CO concentrations may be more uniformly distributed when inversion conditions are prevalent in the valley. Under certain meteorological conditions CO concentrations along a congested roadway or intersection may reach unhealthful levels for sensitive receptors, e.g. children, the elderly, hospital patients, etc. This localized impact can result in elevated levels of CO, or "hotspots" even though concentrations at the closest air quality monitoring station may be below NAAQS and CAAQS.

The localized project impacts depend on whether ambient CO levels in the Project vicinity would be above or below NAAQS. If ambient levels are below the standards, a project is considered to have significant impacts if a project's emissions would exceed of one or more of these standards. If ambient levels already exceed a state standard, a project's emissions are considered significant if they would increase one-hour CO concentrations by 10 ppm or more or eight-hour CO concentrations by 0.45 ppm or more. There are two criteria established by the SJVAPCD's GAMAQI by which CO "Hot Spot" modeling is required:

I. A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity would be reduced to LOS E or F; or
II. A traffic study indicates that the project would substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the project vicinity.

A traffic generation assessment impact study has been prepared for this project and determined the Project will not reduce any streets or intersections to a LOS E or F and will not worsen an already existing LOS F of any street or intersection after mitigation (Ruettgers & Schuler 2018). Therefore, CO "Hotspot" Modeling was not conducted for this Project and no concentrated excessive CO emissions are expected to be caused once the proposed Project is completed.

4.6. PREDICTED HEALTH RISK IMPACTS

GAMAQI recommends that Lead Agencies consider situations wherein a new or modified source of HAPs is proposed for a location near an existing residential area or other sensitive receptor when evaluating potential impacts related to HAPs.

The proposed Project would result in emissions of Hazardous Air Pollutants (HAPs) and would be located near existing residents and future residents; therefore, an assessment of the potential risk to the population attributable to emissions of hazardous air pollutants from the proposed Project is required.

To predict the potential health risk to the population attributable to emissions of HAPs from the proposed Project, ambient air concentrations were predicted with dispersion modeling to arrive at a conservative estimate of increased individual carcinogenic risk that might occur as a result of continuous exposure over a 70-year lifetime. Similarly, predicted concentrations were used to calculate non-cancer chronic and acute hazard indices (HIs), which are the ratio of expected exposure to acceptable exposure. The basis for evaluating potential health risk is the identification of sources with increased HAPs. HAP emissions from anticipated on-site school buses were evaluated.

Health risk is determined using the Hotspots Analysis and Reporting Program (HARP2) software distributed by the CARB; HARP2 requires peak 1-hour emission rates and annual-averaged emission rates for all pollutants for each modeling source (CARB 2014b). Assumptions used to calculate the emission rates for the proposed Project are outlined below.

The most recent version of EPA's AMS/EPA Regulatory Model - AERMOD (recompiled for the Lakes ISC-AERMOD View 9.4.0 interface) was used to predict the dispersion of emissions from the proposed Project (Lakes Environmental Software 2017). The analysis employed all of the regulatory default AERMOD model keyword parameters, including elevated terrain options.

Diesel combustion emissions from 80 delivery trucks per week were modeled as volume line sources for on-site travel following the most likely route of travel on the property. Truck idling emissions were modeled as a point source with fifteen minutes of idling per truck trip. The assumed 80 truck trips per week were estimated from

similar projects and is was determined to be a conservative estimate. Diesel particulate matter was calculated using EMFAC approved emission factors for T-7 Single trucks traveling at 15 miles per hour (representative of on-site speed) and idling for 15 minutes per trip. Emissions from one anticipated griddle were estimated using SJVAPCD spreadsheet titled, "Flat Griddle – Hamburger & Steak" (SJVAPCD 2016) and modeled as point sources. Emissions from the fueling station were estimated using Guidelines from the California Air Pollution Control Officers Association ((CAPCOA) 1997) and CARB Monitoring and Laboratory Division Attachments 1 and 4 and modeled as point and volume sources. A unit emission rate of 1 grams/second (g/sec) was input to AERMOD for each source.

Discrete receptors were placed on houses and businesses within close proximity of the Project site. Receptor grids were placed over the more densely populated areas. A total of 1,513 discrete off-site receptors analyzed. Elevated terrain options were employed even though there is not complex terrain in the Project area.

SJVAPCD-provided, AERMET UStar processed meteorological datasets for the Visalia monitoring station, calendar years 2007 through 2010 was input to AERMOD (SJVAPCD 2018b). This was the most recent available dataset available at the time the modeling was conducted. Rural dispersion parameters were used because the operation and the majority of the land surrounding the facility is considered "rural" under the Auer land use classification method (Auer 1978).

Plot files generated by AERMOD were imported to HARP CONVERSION software (Villalvazo 2015). HARP CONVERSION was used to adjust the AERMOD-predicted air concentrations calculated with unit emission rates to pollutant-specific emission rates and to generate source, X/Q and emission import files for HARP.

The files generated in HARP CONVERSION were then uploaded into the HARP to HARP 2 Converter (Villalvazo 2015), then to the Air Dispersion Modeling and Risk Assessment Tool (ADMRT) program in the Hotspots Analysis and Reporting Program Version 2 (HARP 2) (CARB 2015). ADMRT post-processing was used to assess the potential for excess cancer risk and chronic non-cancer effects using the most recent health effects data from the California EPA Office of Environmental Health Hazard Assessment (OEHHA).

HARP post-processing was used to assess the potential for excess chronic non-cancer effects and cancer risk using the most recent health effects data from the California EPA Office of Environmental Health Hazard Assessment (OEHHA). HARP2 site parameters were set for the mandatory minimum pathways. Risk reports were generated using the derived OEHHA analysis method for carcinogenic risk and non-carcinogenic chronic and acute risk. Site parameters are included in the HARP2 output files. Total cancer risk was predicted at each receptor. A hazard index was computed for chronic and acute non-cancer health effects for each applicable endpoint and each receptor. SJVAPCD has set the level of significance for carcinogenic risk at twenty in one million, which is understood as the possibility of causing twenty additional cancer cases in a population of one million people. The level of significance for chronic non-cancer risk is a hazard index of 1.0. All receptors were modeled as residential receptors with a 70 year exposure. This is conservative since all on-site receptors and business receptors would be exposed less than 70 years.

The carcinogenic risk and the health hazard index (HI) for chronic non-cancer risk at the point of maximum impact (PMI) do not exceed the significance levels of twenty in one million (20×10^{-6}) and 1.0, respectively for the proposed Project. The PMIs, are identified by receptor location and risk, and are provided in **Table 4-6**. The electronic AERMOD and HARP2 output files are provided in **Attachment E**.

Table 4-6 – Potential Maximum Impacts Predicted By HARP

	Value	UTM East	UTM North
Excess Cancer Risk	3.41E-07	289892.16	4013105.71
Chronic Hazard Index	9.13E-04	289892.16	4013105.71
Acute Hazard Index	5.30E-03	289892.16	4013105.71

As shown above in **Table 4-6**, the maximum predicted cancer risk for the proposed Project is 3.41E-07. The maximum chronic non-cancer hazard index for the proposed Project is 9.13E-04. The maximum acute non-cancer hazard index for the proposed Project is 5.30E-03. Since the PMI remained below the significance threshold for cancer, chronic, and acute risk, this Project would not have an adverse effect to any of the surrounding communities.

The potential health risk attributable to the proposed Project is determined to be less than significant based on the following conclusions:

1) Potential carcinogenic risk from the proposed Project is *below* the significance level of twenty in a million at each of the modeled receptors; and
2) The hazard index for the potential chronic non-cancer risk from the proposed Project is *below* the significance level of 1.0 at each of the modeled receptors.
3) The hazard index for the potential acute non-cancer risk from the proposed Project is *below* the significance level of 1.0 at each of the modeled receptors.

Therefore, potential risk to the population attributable to emissions of HAPs from the proposed Project would be *less than significant*.

4.7. ODOR IMPACTS AND MITIGATION

The SJVAPCD's GAMAQI states "An analysis of potential odor impacts should be conducted for both of the following two situations:

1. Generators – projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and
2. Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources." (SJVAPCD 2015).

GAMAQI also states "The District has identified some common types of facilities that have been known to produce odors in the San Joaquin Valley Air Basin. These are presented in Table 6 (Screening Levels for Potential Odor Sources), can be used as a screening tool to qualitatively assess a project's potential to adversely affect area receptors." (SJVAPCD, 2015). Because the operations of the Project are not expected to cause a public nuisance due to odor and the anticipated Project site is not listed in Table 6 of the GAMAQI as a source which would create objectionable odors, the Project is not expected to be a source of objectionable odors.

Based on the provisions of the SJVAPCD's GAMAQI, the proposed Project would not exceed any screening trigger levels to be considered a source of objectionable odors or odorous compounds (SJVAPCD, 2015). Furthermore, there does not appear to be any significant source of objectionable odors in close proximity that may adversely impact the project site when it is in operation. Additionally, the Project emission estimates indicate that the proposed Project would not be expected to adversely impact surrounding receptors. As such, the proposed Project would not be a source of any odorous compounds nor would it likely be impacted by any odorous source.

4.8. IMPACTS TO AMBIENT AIR QUALITY

An ambient air quality analysis was performed to determine if the proposed Project has the potential to impact ambient air quality through a violation of the ambient air quality standards or a substantial contribution to an existing or projected air quality standard. The basis for the analysis is dispersion modeling and the Project's long-term air quality impacts shown in **Table 7-2**.

The maximum off-site ground level concentration of each pollutant for the 1-hour, 3-hour, 8-hour, 24-hour and annual periods was predicted using the most recent version of EPA's AMS/EPA Regulatory Model (AERMOD) dispersion software under the Lakes Environmental ISC-AERMOD View interface. SJVAPCD-approved, AERMET-processed U Star meteorological datasets for calendar years 2007 through 2010 was input to AERMOD (SJVAPCD 2018b). This was the most recent available dataset available at the time the modeling runs were conducted. All of the regulatory default AERMOD model keyword parameters were employed. Rural dispersion parameters were used for this project, which differs from the urban setting used in the CalEEMod model. The CalEEMod selection criteria is based on trip distances to the project site while the AERMOD selection criteria is based on the majority of the land use surrounding the facility. The majority of the land surrounding the project site is considered "rural" under the Auer land use classification method (Auer 1978).

Emissions were evaluated for each pollutant on a short-term (correlating to pollutant averaging period) and long-term (annual) basis, with the exception of CO that was evaluated only for short-term exposures since there are no long term significance thresholds for CO.

The majority of mobile emissions predicted by CalEEMod will occur beyond the project boundary because of vehicle trips. In order to determine the on-site vehicle emissions the following methodology was discussed and approved by the SJVAPCD (Villalvazo personal communications). An estimated on-site trip distance was determined by calculating the diagonal distance from the center of the project to the furthest corner for each land use. The on-site estimated trip distances for Phase 1, Phase 2, and Phase 3 were determined to be 0.38 miles, 0.19 miles and 0.38 miles, respectively. The on-site estimated trip distance was then divided by the average trip length used in CalEEMod for each phase, 7.66 miles, 8.72 miles and 7.66 miles, respectively, in order to determine the on-site to off-site mobile emissions ratio for each phase, 4.96%, 2.18%, and 4.96%, respectively. The total mobile emissions calculated by CalEEMod for the Project were then reduced to estimate the mobile on-site emissions used for ambient air quality modeling.

A fence-line coordinate grid of receptor points was constructed. The grid consisted of a 25-meter fence-line spacing and one receptor tier. The tier had 25-meter tier spacing extending a distance of 100 meters with initial receptors starting 25 meters from the facility boundary. Elevated terrain options were employed even though there is not complex terrain in the Project area.

For each pollutant and averaging period modeled, a "total" concentration was estimated by adding the maximum measured background air concentration to the maximum predicted Project impacts. The maximum measured background air concentrations used in this analysis were calculated from measured concentrations at the nearest monitoring stations.

The results of the air dispersion modeling, presented in **Table 4-7**, demonstrate that the maximum impacts attributable to the Project, when considered in addition to the existing background concentrations, are below the applicable ambient air quality standard for NO_x, SO_x and CO. The electronic AERMOD output files are provided in **Attachment F**.

Table 4-7 – Predicted Ambient Air Quality Impacts

Pollutant	Averaging Period	Background ($\mu g/m^3$)	Project ($\mu g/m^3$)	Project + Background ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
NO_2	1-hour	115.72	10.75	120.38	188.68	338
	Annual	21.98	0.56	22.25	100	56
SO_2	1-hour	21.70	0.08	21.73	196	655
	3-hour	19.530	0.06	19.54	1,300	---
	24-hour	6.490	0.02	6.50	365	105
	Annual	1.750	0.004	1.75	---	---
CO	1-hour	2840.00	37.40	2843.33	40,000	23,000
	8-hour	2340.00	22.53	2340.82	10,000	10,000
PM_{10}	24-hour	144.00	1.63	144.53	150	50
	Annual	78.12	0.31	78.22	---	20
$PM_{2.5}$	24-hour	86.10	0.53	86.27	35	---
	Annual	16.30	0.10	16.33	12	12

Pre-Project concentrations of PM_{10} and $PM_{2.5}$ exceed their respective ambient air quality standards. PM_{10} and $PM_{2.5}$ are evaluated in accordance with the SJVAPCD recommended significant impact level (SIL) for fugitive PM_{10} and $PM_{2.5}$ emissions. It is the SJVAPCD's policy to use significant impact levels to determine whether a proposed new or modified source will cause or contribute significantly to an AAQS violation. If a project's maximum impacts are below the District SIL, the project is judged to not cause or contribute significantly to an AAQS or PSD increment violation. A comparison of the proposed impact from the Project to the District SIL values is provided in **Table 4-8.**

Table 4-8 – Comparison of Maximum Modeled Project Impact with Significance Thresholds

Pollutant	Averaging Period	Predicted Concentration ($\mu g/m^3$)	SIL ($\mu g/m^3$)
PM_{10}	24-hour	1.63	10.4
	Annual	0.31	2.08
$PM_{2.5}$	24-hour	0.53	2.5
	Annual	0.10	0.63

Because the Project's modelled PM_{10} and $PM_{2.5}$ are below the SJVAPCD's significance levels for 24-hour and annual concentrations, the Project's contribution to potential violations of ambient air quality standards would be l*ess-than-significant*.

4.9. IMPACTS TO GREENHOUSE GASES AND CLIMATE CHANGE

The proposed Project's construction and operational GHG emissions were estimated using the CalEEMod program (version 2016.3.2), EMFAC2014, and the California Climate Action Registry General Reporting Protocol (Version 3.1). **Table 4-9** presents the Project's annual GHG emissions.

Table 4-9 – Estimated Annual GHG Emissions (MT/Year)

Source	CO_2	CH_4	N_2O	CO_2e
Construction Emissions				
2019 Construction Emissions	493.46	0.10	0.00	495.99
2020 Construction Emissions	161.71	0.03	0.00	162.48
2022 Construction Emissions	780.45	0.14	0.00	783.89
2023 Construction Emissions	854.04	0.09	0.00	856.23
2024 Construction Emissions	1567.72	0.24	0.00	1573.80
2025 Construction Emissions	1069.36	0.13	0.00	1072.49
2026 Construction Emissions	785.11	0.09	0.00	787.26
2027 Construction Emissions	778.53	0.09	0.00	780.68
2028 Construction Emissions	769.91	0.09	0.00	772.06
2029 Construction Emissions	171.33	0.03	0.00	172.17
Operational Emissions				
Phase 1-3	10,563.08	16.01	0.10	10,994.09
Annualized Construction Emissions[1]	*247.721*	*0.03387*	*0*	*248.568*
Project Emissions	**10,810.80**	**16.04**	**0.10**	**11,242.66**

*Note: 0.00 could represent <0.00

1 Per South Coast AQMD's Methodology

Table 4-10 – Comparison of Unmitigated and Mitigated GHG Emissions (MT/Year)

	Project Unmitigated	Project Mitigated (2020)
CO2e Emissions	18,899.76	10,994.09
Percent Reduction		41.83%

The Project will not result in the emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), or sulfur hexafluoride (SF6), the other gases identified as GHG in AB32. The proposed Project will be subject to any regulations developed under AB32 as determined by CARB. The Project will reduce GHG emissions by 41.83%; thus it will meet the required 29% reduction to meet the AB32 goals (**Table 4-10**); therefore, consistent with SJVAPCD Policies APR 2005, the GHG emissions increases associated with this Project would have a *less than significant* individual and cumulative impact on global climate change.

4.9.1. Feasible and Reasonable Mitigation Relative to Global Warming

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce the impacts from construction and operations on air quality. The SJVAPCD's "Non-Residential On-Site Mitigation Checklist" was utilized in preparing the mitigation measures and evaluating the projects features. These measures include using controls that limit the exhaust from construction equipment and using alternatives to diesel when possible. Additional reductions would be achieved through the regulatory process of the air district and CARB as required changes to diesel engines are implemented, which would affect the product delivery trucks and limits on idling.

While it is not possible to determine whether the Project individually would have a significant impact on global warming or climate change, the Project would potentially contribute to cumulative GHG emissions in California as well as to related health effects. The Project emissions would only be a very small fraction of the statewide GHG emissions. However, without the necessary science and analytical tools, it is not possible to assess, with certainty, whether the Project's contribution would be cumulatively considerable, within the meaning of CEQA Guidelines Sections 15065(a)(3) and 15130. CEQA, however, does note that the more severe environmental problems, the

lower the thresholds for treating a project's contribution to cumulative impacts as significant. Given the position of the legislature in AB32, which states that global warming poses serious detrimental effects, and the requirements of CEQA for the lead agency to determine that a project not have a cumulatively considerable contribution, the effect of the Project's CO_2 contribution may be considered cumulatively considerable. This determination is "speculative," given the lack of clear scientific evidence or other criteria for determining the significance of the Project's contribution of GHG to the air quality in the SJVAB.

The strategies currently being implemented by CARB may help in reducing the Project's GHG emissions and are summarized in the **Table 4-10** below.

Table 4-10 – Select CARB GHG Emission Reduction Strategies

Strategy	Description of Strategy
Vehicle Climate Change Standards	AB 1493 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by CARB in Sept. 2004.
Diesel Anti-Idling	In July 2004, CARB adopted a measure to limit diesel-fueled retail motor vehicle idling.
Other Light-Duty Vehicle Technology	New standards would be adopted to phase in beginning in the 2017 model year.
Alternative Fuels: Biodiesel Blends	CARB would develop regulations to require the use of 1% to 4% Biodiesel displacement of California diesel fuel.
Alternative Fuels: Ethanol	Increased use of ethanol fuel.
Heavy-Duty Vehicle Emission Reduction Measures	Increased efficiency in the design of heavy-duty vehicles and an educational program for the heavy-duty vehicle sector.

Not all of these measures are currently appropriate or applicable to the proposed Project. While future legislation could further reduce the Project's GHG footprint, the analysis of this is speculative and in accordance with CEQA Guidelines Section 15145, will not be further evaluated in this AQIA.

CEQA Guidelines Section 15130 notes that sometimes the only feasible mitigation for cumulative impacts may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis. Global climate change is this type of issue. The causes and effects may not be just regional or statewide, they may also be worldwide. Given the uncertainties in identifying, let alone quantifying the impact of any single project on global warming and climate change, and the efforts made to reduce emissions of GHGs from the Project through design, in accordance with CEQA Section 15130, any further feasible emissions reductions would be accomplished through CARB regulations adopted pursuant to AB32. The Project will achieve the required 29% reduction needed to conform with AB32 goals, as demonstrated in **Table 4-10**. Therefore, consistent with SJVAPCD Policies APR 2005 and APR 2025, the GHG emissions increases associated with this Project would have a *less than significant* individual and cumulative impact on global climate change.

By its very nature, air pollution has a cumulative impact. The District's nonattainment status is a result of past and present development within the SJVAB. Furthermore, attainment of ambient air quality standards can be jeopardized by increasing emissions-generating activities in the region. No single project would be sufficient in size, by itself, to result in nonattainment of the regional air quality standards. Instead, a project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development within the San Joaquin Valley Air Basin. When assessing whether there is a new significant cumulative effect, the Lead Agency shall consider whether the incremental effects of the project are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects [CCR §15064(h)(1)]. Per CEQA Guidelines §15064(h)(3), a Lead Agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including, but not limited to, an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located. (SJVAPCD 2015a)

GAMAQI also states "*If a project is significant based on the thresholds of significance for criteria pollutants, then it is also cumulatively significant. This does not imply that if the project is below all such significance thresholds, it cannot be cumulatively significant.*" (SJVAPCD 2015a). Based on the analysis conducted for this Project, it is individually *less than significant*. This AQIA, however, also considered impacts of the proposed Project in conjunction with the impacts of other projects previously proposed in the area. The following cumulative impacts were considered:

- Cumulative O_3 Impacts (ROG and NO_x) from numerous sources within the region including transport from outside the region. O_3 is formed through chemical reactions of ROG and NO_x in the presence of sunlight.
- Cumulative CO Impacts produced primarily by vehicular emissions.
- Cumulative PM_{10} Impacts from within the region and locally from the various projects. Such projects may cumulatively produce a significant amount of PM_{10} if several projects conduct grading or earthmoving activities at the same time; and
- Hazardous Air Pollutant (HAP) Impacts on sensitive receptors from within the SJVAPCD recommended screening radius of one mile.

5.1. CUMULATIVE REGIONAL AIR QUALITY IMPACTS

The most recent, certified SJVAB Emission Inventory data available from the SJVAPCD is based on data gathered for the 2015 annual inventory. This data will be used to assist the SJVAPCD in demonstrating attainment of Federal 1-hour O_3 Standards (SJVAPCD 2007). **Table 5-1** provides a comparative look at the impacts proposed by the proposed Project to the SJVAB Emissions Inventory.

Table 5-1 – Comparative Analysis Based on SJV Air Basin 2015 Inventory

Emissions Inventory Source	Pollutant (tons/year)					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Tulare County - 2015[1]	17,155	10,257	25,076	146	12,593	2,555
SJVAB - 2015[1]	112,931	96,105	199,509	2,738	95,667	21,681
Proposed Project	9.50	8.98	29.4	0.08	8.77	2.44
Proposed Project's % of Tulare	0.055	0.088	0.117	0.055	0.070	0.095
Proposed Project's % of SJVAB	0.008	0.009	0.015	0.003	0.009	0.011

NOTES:
[1] This is the latest inventory available as of June 2018, excluding Natural Sources.
SOURCE: CARB 2018b

As shown in **Table 5-1** the proposed Project does not pose a substantial increase to basin emissions, as such basin emissions would be essentially the same if the Project is approved.

Tables 5-2 through **5-4** provide CARB Emissions Inventory projections for the year 2020 for both the SJVAB and the Tulare County. Looking at the SJVAB Emissions predicted by the CARB year 2020 emissions inventory, the Tulare County portion of the air basin is a moderate source of the emissions. The proposed Project produces a small portion of the total emissions in both Tulare County and the entire SJVAB.

Table 5-2 – Emission Inventory SJVAB 2020 Projection – Tons per Year

	ROG	NO_X	PM_{10}
Total Emissions	108,113	74,204	96,652
Percent Stationary Sources	30.8%	14.1%	5.6%
Percent Area-Wide Sources	51.6%	3.9%	89.4%
Percent Mobile Sources	17.6%	82.0%	4.9%
Total Stationary Source Emissions	33,325	10,439	5,439
Total Area-Wide Source Emissions	55,772	2,884	86,432
Total Mobile Source Emissions	18,980	60,882	4,782

Source: CARB 2018b
Note: Total may not add due to rounding.

Table 5-3 - Emission Inventory Tulare County 2020 Estimate Projection – Tons per Year

	ROG	NO_X	PM_{10}
Total Emissions	16,425	7,592	12,702
Percent Stationary Sources	13.33%	9.62%	4.31%
Percent Area-Wide Sources	73.56%	4.81%	91.67%
Percent Mobile Sources	13.11%	85.58%	3.74%
Total Stationary Source Emissions	2,190	730	548
Total Area-Wide Source Emissions	12,082	365	11,644
Total Mobile Source Emissions	2,154	6,497	475

Source: CARB 2018b
Note: Total may not add due to rounding.

Table 5-4 - 2020 Emissions Projections – Proposed Project, Tulare County, and San Joaquin Valley Air Basin

	ROG	NO_X	PM_{10}
Proposed Project	**9.50**	**8.98**	**8.77**
Tulare County	16,425	7,592	12,702
SJVAB	108,113	74,204	96,652
Proposed Project Percent of Tulare County	0.058%	0.118%	0.069%
Proposed Project Percent of SJVAB	0.009%	0.012%	0.009%
Tulare County Percent of SJVAB	15.19%	10.23%	13.14%

Source: CARB 2018b
Notes: The emission estimates for Tulare County and the SJVAB are based on 2020 projections. The Proposed Project emission estimates are for the proposed emissions that are not already included in the SJVAB Emissions Inventory. Project emissions are based on 2029 emissions estimates to present the most conservative comparison. The Project's emissions are expected to decline as cleaner, less polluting vehicles replace vehicles with higher emissions.

As shown above, the proposed Project would pose no impact on regional O_3 and PM_{10} formation. Because the regional contribution to these cumulative impacts would be negligible, the Project would not be considered cumulatively considerable in its contribution to regional O_3 and PM_{10} impacts.

5.2. CUMULATIVE LOCAL AIR QUALITY IMPACTS

Records search of the City of Tulare Planning Division's records and development files and Tulare County Community Development Agency's GIS Viewer and records identified eight other projects within a one-mile radius of the proposed Project. The listings provided below in **Table 5-5** and **5-6** are only a geographical reference to demonstrate the construction activity in the project vicinity. *The number or size of cumulative projects is of no particular significance since no "cumulative" emissions thresholds have been established by the SJVAPCD, the City of Tulare Planning Division, or the Tulare County Community Development Agency*.

Table 5-5 – Cumulative Construction Projects

One-Mile Radius Projects	Pollutant (tons/year)(1)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Tulare County						
Total Cumulative One-Mile Projects	14.42	38.44	30.02	0.05	4.32	2.86
This Project	*13.20*	*30.56*	*30.08*	*0.08*	*4.38*	*2.02*
Total Cumulative Projects	**27.62**	**69.00**	**60.10**	**0.13**	**8.70**	**4.88**

(1) These emissions are overestimated and include all years of construction not just a single year, as they are discretionary projects that are subject to various mitigation measures that have not yet been determined nor their impacts reduced herein.

Table 5-6 – Cumulative Operational Projects

One-Mile Radius Projects	Pollutant (tons/year)(1)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Tulare County						
Total Cumulative One-Mile Projects	12.64	42.42	70.83	0.23	13.59	5.66
This Project	*9.50*	*8.98*	*29.40*	*0.08*	*8.77*	*2.44*
Total Cumulative Projects	**22.14**	**51.40**	**100.23**	**0.31**	**22.36**	**8.10**

(1) These emissions are overestimated, as they are discretionary projects that are subject to various mitigation measures that have not yet been determined nor their impacts reduced herein.

As details regarding the potential emissions from the various cumulative projects were not readily available through the City of Tulare's Planning Division, the emissions estimates presented were modeled using the CalEEMod computer model to predict cumulative impacts (see **Attachment C** for output results) unless otherwise noted. Emissions for the construction and operational phases of each project were based on total number of lots or square footage for maximum project build-out as noted by the City of Tulare's Planning Division. No mitigation measures were applied to any of the projects as it is not known which, if any, would be required or which may be voluntarily proposed by each developer or required by code or regulation. Additionally, no cumulative significance thresholds are shown since no cumulative thresholds have been established by the SJVAPCD, CARB or other regulatory authority. These projects represent all known and reasonably foreseeable projects in the area. As these projects are either currently under construction or, at a minimum, approved by the City of Tulare for consistency with applicable regulation, for the purposes of this analysis, it is assumed that they are in conformance with the regional AQAP. Because the proposed Project would generate less than significant Project-related operational impacts to criteria air pollutants, the Project's contribution to cumulative air quality impacts would not be cumulatively considerable.

5.3. CUMULATIVE HAZARDOUS AIR POLLUTANTS

The GAMAQI states that when evaluating potential impacts related to HAPs, "*impacts of local pollutants (CO, HAPs) are cumulatively significant when modeling shows that the combined emissions from the project and other existing and planned projects will exceed air quality standards.*" Because the Project would not be a significant sources of HAPS, the proposed Project would also *not be expected to pose a significant cumulative CO or HAPs impact*.

5.4. CUMULATIVE CARBON MONOXIDE (CO) – MOBILE SOURCES

The SJVAPCD's GAMAQI has identified CO impacts from impacted traffic intersections and roadway segments as being potentially cumulatively considerable. Traffic increases and added congestion caused by a project can combine to cause a violation of the SJVAPCD's CO standard also known as a "Hotspot". There are two criteria established by the GAMAQI by which CO "Hot Spot" modeling is required:

- A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to LOS E or F; or
- A traffic study indicates that the project will substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the project vicinity.

A traffic generation assessment impact study has been prepared for this project and determined the Project will not reduce any streets or intersections to a LOS E or F and will not worsen an already existing LOS F of any street or intersection after mitigation (Ruettgers & Schuler 2018). Therefore, CO "Hotspot" Modeling was not conducted for this Project and no concentrated excessive CO emissions are expected to be caused once the proposed Project is completed.

Air quality impacts from proposed projects within Tulare County are controlled through policies and provisions of the SJVAPCD and the Tulare County General Plan (TCRMA 2012). In order to demonstrate that a proposed project would not cause further air quality degradation in either of the SJVAPCD's plan to improve air quality within the air basin or federal requirements to meet certain air quality compliance goals, each project should also demonstrate consistency with the SJVAPCD's adopted Air Quality Attainment Plans (AQAP) for O_3 and PM_{10}. The SJVAPCD is required to submit a "Rate of Progress" document to the CARB that demonstrates past and planned progress toward reaching attainment for all criteria pollutants. The California Clean Air Act (CCAA) requires air pollution control districts with severe or extreme air quality problems to provide for a 5% reduction in non-attainment emissions per year. The AQAP prepared for the San Joaquin Valley by the SJVAPCD complies with this requirement. CARB reviews, approves, or amends the document and forwards the plan to the EPA for final review and approval within the SIP.

Air pollution sources associated with stationary sources are regulated through the permitting authority of the SJVAPCD under the New and Modified Stationary Source Review Rule (SJVAPCD Rule 2201). Owners of any new or modified equipment that emits, reduces, or controls air contaminants, except those specifically exempted by the SJVAPCD, are required to apply for an Authority to Construct and Permit to Operate (SJVAPCD Rule 2010). Additionally, best available control technology (BACT) is required on specific types of stationary equipment and are required to offset both stationary source emission increases along with increases in cargo carrier emissions if the specified threshold levels are exceeded (SJVAPCD Rule 2201, 4.7.1). Through this mechanism, the SJVAPCD would ensure that all stationary sources within the project area would be subject to the standards of the SJVAPCD to ensure that new developments do not result in net increases in stationary sources of criteria air pollutants.

6.1. REQUIRED EVALUATION GUIDELINES

State CEQA Guidelines and the Federal Clean Air Act (Sections 176 and 316) contain specific references on the need to evaluate consistencies between the proposed project and the applicable AQAP for the project site. To accomplish this, CARB has developed a three-step approach to determine project conformity with the applicable AQAP:

1. *Determination that an AQAP is being implemented in the area where the project is being proposed*. The SJVAPCD has implemented the current, modified, AQAP as approved by the CARB. The current AQAP is under review by the U.S. EPA.
2. *The proposed project must be consistent with the growth assumptions of the applicable AQAP*. The proposed project is included within the growth projected in the Tulare County General Plan or City of Tulare General Plan.
3. *The project must contain in its design all reasonably available and feasible air quality control measures*. The proposed project incorporates various policy and rule-required implementation measures that will reduce related emissions.

The CCAA and AQAP identify transportation control measures as methods to further reduce emissions from mobile sources. Strategies identified to reduce vehicular emissions such as reductions in vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, and traffic congestion, in order to reduce vehicular emissions, can be implemented as control measures under the CCAA as well. Additional measures may also be implemented through the building process such as providing electrical outlets on exterior walls of structures to encourage use of electrical landscape maintenance equipment or measures such as electrical outlets for electrical systems on diesel trucks to reduce or eliminate idling time.

As the growth represented by the proposed project was anticipated by the Tulare County General Plan and incorporated into the AQAP, conclusions may be drawn from the following criteria:

1. The findings of the analysis show that the Project's minimal employment increases are planned for the project area; and
2. That, by definition, the proposed emissions from the project are below the SJVAPCD's established emissions impact thresholds

Based on these factors, the project appears to be *consistent with the AQAP*.

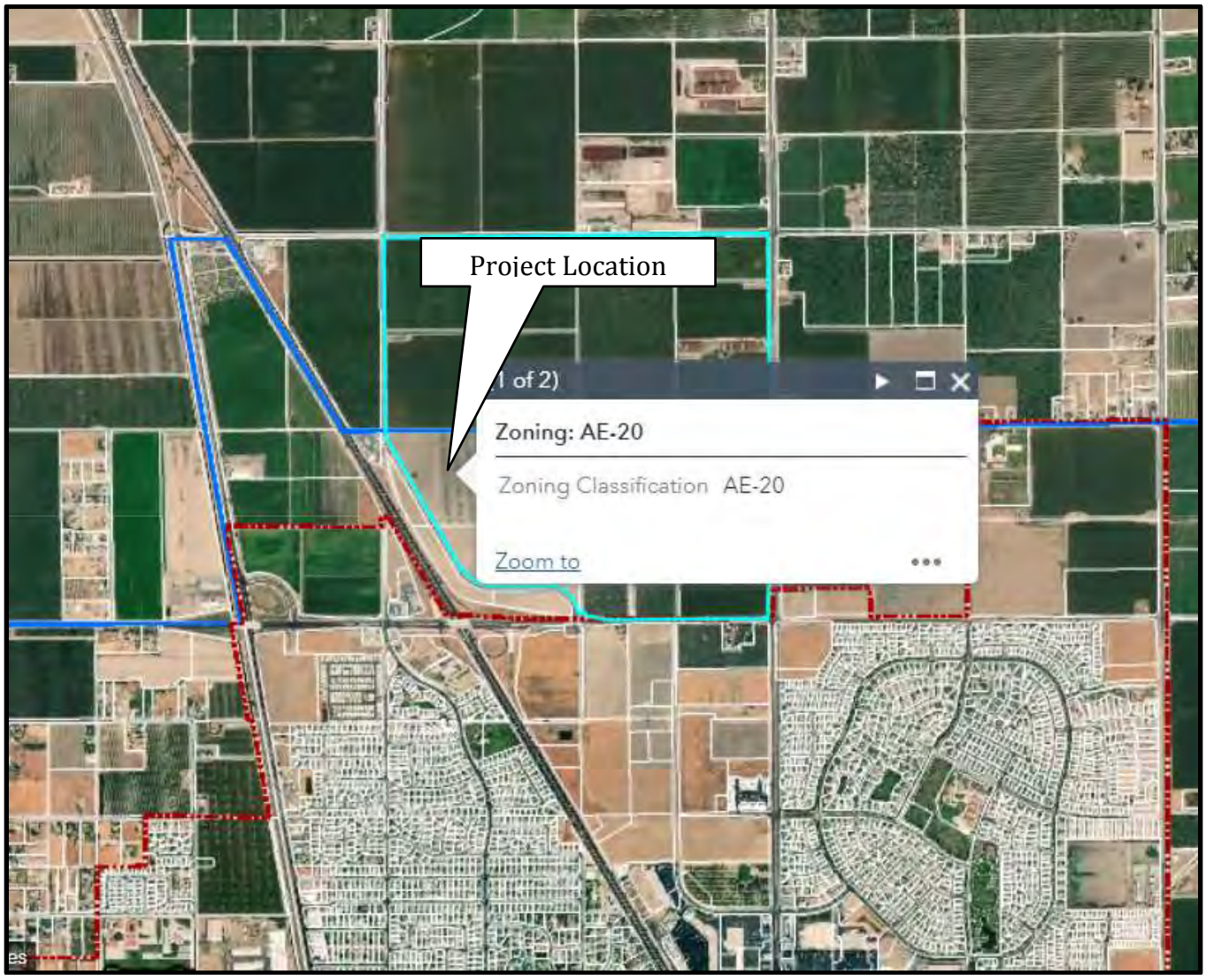
6.2. CONSISTENCY WITH THE TULARE COUNTY ASSOCIATION OF GOVERNMENT'S AIR QUALITY CONFORMITY ANALYSIS

The Tulare County Association of Governments (TCAG) Final 2015 Conformity Analysis Addressing the 2008 Ozone and 2012 PM2.5 Standards for the 2015 Federal Transportation Improvement Program and the 2014 Regional Transportation Plan in the Tulare County would not hinder the efforts set out in the CARB's SIP for each area's non-attainment pollutants (CO, O_3, PM_{10} and $PM_{2.5}$) (TCAG 2015). The analysis uses the *San Joaquin Valley Demographic Forecasts 2010 to 2050* (Planning Center 2012).

The TCAG Air Quality Conformity Analysis considers General Plan Amendments (GPA) and zone changes that were enacted at the time of the analysis as projected growth within the area based on land use designations incorporated within the Tulare County General Plan. Land use designations that are altered based on subsequent GPAs that were not included in the Air Quality Conformity Analysis were not incorporated into the TCAG analysis. Consequently, if a proposed project is not included in the regional growth forecast using the latest planning assumptions, it may not be said to conform to the regional growth forecast. Under the current Tulare County Zoning, the project site is designated as "AE-20" (see **Figure 6-1**).

Under current policies, only after a General Plan Amendment (GPA) is approved can housing and employment assumptions be updated to reflect the capacity changes. Since the proposed development does require a GPA and zone change, the existing growth forecast will be modified to reflect these changes. In order to determine whether the forecasted growth for the project area is sufficient to account for the projected increases in employment, an analysis based on TCAG regional forecast was conducted. Employment and population forecast for the analysis area appear to be sufficient to account for 100% of the planned employment growth attributed to the proposed Project. In order to be considered "consistent" and, therefore, in conformance with the AQAP, these increases would need to occur over the same time as the adopted growth forecast. According to Table 2-1 of TCAG's Air Quality Conformity Analysis there is a projected population increase of 24,865 and an employee increase of 7,300 in Tulare County between 2017 and 2020 (TCAG 2015).

Figure 6-1 – Tulare County Zoning



As the estimated construction and operational emissions from the proposed Project would be *less than significant*, no specific mitigation measures would be required. However, to ensure that Project is in compliance with all applicable SJVAPCD rules and regulations and emissions are further reduced, the applicant should implement and comply with a number of measures that are either recommended as a "good operating practice" for environmental stewardship or they are required by regulation. Some of the listed measures are regulatory requirements or construction requirements that would result in further emission reductions through their inclusion in Project construction and long-term design. The following measures either have been applied to the project through the CalEEMod model and would be incorporated into the Project by design or would be implemented in conjunction with SJVAPCD rules as conditions of approval:

7.1. SJVAPCD REQUIRED PM_{10} REDUCTION MEASURES

As the project would be completed in compliance with SJVAPCD Regulation VIII, dust control measures would be taken to ensure compliance specifically during grading and construction phases. The required Regulation VII measures are as follows:

- Water previously exposed surfaces (soil) whenever visible dust is capable of drifting from the site or approaches 20% opacity.
- Water all unpaved haul roads a minimum of three-times/day or whenever visible dust from such roads is capable of drifting from the site or approaches 20% opacity.
- Reduce speed on unpaved roads to less than 15 miles per hour.
- Install and maintain a track out control device that meets the specifications of SJVAPCD Rule 8041 if the site exceeds 150 vehicle trips per day or more than 20 vehicle trips per day by vehicles with three or more axles.
- Stabilize all disturbed areas, including storage piles, which are not being actively utilized for production purposes using water, by using chemical stabilizers or by covering with a tarp or other suitable cover.
- Control fugitive dust emissions during land clearing, grubbing, scraping, excavation, leveling, grading, or cut and fill operations with application of water or by presoaking.
- When transporting materials offsite, maintain a freeboard limit of at least 6 inches and cover or effectively wet to limit visible dust emissions.
- Limit and remove the accumulation of mud and/or dirt from adjacent public roadways at the end of each workday. (Use of dry rotary brushes is prohibited except when preceded or accompanied by sufficient wetting to limit visible dust emissions and use of blowers is expressly forbidden).
- Stabilize the surface of storage piles following the addition or removal of materials using water or chemical stabilizer/suppressants.
- Remove visible track-out from the site at the end of each workday.
- Cease grading or other activities that cause excessive (greater than 20% opacity) dust formation during periods of high winds (greater than 20 mph over a one-hour period).

7.2. RECOMMENDED MEASURES TO REDUCE EQUIPMENT EXHAUST

In addition, the GAMAQI guidance document lists the following measures as approved and recommended for construction activities. These measures are recommended:

- Maintain all construction equipment as recommended by manufacturer manuals.
- Shut down equipment when not in use for extended periods.
- Construction equipment shall operate no longer than eight (8) cumulative hours per day.
- Use electric equipment for construction whenever possible in lieu of diesel or gasoline powered equipment.
- Curtail use of high-emitting construction equipment during periods of high or excessive ambient pollutant concentrations.
- All construction vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NO_x emissions.
- On-Road and Off-Road diesel equipment shall use diesel particulate filters if permitted under manufacturer's guidelines.
- On-Road and Off-Road diesel equipment shall use cooled exhaust gas recirculation (EGR) if permitted under manufacturer's guidelines.
- All construction workers shall be encouraged to shuttle (car-pool) to retail establishments or to remain on-site during lunch breaks.
- All construction activities within the project area shall be discontinued during the first stage smog alerts.
- Construction and grading activities shall not be allowed during first stage O_3 alerts. First stage O_3 alerts are declared when the O_3 level exceeds 0.20 ppm (1-hour average).

7.3. OTHER MEASURES TO REDUCE PROJECT IMPACTS

The following measures are recommended to further reduce the potential for long-term emissions from the Project (if applicable). These measures are required as a matter of regulatory compliance:

- The project design shall comply with applicable standards set forth in Title 24 of the Uniform Building Code to minimize total consumption of energy.
- Applicants shall be required to comply with applicable mitigation measures in the AQAP, SJVAPCD Rules, Traffic Control Measures, Regulation VIII, and Indirect Source Rules for the SJVAPCD.
- The developer shall comply with the provisions of SJVAPCD Rule 4601 - Architectural Coatings during the construction of all buildings and facilities. Application of architectural coatings shall be completed in a manner that poses the least emissions impacts whenever such application is deemed proficient.
- The applicant shall comply with the provisions of SJVAPCD Rule 4641 during the construction and pavement of all roads and parking areas within the project area. Specifically, the applicant shall not allow the use of:
  - Rapid cure cutback asphalt;
  - Medium cure cutback asphalt;
  - Slow cure cutback asphalt (as specified in SJVAPCD Rule 4641, Section 5.1.3); or Emulsified asphalt (as specified in SJVAPCD Rule 4641, Section 5.1.4).
  - The developer shall comply with applicable provisions of SJVAPCD Rule 9510 (Indirect Source Review).

8. LEVEL OF SIGNIFICANCE AFTER MITIGATION

The proposed Project would have short-term air quality impacts due to facility construction activities as well as vehicular emissions. Both of these impacts would be mitigated and *were found to be less than significant* before and after mitigation.

The proposed Project would result in long-term air quality impacts due to operational and related mobile source emissions. These impacts *were found to be less than significant*.

The proposed Project in conjunction with other past, present and foreseeable future Projects will result in cumulative short-term and long-term impacts to air quality. The proposed Project's incremental contribution to these impacts would be mitigated and are below thresholds of significance and would be not be considered cumulatively considerable. Therefore, the Project's contribution to cumulative impacts *were found to be less than significant*.

The proposed Project in conjunction with other past, present and foreseeable future projects would result in cumulative long-term impacts to global climate change. The proposed Project's incremental contribution to these impacts will be mitigated to the extent feasible and are considered *less than significant.*

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ATTACHMENT A: EXISTING AIR QUALITY MONITORING DATA

Secure | https://www.arb.ca.gov/adam/topfour/topfourdisplay.php

Monday, July 2, 2018

Up Links
- Air Quality & Emissions
  - iADAM: Air Quality Data Statistics
    - iADAM: Top Four Summary
      - Previous Page

Program Links
- Frequently Asked Questions

Resources
- Contact Us

Top 4 Summary: Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

at Visalia-N Church Street

iADAM

	2015		2016		2017	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Sep 21	62.3	Nov 11	57.5	Dec 29	58.1
Second High:	Aug 25	56.9	Nov 12	51.8	Dec 15	57.1
Third High:	Sep 1	54.3	Oct 20	51.3	Nov 22	57.0
Fourth High:	Aug 31	53.6	Nov 14	49.5	Dec 12	56.3
California:						
First High:	Sep 21	62	Nov 11	57	Dec 29	58
Second High:	Aug 25	56	Oct 20	51	Nov 22	57
Third High:	Sep 1	54	Nov 12	51	Dec 15	57
Fourth High:	Aug 31	53	Nov 14	49	Dec 12	56
National:						
1-Hour Standard Design Value:		51		49		49
1-Hour Standard 98th Percentile:		45.6		45.9		55.6
# Days Above the Standard:		0		0		0
Annual Standard Design Value:		10		9		11
California:						
1-Hour Std Designation Value:		60		60		60
Expected Peak Day Concentration:		65		65		63
# Days Above the Standard:		0		0		0
Annual Std Designation Value:		12		10		10
Annual Average:		9		*		10
Year Coverage:		99		84		97

Secure | https://www.arb.ca.gov/adam/select8/sc8display.php



Air Resources Board

iADAM

FAQs

Select 8 Summary

Monitoring Sites	Ozone					
	#Days > State 1-Hour Standard			Highest 1-Hour Observation		
	2015	2016	2017	2015	2016	2017
	Tulare County					
Visalia-N Church Street	9	1	9	0.110	0.098	0.109

Note: * There was insufficient (or no) data available to determine the value.

Go to: Data Statistics Home Page | Select 8 Summary Start Page

Secure | https://www.arb.ca.gov/adam/select8/sc8display.php



Air Resources Board

iADAM

FAQs

Select 8 Summary

Monitoring Sites	Ozone					
	#Days > State 8-Hour Standard			Highest State 8-Hour Average		
	2015	2016	2017	2015	2016	2017
	Tulare County					
Visalia-N Church Street	52	19	65	0.091	0.083	0.092

Note: * There was insufficient (or no) data available to determine the value.

Go to: Data Statistics Home Page | Select 8 Summary Start Page

Secure | https://www.arb.ca.gov/adam/select8/sc8display.php



Air Resources Board

iADAM

Select 8 Summary

FAQs

Monitoring Sites	Ozone					
	#Days > Natl 0.070 8-Hr Standard			Highest Natl 0.070 8-Hr Average		
	2015	2016	2017	2015	2016	2017
	Tulare County					
Visalia-N Church Street	49	18	61	0.090	0.083	0.091

Note: * There was insufficient (or no) data available to determine the value.

Go to: Data Statistics Home Page | Select 8 Summary Start Page



Select 8 Summary

Monitoring Sites	PM2.5					
	Est #Days > National 24-Hour Std			High National 24-Hour Average		
	2015	2016	2017	2015	2016	2017
	Tulare County					
Visalia-N Church Street	17.9	21.3	26.7	86.3	48.0	86.1

Note: * There was insufficient (or no) data available to determine the value.

Go to: Data Statistics Home Page | Select 8 Summary Start Page

Secure | https://www.arb.ca.gov/adam/select8/sc8display.php



Air Resources Board

iADAM

Select 8 Summary

FAQs

Monitoring Sites	PM10					
	Est #Days > State 24-Hour Standard			High State 24-Hour Average		
	2015	2016	2017	2015	2016	2017
	Tulare County					
Visalia-N Church Street	*	*	135.9	140.3	132.5	145.7

Notes: PM10 statistics may include data that are related to an exceptional event.
* There was insufficient (or no) data available to determine the value.

Go to: Data Statistics Home Page | Select 8 Summary Start Page



Air Resources Board

iADAM

Select 8 Summary

FAQs

Monitoring Sites	PM10					
	Est #Days > Natl 24-Hour Standard			National Annual Average		
	2015	2016	2017	2015	2016	2017
	Tulare County					
Visalia-N Church Street	*	0	0	28.9	43.3	47.4

Notes: PM10 statistics may include data that are related to an exceptional event.
* There was insufficient (or no) data available to determine the value.

Go to: Data Statistics Home Page | Select 8 Summary Start Page

Secure | https://www.arb.ca.gov/adam/toxics/sitepages/pbfsng.html

Air Resources Board

View a Different Site
View a Different Substance
Order a Data CD

Annual Toxics Summary

Fresno-Garland

Lead

nanograms per cubic meter

iADAM
FAQs

Read About New Estimated Risk

Year	Months Present	Minimum	Median	Mean	90th Percentile	Maximum	Standard Deviation	Number of Observations	Detection Limit	Estimated Risk
2017		0.65	3.1	*	6.6	8.4	2.08	26	1.3	*
2016		0.65	3.0	3.71	5.7	12.1	2.47	31	1.3	0.1
2015		0.65	2.6	3.01	5.4	8.3	1.81	30	1.3	0.1
2014		0.85	3.0	3.93	8.0	12	3.09	30	1.7	0.1
2013		0.5	3.5	*	10.1	17	4.01	30	1.0	*
2012		0.75	2.6	3.17	6.2	16	3.29	29	1.5	0.1
2011		*	*	*	*	*	*	0	*	*
2010		*	*	*	*	*	*	0	*	*
2009		*	*	*	*	*	*	0	*	*
2008		*	*	*	*	*	*	0	*	*
2007		*	*	*	*	*	*	0	*	*
2006		*	*	*	*	*	*	0	*	*
2005		*	*	*	*	*	*	0	*	*
2004		*	*	*	*	*	*	0	*	*
2003		*	*	*	*	*	*	0	*	*
2002		*	*	*	*	*	*	0	*	*
2001		*	*	*	*	*	*	0	*	*
2000		*	*	*	*	*	*	0	*	*
1999		*	*	*	*	*	*	0	*	*
1998		*	*	*	*	*	*	0	*	*
1997		*	*	*	*	*	*	0	*	*
1996		*	*	*	*	*	*	0	*	*
1995		*	*	*	*	*	*	0	*	*
1994		*	*	*	*	*	*	0	*	*
1993		*	*	*	*	*	*	0	*	*
1992		*	*	*	*	*	*	0	*	*
1991		*	*	*	*	*	*	0	*	*
1990		*	*	*	*	*	*	0	*	*
1989		*	*	*	*	*	*	0	*	*

ATTACHMENT B: PROJECT EMISSION CALCULATIONS

QK Cartmill Crossing AQIA Phase 1

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Regional Shopping Center	176.00	1000sqft	15.00	176,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - According to project site description

Construction Phase -

Vehicle Trips - Adjusted to match Traffic Study

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Paint VOC based on Behr's MSDS. Landscape is an approved APCD assumption

Fleet Mix - ADjusted Fleet Mix to account for fewer HHD Trucks than default.

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	150	100
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	150	47
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblFleetMix	HHD	0.08	4.9200e-004
tblFleetMix	LDA	0.51	0.55
tblFleetMix	LDT1	0.03	0.04
tblFleetMix	LDT2	0.17	0.19
tblFleetMix	LHD1	0.02	0.03
tblFleetMix	LHD2	5.7980e-003	6.2810e-003
tblFleetMix	MCY	4.4020e-003	4.7690e-003
tblFleetMix	MDV	0.15	0.16
tblFleetMix	MH	8.1800e-004	8.8600e-004
tblFleetMix	MHD	0.02	0.02
tblFleetMix	OBUS	1.8190e-003	1.9710e-003
tblFleetMix	SBUS	1.1550e-003	1.2510e-003
tblFleetMix	UBUS	1.3710e-003	1.4850e-003
tblLandUse	LotAcreage	4.04	15.00
tblVehicleTrips	ST_TR	49.97	30.83
tblVehicleTrips	SU_TR	25.24	30.83
tblVehicleTrips	WD_TR	42.70	30.83

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.4042	3.8295	2.8391	5.5200e-003	0.2940	0.1941	0.4881	0.1237	0.1815	0.3052	0.0000	493.4559	493.4559	0.1012	0.0000	495.9854
2020	1.3396	1.0629	0.9371	1.8300e-003	0.0273	0.0537	0.0810	7.4200e-003	0.0504	0.0578	0.0000	161.7061	161.7061	0.0310	0.0000	162.4798
Maximum	**1.3396**	**3.8295**	**2.8391**	**5.5200e-003**	**0.2940**	**0.1941**	**0.4881**	**0.1237**	**0.1815**	**0.3052**	**0.0000**	**493.4559**	**493.4559**	**0.1012**	**0.0000**	**495.9854**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.4042	3.8295	2.8391	5.5200e-003	0.1595	0.1941	0.3536	0.0605	0.1815	0.2420	0.0000	493.4555	493.4555	0.1012	0.0000	495.9849
2020	1.3396	1.0629	0.9371	1.8300e-003	0.0273	0.0537	0.0810	7.4200e-003	0.0504	0.0578	0.0000	161.7059	161.7059	0.0310	0.0000	162.4797
Maximum	**1.3396**	**3.8295**	**2.8391**	**5.5200e-003**	**0.1595**	**0.1941**	**0.3536**	**0.0605**	**0.1815**	**0.2420**	**0.0000**	**493.4555**	**493.4555**	**0.1012**	**0.0000**	**495.9849**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**41.86**	**0.00**	**23.63**	**48.21**	**0.00**	**17.41**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2019	3-31-2019	1.4824	1.4824
2	4-1-2019	6-30-2019	0.9080	0.9080
3	7-1-2019	9-30-2019	0.9180	0.9180
4	10-1-2019	12-31-2019	0.9206	0.9206
5	1-1-2020	3-31-2020	0.8265	0.8265
6	4-1-2020	6-30-2020	1.5805	1.5805
		Highest	1.5805	1.5805

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8099	2.0000e-005	1.6300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.1400e-003	3.1400e-003	1.0000e-005	0.0000	3.3600e-003
Energy	0.0102	0.0923	0.0775	5.5000e-004		7.0200e-003	7.0200e-003		7.0200e-003	7.0200e-003	0.0000	517.7781	517.7781	0.0208	5.7500e-003	520.0104
Mobile	1.7560	4.3687	17.0603	0.0405	3.5611	0.0485	3.6097	0.9552	0.0456	1.0008	0.0000	3,687.8015	3,687.8015	0.1561	0.0000	3,691.7049
Waste						0.0000	0.0000		0.0000	0.0000	37.5127	0.0000	37.5127	2.2169	0.0000	92.9362
Water						0.0000	0.0000		0.0000	0.0000	4.1360	28.6571	32.7930	0.4261	0.0103	46.5145
Total	**2.5760**	**4.4610**	**17.1395**	**0.0411**	**3.5611**	**0.0556**	**3.6167**	**0.9552**	**0.0527**	**1.0078**	**41.6487**	**4,234.2398**	**4,275.8885**	**2.8200**	**0.0161**	**4,351.1693**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8099	1.0000e-005	1.6100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.1000e-003	3.1000e-003	1.0000e-005	0.0000	3.3100e-003
Energy	0.0102	0.0923	0.0775	5.5000e-004		7.0200e-003	7.0200e-003		7.0200e-003	7.0200e-003	0.0000	517.7781	517.7781	0.0208	5.7500e-003	520.0104
Mobile	1.6030	3.3315	12.9454	0.0268	2.2975	0.0334	2.3309	0.6162	0.0314	0.6476	0.0000	2,437.7300	2,437.7300	0.1129	0.0000	2,440.5516
Waste						0.0000	0.0000		0.0000	0.0000	37.5127	0.0000	37.5127	2.2169	0.0000	92.9362
Water						0.0000	0.0000		0.0000	0.0000	4.1360	28.6571	32.7930	0.4261	0.0103	46.5145
Total	**2.4231**	**3.4239**	**13.0246**	**0.0274**	**2.2975**	**0.0405**	**2.3379**	**0.6162**	**0.0384**	**0.6547**	**41.6487**	**2,984.1683**	**3,025.8170**	**2.7767**	**0.0161**	**3,100.0160**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**5.94**	**23.25**	**24.01**	**33.37**	**35.48**	**27.18**	**35.36**	**35.49**	**27.02**	**35.04**	**0.00**	**29.52**	**29.24**	**1.53**	**0.00**	**28.75**

3.0 Construction Detail

Construction Phase

QK Cartmill Crossing AQIA Phase 1 - Tulare County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2019	1/14/2019	5	10	
2	Grading	Grading	1/15/2019	2/25/2019	5	30	
3	Building Construction	Building Construction	2/26/2019	4/20/2020	5	300	
4	Paving	Paving	4/21/2020	5/18/2020	5	20	
5	Architectural Coating	Architectural Coating	5/19/2020	6/15/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 264,000; Non-Residential Outdoor: 88,000; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	56.00	29.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	11.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0903**	**0.0120**	**0.1023**	**0.0497**	**0.0110**	**0.0607**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

3.2 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.2000e-004	3.2800e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6354	0.6354	2.0000e-005	0.0000	0.6360
Total	**4.7000e-004**	**3.2000e-004**	**3.2800e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6354**	**0.6354**	**2.0000e-005**	**0.0000**	**0.6360**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0352	0.0000	0.0352	0.0194	0.0000	0.0194	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0352**	**0.0120**	**0.0472**	**0.0194**	**0.0110**	**0.0304**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

3.2 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.2000e-004	3.2800e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6354	0.6354	2.0000e-005	0.0000	0.6360
Total	**4.7000e-004**	**3.2000e-004**	**3.2800e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6354**	**0.6354**	**2.0000e-005**	**0.0000**	**0.6360**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0711	0.8178	0.5007	9.3000e-004		0.0357	0.0357		0.0329	0.0329	0.0000	83.5520	83.5520	0.0264	0.0000	84.2129
Total	**0.0711**	**0.8178**	**0.5007**	**9.3000e-004**	**0.1301**	**0.0357**	**0.1658**	**0.0540**	**0.0329**	**0.0868**	**0.0000**	**83.5520**	**83.5520**	**0.0264**	**0.0000**	**84.2129**

3.3 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5700e-003	1.0800e-003	0.0109	2.0000e-005	2.3900e-003	2.0000e-005	2.4100e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1181	2.1181	8.0000e-005	0.0000	2.1199
Total	**1.5700e-003**	**1.0800e-003**	**0.0109**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1181**	**2.1181**	**8.0000e-005**	**0.0000**	**2.1199**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0507	0.0000	0.0507	0.0210	0.0000	0.0210	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0711	0.8178	0.5007	9.3000e-004		0.0357	0.0357		0.0329	0.0329	0.0000	83.5519	83.5519	0.0264	0.0000	84.2128
Total	**0.0711**	**0.8178**	**0.5007**	**9.3000e-004**	**0.0507**	**0.0357**	**0.0865**	**0.0210**	**0.0329**	**0.0539**	**0.0000**	**83.5519**	**83.5519**	**0.0264**	**0.0000**	**84.2128**

3.3 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5700e-003	1.0800e-003	0.0109	2.0000e-005	2.3900e-003	2.0000e-005	2.4100e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1181	2.1181	8.0000e-005	0.0000	2.1199
Total	**1.5700e-003**	**1.0800e-003**	**0.0109**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1181**	**2.1181**	**8.0000e-005**	**0.0000**	**2.1199**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2609	2.3292	1.8966	2.9700e-003		0.1425	0.1425		0.1340	0.1340	0.0000	259.7901	259.7901	0.0633	0.0000	261.3723
Total	**0.2609**	**2.3292**	**1.8966**	**2.9700e-003**		**0.1425**	**0.1425**		**0.1340**	**0.1340**	**0.0000**	**259.7901**	**259.7901**	**0.0633**	**0.0000**	**261.3723**

3.4 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0162	0.4309	0.0916	9.1000e-004	0.0212	3.4500e-003	0.0246	6.1200e-003	3.3000e-003	9.4200e-003	0.0000	86.5876	86.5876	4.3900e-003	0.0000	86.6974
Worker	0.0324	0.0223	0.2258	4.8000e-004	0.0493	3.6000e-004	0.0497	0.0131	3.3000e-004	0.0134	0.0000	43.6884	43.6884	1.5600e-003	0.0000	43.7274
Total	**0.0485**	**0.4532**	**0.3174**	**1.3900e-003**	**0.0705**	**3.8100e-003**	**0.0743**	**0.0192**	**3.6300e-003**	**0.0229**	**0.0000**	**130.2760**	**130.2760**	**5.9500e-003**	**0.0000**	**130.4248**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2609	2.3292	1.8966	2.9700e-003		0.1425	0.1425		0.1340	0.1340	0.0000	259.7898	259.7898	0.0633	0.0000	261.3720
Total	**0.2609**	**2.3292**	**1.8966**	**2.9700e-003**		**0.1425**	**0.1425**		**0.1340**	**0.1340**	**0.0000**	**259.7898**	**259.7898**	**0.0633**	**0.0000**	**261.3720**

3.4 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0162	0.4309	0.0916	9.1000e-004	0.0212	3.4500e-003	0.0246	6.1200e-003	3.3000e-003	9.4200e-003	0.0000	86.5876	86.5876	4.3900e-003	0.0000	86.6974
Worker	0.0324	0.0223	0.2258	4.8000e-004	0.0493	3.6000e-004	0.0497	0.0131	3.3000e-004	0.0134	0.0000	43.6884	43.6884	1.5600e-003	0.0000	43.7274
Total	**0.0485**	**0.4532**	**0.3174**	**1.3900e-003**	**0.0705**	**3.8100e-003**	**0.0743**	**0.0192**	**3.6300e-003**	**0.0229**	**0.0000**	**130.2760**	**130.2760**	**5.9500e-003**	**0.0000**	**130.4248**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0837	0.7579	0.6655	1.0600e-003		0.0441	0.0441		0.0415	0.0415	0.0000	91.4859	91.4859	0.0223	0.0000	92.0439
Total	**0.0837**	**0.7579**	**0.6655**	**1.0600e-003**		**0.0441**	**0.0441**		**0.0415**	**0.0415**	**0.0000**	**91.4859**	**91.4859**	**0.0223**	**0.0000**	**92.0439**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5500e-003	0.1398	0.0278	3.2000e-004	7.5700e-003	7.9000e-004	8.3600e-003	2.1900e-003	7.6000e-004	2.9400e-003	0.0000	30.7232	30.7232	1.4200e-003	0.0000	30.7588
Worker	0.0104	6.9500e-003	0.0707	1.7000e-004	0.0176	1.2000e-004	0.0177	4.6800e-003	1.1000e-004	4.8000e-003	0.0000	15.1363	15.1363	4.7000e-004	0.0000	15.1482
Total	**0.0150**	**0.1468**	**0.0985**	**4.9000e-004**	**0.0252**	**9.1000e-004**	**0.0261**	**6.8700e-003**	**8.7000e-004**	**7.7400e-003**	**0.0000**	**45.8595**	**45.8595**	**1.8900e-003**	**0.0000**	**45.9070**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0837	0.7579	0.6655	1.0600e-003		0.0441	0.0441		0.0415	0.0415	0.0000	91.4858	91.4858	0.0223	0.0000	92.0438
Total	**0.0837**	**0.7579**	**0.6655**	**1.0600e-003**		**0.0441**	**0.0441**		**0.0415**	**0.0415**	**0.0000**	**91.4858**	**91.4858**	**0.0223**	**0.0000**	**92.0438**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5500e-003	0.1398	0.0278	3.2000e-004	7.5700e-003	7.9000e-004	8.3600e-003	2.1900e-003	7.6000e-004	2.9400e-003	0.0000	30.7232	30.7232	1.4200e-003	0.0000	30.7588
Worker	0.0104	6.9500e-003	0.0707	1.7000e-004	0.0176	1.2000e-004	0.0177	4.6800e-003	1.1000e-004	4.8000e-003	0.0000	15.1363	15.1363	4.7000e-004	0.0000	15.1482
Total	**0.0150**	**0.1468**	**0.0985**	**4.9000e-004**	**0.0252**	**9.1000e-004**	**0.0261**	**6.8700e-003**	**8.7000e-004**	**7.7400e-003**	**0.0000**	**45.8595**	**45.8595**	**1.8900e-003**	**0.0000**	**45.9070**

3.5 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1902
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0136**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1902**

3.5 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.1000e-004	4.7000e-004	4.7900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0264	1.0264	3.0000e-005	0.0000	1.0272
Total	**7.1000e-004**	**4.7000e-004**	**4.7900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0264**	**1.0264**	**3.0000e-005**	**0.0000**	**1.0272**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1901
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0136**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1901**

3.5 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.1000e-004	4.7000e-004	4.7900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0264	1.0264	3.0000e-005	0.0000	1.0272
Total	**7.1000e-004**	**4.7000e-004**	**4.7900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0264**	**1.0264**	**3.0000e-005**	**0.0000**	**1.0272**

3.6 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.2236					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.2261**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.6 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.5000e-004	3.5200e-003	1.0000e-005	8.8000e-004	1.0000e-005	8.8000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7527	0.7527	2.0000e-005	0.0000	0.7533
Total	**5.2000e-004**	**3.5000e-004**	**3.5200e-003**	**1.0000e-005**	**8.8000e-004**	**1.0000e-005**	**8.8000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**0.7527**	**0.7527**	**2.0000e-005**	**0.0000**	**0.7533**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.2236					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.2261**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.6 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.5000e-004	3.5200e-003	1.0000e-005	8.8000e-004	1.0000e-005	8.8000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7527	0.7527	2.0000e-005	0.0000	0.7533
Total	**5.2000e-004**	**3.5000e-004**	**3.5200e-003**	**1.0000e-005**	**8.8000e-004**	**1.0000e-005**	**8.8000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**0.7527**	**0.7527**	**2.0000e-005**	**0.0000**	**0.7533**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.6030	3.3315	12.9454	0.0268	2.2975	0.0334	2.3309	0.6162	0.0314	0.6476	0.0000	2,437.7300	2,437.7300	0.1129	0.0000	2,440.5516
Unmitigated	1.7560	4.3687	17.0603	0.0405	3.5611	0.0485	3.6097	0.9552	0.0456	1.0008	0.0000	3,687.8015	3,687.8015	0.1561	0.0000	3,691.7049

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Regional Shopping Center	5,426.08	5,426.08	5426.08	9,513,572	6,137,704
Total	5,426.08	5,426.08	5,426.08	9,513,572	6,137,704

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Regional Shopping Center	0.549133	0.037447	0.185470	0.161640	0.026392	0.006281	0.022783	0.000492	0.001971	0.001485	0.004769	0.001251	0.000886

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	417.2834	417.2834	0.0189	3.9000e-003	418.9185
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	417.2834	417.2834	0.0189	3.9000e-003	418.9185
NaturalGas Mitigated	0.0102	0.0923	0.0775	5.5000e-004		7.0200e-003	7.0200e-003		7.0200e-003	7.0200e-003	0.0000	100.4947	100.4947	1.9300e-003	1.8400e-003	101.0919
NaturalGas Unmitigated	0.0102	0.0923	0.0775	5.5000e-004		7.0200e-003	7.0200e-003		7.0200e-003	7.0200e-003	0.0000	100.4947	100.4947	1.9300e-003	1.8400e-003	101.0919

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Regional Shopping Center	1.8832e+006	0.0102	0.0923	0.0775	5.5000e-004		7.0200e-003	7.0200e-003		7.0200e-003	7.0200e-003	0.0000	100.4947	100.4947	1.9300e-003	1.8400e-003	101.0919
Total		**0.0102**	**0.0923**	**0.0775**	**5.5000e-004**		**7.0200e-003**	**7.0200e-003**		**7.0200e-003**	**7.0200e-003**	**0.0000**	**100.4947**	**100.4947**	**1.9300e-003**	**1.8400e-003**	**101.0919**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Regional Shopping Center	1.8832e+006	0.0102	0.0923	0.0775	5.5000e-004		7.0200e-003	7.0200e-003		7.0200e-003	7.0200e-003	0.0000	100.4947	100.4947	1.9300e-003	1.8400e-003	101.0919
Total		**0.0102**	**0.0923**	**0.0775**	**5.5000e-004**		**7.0200e-003**	**7.0200e-003**		**7.0200e-003**	**7.0200e-003**	**0.0000**	**100.4947**	**100.4947**	**1.9300e-003**	**1.8400e-003**	**101.0919**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Regional Shopping Center	1.4344e+006	417.2834	0.0189	3.9000e-003	418.9185
Total		**417.2834**	**0.0189**	**3.9000e-003**	**418.9185**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Regional Shopping Center	1.4344e+006	417.2834	0.0189	3.9000e-003	418.9185
Total		**417.2834**	**0.0189**	**3.9000e-003**	**418.9185**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8099	1.0000e-005	1.6100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.1000e-003	3.1000e-003	1.0000e-005	0.0000	3.3100e-003
Unmitigated	0.8099	2.0000e-005	1.6300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.1400e-003	3.1400e-003	1.0000e-005	0.0000	3.3600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1224					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6874					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.5000e-004	2.0000e-005	1.6300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.1400e-003	3.1400e-003	1.0000e-005	0.0000	3.3600e-003
Total	**0.8099**	**2.0000e-005**	**1.6300e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.1400e-003**	**3.1400e-003**	**1.0000e-005**	**0.0000**	**3.3600e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1224					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6874					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.5000e-004	1.0000e-005	1.6100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.1000e-003	3.1000e-003	1.0000e-005	0.0000	3.3100e-003
Total	**0.8099**	**1.0000e-005**	**1.6100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.1000e-003**	**3.1000e-003**	**1.0000e-005**	**0.0000**	**3.3100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	32.7930	0.4261	0.0103	46.5145
Unmitigated	32.7930	0.4261	0.0103	46.5145

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Regional Shopping Center	13.0368 / 7.99027	32.7930	0.4261	0.0103	46.5145
Total		**32.7930**	**0.4261**	**0.0103**	**46.5145**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Regional Shopping Center	13.0368 / 7.99027	32.7930	0.4261	0.0103	46.5145
Total		**32.7930**	**0.4261**	**0.0103**	**46.5145**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	37.5127	2.2169	0.0000	92.9362
Unmitigated	37.5127	2.2169	0.0000	92.9362

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Regional Shopping Center	184.8	37.5127	2.2169	0.0000	92.9362
Total		**37.5127**	**2.2169**	**0.0000**	**92.9362**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Regional Shopping Center	184.8	37.5127	2.2169	0.0000	92.9362
Total		**37.5127**	**2.2169**	**0.0000**	**92.9362**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

QK Cartmill Crossing AQIA - Phase 2

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	7.00	Acre	7.00	304,920.00	0
Apartments Mid Rise	170.00	Dwelling Unit	7.70	170,000.00	486
Condo/Townhouse	40.00	Dwelling Unit	4.40	40,000.00	114
Single Family Housing	132.00	Dwelling Unit	30.30	237,600.00	378

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

QK Cartmill Crossing AQIA - Phase 2 - Tulare County, Annual

Project Characteristics -

Land Use - According to project description and site map

Construction Phase -

Vehicle Trips - Adjusted to match Traffic Study

Woodstoves - According to Rule 4901

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Paint VOC based on Behr's MSDS. Landscape is an approved APCD assumption

Fleet Mix - Residential fleet mix for 2025

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	100
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	150	47
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblFleetMix	HHD	0.08	0.02
tblFleetMix	HHD	0.08	0.02
tblFleetMix	HHD	0.08	0.02
tblFleetMix	HHD	0.08	0.02
tblFleetMix	LDA	0.55	0.52
tblFleetMix	LDA	0.55	0.52
tblFleetMix	LDA	0.55	0.52
tblFleetMix	LDA	0.55	0.52
tblFleetMix	LDT1	0.03	0.21
tblFleetMix	LDT1	0.03	0.21
tblFleetMix	LDT1	0.03	0.21
tblFleetMix	LDT1	0.03	0.21
tblFleetMix	LDT2	0.18	0.17

tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LHD1	0.02	8.0000e-004
tblFleetMix	LHD1	0.02	8.0000e-004
tblFleetMix	LHD1	0.02	8.0000e-004
tblFleetMix	LHD1	0.02	8.0000e-004
tblFleetMix	LHD2	4.3040e-003	9.0000e-004
tblFleetMix	LHD2	4.3040e-003	9.0000e-004
tblFleetMix	LHD2	4.3040e-003	9.0000e-004
tblFleetMix	LHD2	4.3040e-003	9.0000e-004
tblFleetMix	MCY	4.0600e-003	2.5000e-003
tblFleetMix	MCY	4.0600e-003	2.5000e-003
tblFleetMix	MCY	4.0600e-003	2.5000e-003
tblFleetMix	MCY	4.0600e-003	2.5000e-003
tblFleetMix	MDV	0.12	0.06
tblFleetMix	MDV	0.12	0.06
tblFleetMix	MDV	0.12	0.06
tblFleetMix	MDV	0.12	0.06
tblFleetMix	MH	5.8700e-004	2.2000e-003
tblFleetMix	MH	5.8700e-004	2.2000e-003
tblFleetMix	MH	5.8700e-004	2.2000e-003
tblFleetMix	MH	5.8700e-004	2.2000e-003
tblFleetMix	MHD	0.02	7.6000e-003
tblFleetMix	MHD	0.02	7.6000e-003
tblFleetMix	MHD	0.02	7.6000e-003
tblFleetMix	MHD	0.02	7.6000e-003

tblFleetMix	OBUS	1.8020e-003	0.00
tblFleetMix	OBUS	1.8020e-003	0.00
tblFleetMix	OBUS	1.8020e-003	0.00
tblFleetMix	OBUS	1.8020e-003	0.00
tblFleetMix	SBUS	1.0580e-003	1.0000e-004
tblFleetMix	SBUS	1.0580e-003	1.0000e-004
tblFleetMix	SBUS	1.0580e-003	1.0000e-004
tblFleetMix	SBUS	1.0580e-003	1.0000e-004
tblFleetMix	UBUS	1.1360e-003	4.3000e-003
tblFleetMix	UBUS	1.1360e-003	4.3000e-003
tblFleetMix	UBUS	1.1360e-003	4.3000e-003
tblFleetMix	UBUS	1.1360e-003	4.3000e-003
tblLandUse	LotAcreage	4.47	7.70
tblLandUse	LotAcreage	2.50	4.40
tblLandUse	LotAcreage	42.86	30.30
tblVehicleTrips	ST_TR	6.39	7.37
tblVehicleTrips	ST_TR	22.75	13.29
tblVehicleTrips	ST_TR	5.67	7.37
tblVehicleTrips	ST_TR	9.91	10.17
tblVehicleTrips	SU_TR	5.86	7.37
tblVehicleTrips	SU_TR	16.74	13.29
tblVehicleTrips	SU_TR	4.84	7.37
tblVehicleTrips	SU_TR	8.62	10.17
tblVehicleTrips	WD_TR	6.65	7.37
tblVehicleTrips	WD_TR	1.89	13.29
tblVehicleTrips	WD_TR	5.81	7.37
tblVehicleTrips	WD_TR	9.52	10.17

tblWoodstoves	NumberCatalytic	0.00	7.70
tblWoodstoves	NumberCatalytic	0.00	4.40
tblWoodstoves	NumberCatalytic	0.00	30.30
tblWoodstoves	NumberNoncatalytic	0.00	7.70
tblWoodstoves	NumberNoncatalytic	0.00	4.40
tblWoodstoves	NumberNoncatalytic	0.00	30.30

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.4415	3.9373	3.4704	8.7200e-003	0.8508	0.1515	1.0023	0.3525	0.1407	0.4933	0.0000	780.4543	780.4543	0.1375	0.0000	783.8910
2023	0.3856	2.8930	3.2971	9.4600e-003	0.4134	0.0941	0.5074	0.1116	0.0885	0.2001	0.0000	854.0441	854.0441	0.0874	0.0000	856.2296
2024	0.3636	2.7742	3.2197	9.4000e-003	0.4166	0.0834	0.4999	0.1125	0.0784	0.1909	0.0000	848.2208	848.2208	0.0871	0.0000	850.3991
2025	4.3198	0.9038	1.2455	3.0800e-003	0.1177	0.0304	0.1481	0.0317	0.0284	0.0601	0.0000	275.7177	275.7177	0.0392	0.0000	276.6978
Maximum	**4.3198**	**3.9373**	**3.4704**	**9.4600e-003**	**0.8508**	**0.1515**	**1.0023**	**0.3525**	**0.1407**	**0.4933**	**0.0000**	**854.0441**	**854.0441**	**0.1375**	**0.0000**	**856.2296**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.4415	3.9373	3.4704	8.7200e-003	0.4871	0.1515	0.6386	0.1794	0.1407	0.3201	0.0000	780.4538	780.4538	0.1375	0.0000	783.8904
2023	0.3856	2.8930	3.2971	9.4600e-003	0.4134	0.0941	0.5074	0.1116	0.0885	0.2001	0.0000	854.0438	854.0438	0.0874	0.0000	856.2292
2024	0.3636	2.7742	3.2197	9.4000e-003	0.4166	0.0834	0.4999	0.1125	0.0784	0.1909	0.0000	848.2204	848.2204	0.0871	0.0000	850.3987
2025	4.3198	0.9038	1.2455	3.0800e-003	0.1177	0.0304	0.1481	0.0317	0.0284	0.0601	0.0000	275.7175	275.7175	0.0392	0.0000	276.6977
Maximum	**4.3198**	**3.9373**	**3.4704**	**9.4600e-003**	**0.4871**	**0.1515**	**0.6386**	**0.1794**	**0.1407**	**0.3201**	**0.0000**	**854.0438**	**854.0438**	**0.1375**	**0.0000**	**856.2292**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**20.22**	**0.00**	**16.86**	**28.46**	**0.00**	**18.33**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-3-2022	4-2-2022	1.2805	1.2805
2	4-3-2022	7-2-2022	1.2080	1.2080
3	7-3-2022	10-2-2022	0.9485	0.9485
4	10-3-2022	1-2-2023	0.9497	0.9497
5	1-3-2023	4-2-2023	0.8145	0.8145
6	4-3-2023	7-2-2023	0.8214	0.8214
7	7-3-2023	10-2-2023	0.8305	0.8305
8	10-3-2023	1-2-2024	0.8317	0.8317

9	**1-3-2024**	**4-2-2024**	0.7820	0.7820
10	**4-3-2024**	**7-2-2024**	0.7800	0.7800
11	**7-3-2024**	**10-2-2024**	0.7886	0.7886
12	**10-3-2024**	**1-2-2025**	0.7897	0.7897
13	**1-3-2025**	**4-2-2025**	0.7083	0.7083
14	**4-3-2025**	**7-2-2025**	1.2942	1.2942
15	**7-3-2025**	**9-30-2025**	3.1989	3.1989
		Highest	3.1989	3.1989

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.1263	0.2852	10.4388	0.0266		1.3046	1.3046		1.3046	1.3046	171.4115	152.3051	323.7166	0.8081	2.7200e-003	344.7291
Energy	0.0337	0.2875	0.1224	1.8400e-003		0.0233	0.0233		0.0233	0.0233	0.0000	955.8636	955.8636	0.0346	0.0119	960.2830
Mobile	0.8039	2.4816	9.0623	0.0295	3.1118	0.0220	3.1338	0.8320	0.0204	0.8523	0.0000	2,710.4797	2,710.4797	0.1250	0.0000	2,713.6045
Waste						0.0000	0.0000		0.0000	0.0000	47.3537	0.0000	47.3537	2.7985	0.0000	117.3169
Water						0.0000	0.0000		0.0000	0.0000	7.0693	57.8710	64.9403	0.7287	0.0177	88.4281
Total	**3.9639**	**3.0543**	**19.6234**	**0.0579**	**3.1118**	**1.3498**	**4.4616**	**0.8320**	**1.3482**	**2.1802**	**225.8345**	**3,876.5194**	**4,102.3538**	**4.4949**	**0.0323**	**4,224.3616**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.2462	0.0290	2.5188	1.3000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	4.1108	4.1108	3.9200e-003	0.0000	4.2087
Energy	0.0337	0.2875	0.1224	1.8400e-003		0.0233	0.0233		0.0233	0.0233	0.0000	955.8636	955.8636	0.0346	0.0119	960.2830
Mobile	0.6939	1.7881	5.1690	0.0143	1.3874	0.0115	1.3989	0.3709	0.0107	0.3816	0.0000	1,312.8321	1,312.8321	0.0696	0.0000	1,314.5723
Waste						0.0000	0.0000		0.0000	0.0000	47.3537	0.0000	47.3537	2.7985	0.0000	117.3169
Water						0.0000	0.0000		0.0000	0.0000	7.0693	57.8710	64.9403	0.7287	0.0177	88.4281
Total	**2.9737**	**2.1047**	**7.8102**	**0.0162**	**1.3874**	**0.0487**	**1.4362**	**0.3709**	**0.0479**	**0.4188**	**54.4230**	**2,330.6775**	**2,385.1005**	**3.6353**	**0.0296**	**2,484.8090**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**24.98**	**31.09**	**60.20**	**71.93**	**55.41**	**96.39**	**67.81**	**55.41**	**96.45**	**80.79**	**75.90**	**39.88**	**41.86**	**19.12**	**8.41**	**41.18**

3.0 Construction Detail

Construction Phase

QK Cartmill Crossing AQIA - Phase 2 - Tulare County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/3/2022	2/11/2022	5	30	
2	Grading	Grading	2/12/2022	5/27/2022	5	75	
3	Building Construction	Building Construction	5/28/2022	3/28/2025	5	740	
4	Paving	Paving	3/29/2025	6/13/2025	5	55	
5	Architectural Coating	Architectural Coating	6/14/2025	8/29/2025	5	55	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 0

Residential Indoor: 906,390; Residential Outdoor: 302,130; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

QK Cartmill Crossing AQIA - Phase 2 - Tulare County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	327.00	87.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	65.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2710	0.0000	0.2710	0.1490	0.0000	0.1490	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0476	0.4963	0.2955	5.7000e-004		0.0242	0.0242		0.0223	0.0223	0.0000	50.1591	50.1591	0.0162	0.0000	50.5647
Total	**0.0476**	**0.4963**	**0.2955**	**5.7000e-004**	**0.2710**	**0.0242**	**0.2952**	**0.1490**	**0.0223**	**0.1712**	**0.0000**	**50.1591**	**50.1591**	**0.0162**	**0.0000**	**50.5647**

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0800e-003	6.7000e-004	7.0300e-003	2.0000e-005	2.1500e-003	1.0000e-005	2.1600e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.7263	1.7263	5.0000e-005	0.0000	1.7275
Total	**1.0800e-003**	**6.7000e-004**	**7.0300e-003**	**2.0000e-005**	**2.1500e-003**	**1.0000e-005**	**2.1600e-003**	**5.7000e-004**	**1.0000e-005**	**5.8000e-004**	**0.0000**	**1.7263**	**1.7263**	**5.0000e-005**	**0.0000**	**1.7275**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1057	0.0000	0.1057	0.0581	0.0000	0.0581	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0476	0.4963	0.2955	5.7000e-004		0.0242	0.0242		0.0223	0.0223	0.0000	50.1590	50.1590	0.0162	0.0000	50.5646
Total	**0.0476**	**0.4963**	**0.2955**	**5.7000e-004**	**0.1057**	**0.0242**	**0.1299**	**0.0581**	**0.0223**	**0.0803**	**0.0000**	**50.1590**	**50.1590**	**0.0162**	**0.0000**	**50.5646**

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0800e-003	6.7000e-004	7.0300e-003	2.0000e-005	2.1500e-003	1.0000e-005	2.1600e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.7263	1.7263	5.0000e-005	0.0000	1.7275
Total	**1.0800e-003**	**6.7000e-004**	**7.0300e-003**	**2.0000e-005**	**2.1500e-003**	**1.0000e-005**	**2.1600e-003**	**5.7000e-004**	**1.0000e-005**	**5.8000e-004**	**0.0000**	**1.7263**	**1.7263**	**5.0000e-005**	**0.0000**	**1.7275**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3253	0.0000	0.3253	0.1349	0.0000	0.1349	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1359	1.4566	1.0891	2.3300e-003		0.0613	0.0613		0.0564	0.0564	0.0000	204.5048	204.5048	0.0661	0.0000	206.1583
Total	**0.1359**	**1.4566**	**1.0891**	**2.3300e-003**	**0.3253**	**0.0613**	**0.3866**	**0.1349**	**0.0564**	**0.1913**	**0.0000**	**204.5048**	**204.5048**	**0.0661**	**0.0000**	**206.1583**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-003	1.8600e-003	0.0195	5.0000e-005	5.9700e-003	4.0000e-005	6.0100e-003	1.5900e-003	4.0000e-005	1.6200e-003	0.0000	4.7954	4.7954	1.3000e-004	0.0000	4.7986
Total	**3.0000e-003**	**1.8600e-003**	**0.0195**	**5.0000e-005**	**5.9700e-003**	**4.0000e-005**	**6.0100e-003**	**1.5900e-003**	**4.0000e-005**	**1.6200e-003**	**0.0000**	**4.7954**	**4.7954**	**1.3000e-004**	**0.0000**	**4.7986**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1269	0.0000	0.1269	0.0526	0.0000	0.0526	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1359	1.4566	1.0891	2.3300e-003		0.0613	0.0613		0.0564	0.0564	0.0000	204.5045	204.5045	0.0661	0.0000	206.1580
Total	**0.1359**	**1.4566**	**1.0891**	**2.3300e-003**	**0.1269**	**0.0613**	**0.1882**	**0.0526**	**0.0564**	**0.1090**	**0.0000**	**204.5045**	**204.5045**	**0.0661**	**0.0000**	**206.1580**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-003	1.8600e-003	0.0195	5.0000e-005	5.9700e-003	4.0000e-005	6.0100e-003	1.5900e-003	4.0000e-005	1.6200e-003	0.0000	4.7954	4.7954	1.3000e-004	0.0000	4.7986
Total	**3.0000e-003**	**1.8600e-003**	**0.0195**	**5.0000e-005**	**5.9700e-003**	**4.0000e-005**	**6.0100e-003**	**1.5900e-003**	**4.0000e-005**	**1.6200e-003**	**0.0000**	**4.7954**	**4.7954**	**1.3000e-004**	**0.0000**	**4.7986**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1322	1.2102	1.2682	2.0900e-003		0.0627	0.0627		0.0590	0.0590	0.0000	179.5871	179.5871	0.0430	0.0000	180.6627
Total	**0.1322**	**1.2102**	**1.2682**	**2.0900e-003**		**0.0627**	**0.0627**		**0.0590**	**0.0590**	**0.0000**	**179.5871**	**179.5871**	**0.0430**	**0.0000**	**180.6627**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0201	0.7087	0.1314	1.8700e-003	0.0446	1.9000e-003	0.0465	0.0129	1.8200e-003	0.0147	0.0000	177.6452	177.6452	7.6300e-003	0.0000	177.8360
Worker	0.1015	0.0629	0.6598	1.7900e-003	0.2019	1.3100e-003	0.2032	0.0537	1.2100e-003	0.0549	0.0000	162.0365	162.0365	4.2700e-003	0.0000	162.1433
Total	**0.1217**	**0.7716**	**0.7912**	**3.6600e-003**	**0.2464**	**3.2100e-003**	**0.2496**	**0.0666**	**3.0300e-003**	**0.0696**	**0.0000**	**339.6816**	**339.6816**	**0.0119**	**0.0000**	**339.9793**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1322	1.2102	1.2682	2.0900e-003		0.0627	0.0627		0.0590	0.0590	0.0000	179.5869	179.5869	0.0430	0.0000	180.6625
Total	**0.1322**	**1.2102**	**1.2682**	**2.0900e-003**		**0.0627**	**0.0627**		**0.0590**	**0.0590**	**0.0000**	**179.5869**	**179.5869**	**0.0430**	**0.0000**	**180.6625**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0201	0.7087	0.1314	1.8700e-003	0.0446	1.9000e-003	0.0465	0.0129	1.8200e-003	0.0147	0.0000	177.6452	177.6452	7.6300e-003	0.0000	177.8360
Worker	0.1015	0.0629	0.6598	1.7900e-003	0.2019	1.3100e-003	0.2032	0.0537	1.2100e-003	0.0549	0.0000	162.0365	162.0365	4.2700e-003	0.0000	162.1433
Total	**0.1217**	**0.7716**	**0.7912**	**3.6600e-003**	**0.2464**	**3.2100e-003**	**0.2496**	**0.0666**	**3.0300e-003**	**0.0696**	**0.0000**	**339.6816**	**339.6816**	**0.0119**	**0.0000**	**339.9793**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3462	301.3462	0.0717	0.0000	303.1383
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3462**	**301.3462**	**0.0717**	**0.0000**	**303.1383**

3.4 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0235	0.9289	0.1842	3.0600e-003	0.0748	9.6000e-004	0.0757	0.0216	9.2000e-004	0.0225	0.0000	290.9656	290.9656	9.3800e-003	0.0000	291.2003
Worker	0.1577	0.0940	1.0012	2.9000e-003	0.3386	2.1200e-003	0.3407	0.0900	1.9500e-003	0.0920	0.0000	261.7323	261.7323	6.3500e-003	0.0000	261.8910
Total	**0.1811**	**1.0229**	**1.1854**	**5.9600e-003**	**0.4134**	**3.0800e-003**	**0.4165**	**0.1116**	**2.8700e-003**	**0.1145**	**0.0000**	**552.6980**	**552.6980**	**0.0157**	**0.0000**	**553.0913**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3458	301.3458	0.0717	0.0000	303.1380
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3458**	**301.3458**	**0.0717**	**0.0000**	**303.1380**

3.4 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0235	0.9289	0.1842	3.0600e-003	0.0748	9.6000e-004	0.0757	0.0216	9.2000e-004	0.0225	0.0000	290.9656	290.9656	9.3800e-003	0.0000	291.2003
Worker	0.1577	0.0940	1.0012	2.9000e-003	0.3386	2.1200e-003	0.3407	0.0900	1.9500e-003	0.0920	0.0000	261.7323	261.7323	6.3500e-003	0.0000	261.8910
Total	**0.1811**	**1.0229**	**1.1854**	**5.9600e-003**	**0.4134**	**3.0800e-003**	**0.4165**	**0.1116**	**2.8700e-003**	**0.1145**	**0.0000**	**552.6980**	**552.6980**	**0.0157**	**0.0000**	**553.0913**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0229	0.9283	0.1746	3.0600e-003	0.0753	9.5000e-004	0.0763	0.0218	9.1000e-004	0.0227	0.0000	291.1943	291.1943	9.6000e-003	0.0000	291.4343
Worker	0.1479	0.0848	0.9273	2.8000e-003	0.3412	2.0700e-003	0.3433	0.0907	1.9000e-003	0.0926	0.0000	253.3041	253.3041	5.7100e-003	0.0000	253.4470
Total	**0.1708**	**1.0131**	**1.1018**	**5.8600e-003**	**0.4166**	**3.0200e-003**	**0.4196**	**0.1125**	**2.8100e-003**	**0.1153**	**0.0000**	**544.4985**	**544.4985**	**0.0153**	**0.0000**	**544.8812**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0229	0.9283	0.1746	3.0600e-003	0.0753	9.5000e-004	0.0763	0.0218	9.1000e-004	0.0227	0.0000	291.1943	291.1943	9.6000e-003	0.0000	291.4343
Worker	0.1479	0.0848	0.9273	2.8000e-003	0.3412	2.0700e-003	0.3433	0.0907	1.9000e-003	0.0926	0.0000	253.3041	253.3041	5.7100e-003	0.0000	253.4470
Total	**0.1708**	**1.0131**	**1.1018**	**5.8600e-003**	**0.4166**	**3.0200e-003**	**0.4196**	**0.1125**	**2.8100e-003**	**0.1153**	**0.0000**	**544.4985**	**544.4985**	**0.0153**	**0.0000**	**544.8812**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0431	0.3928	0.5067	8.5000e-004		0.0166	0.0166		0.0156	0.0156	0.0000	73.0546	73.0546	0.0172	0.0000	73.4840
Total	**0.0431**	**0.3928**	**0.5067**	**8.5000e-004**		**0.0166**	**0.0166**		**0.0156**	**0.0156**	**0.0000**	**73.0546**	**73.0546**	**0.0172**	**0.0000**	**73.4840**

3.4 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.3600e-003	0.2212	0.0397	7.3000e-004	0.0181	2.3000e-004	0.0183	5.2400e-003	2.2000e-004	5.4500e-003	0.0000	69.5698	69.5698	2.3500e-003	0.0000	69.6285
Worker	0.0333	0.0184	0.2048	6.5000e-004	0.0821	4.8000e-004	0.0825	0.0218	4.5000e-004	0.0223	0.0000	58.5200	58.5200	1.2300e-003	0.0000	58.5509
Total	**0.0386**	**0.2396**	**0.2445**	**1.3800e-003**	**0.1002**	**7.1000e-004**	**0.1009**	**0.0271**	**6.7000e-004**	**0.0277**	**0.0000**	**128.0898**	**128.0898**	**3.5800e-003**	**0.0000**	**128.1794**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0431	0.3928	0.5067	8.5000e-004		0.0166	0.0166		0.0156	0.0156	0.0000	73.0545	73.0545	0.0172	0.0000	73.4839
Total	**0.0431**	**0.3928**	**0.5067**	**8.5000e-004**		**0.0166**	**0.0166**		**0.0156**	**0.0156**	**0.0000**	**73.0545**	**73.0545**	**0.0172**	**0.0000**	**73.4839**

3.4 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.3600e-003	0.2212	0.0397	7.3000e-004	0.0181	2.3000e-004	0.0183	5.2400e-003	2.2000e-004	5.4500e-003	0.0000	69.5698	69.5698	2.3500e-003	0.0000	69.6285
Worker	0.0333	0.0184	0.2048	6.5000e-004	0.0821	4.8000e-004	0.0825	0.0218	4.5000e-004	0.0223	0.0000	58.5200	58.5200	1.2300e-003	0.0000	58.5509
Total	**0.0386**	**0.2396**	**0.2445**	**1.3800e-003**	**0.1002**	**7.1000e-004**	**0.1009**	**0.0271**	**6.7000e-004**	**0.0277**	**0.0000**	**128.0898**	**128.0898**	**3.5800e-003**	**0.0000**	**128.1794**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0252	0.2360	0.4009	6.3000e-004		0.0115	0.0115		0.0106	0.0106	0.0000	55.0530	55.0530	0.0178	0.0000	55.4981
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0252**	**0.2360**	**0.4009**	**6.3000e-004**		**0.0115**	**0.0115**		**0.0106**	**0.0106**	**0.0000**	**55.0530**	**55.0530**	**0.0178**	**0.0000**	**55.4981**

3.5 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3300e-003	7.4000e-004	8.2000e-003	3.0000e-005	3.2900e-003	2.0000e-005	3.3100e-003	8.7000e-004	2.0000e-005	8.9000e-004	0.0000	2.3435	2.3435	5.0000e-005	0.0000	2.3448
Total	**1.3300e-003**	**7.4000e-004**	**8.2000e-003**	**3.0000e-005**	**3.2900e-003**	**2.0000e-005**	**3.3100e-003**	**8.7000e-004**	**2.0000e-005**	**8.9000e-004**	**0.0000**	**2.3435**	**2.3435**	**5.0000e-005**	**0.0000**	**2.3448**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0252	0.2360	0.4009	6.3000e-004		0.0115	0.0115		0.0106	0.0106	0.0000	55.0529	55.0529	0.0178	0.0000	55.4980
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0252**	**0.2360**	**0.4009**	**6.3000e-004**		**0.0115**	**0.0115**		**0.0106**	**0.0106**	**0.0000**	**55.0529**	**55.0529**	**0.0178**	**0.0000**	**55.4980**

3.5 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3300e-003	7.4000e-004	8.2000e-003	3.0000e-005	3.2900e-003	2.0000e-005	3.3100e-003	8.7000e-004	2.0000e-005	8.9000e-004	0.0000	2.3435	2.3435	5.0000e-005	0.0000	2.3448
Total	**1.3300e-003**	**7.4000e-004**	**8.2000e-003**	**3.0000e-005**	**3.2900e-003**	**2.0000e-005**	**3.3100e-003**	**8.7000e-004**	**2.0000e-005**	**8.9000e-004**	**0.0000**	**2.3435**	**2.3435**	**5.0000e-005**	**0.0000**	**2.3448**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.2011					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7000e-003	0.0315	0.0498	8.0000e-005		1.4200e-003	1.4200e-003		1.4200e-003	1.4200e-003	0.0000	7.0215	7.0215	3.8000e-004	0.0000	7.0310
Total	**4.2058**	**0.0315**	**0.0498**	**8.0000e-005**		**1.4200e-003**	**1.4200e-003**		**1.4200e-003**	**1.4200e-003**	**0.0000**	**7.0215**	**7.0215**	**3.8000e-004**	**0.0000**	**7.0310**

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.7700e-003	3.1900e-003	0.0355	1.1000e-004	0.0142	8.0000e-005	0.0143	3.7900e-003	8.0000e-005	3.8600e-003	0.0000	10.1553	10.1553	2.1000e-004	0.0000	10.1606
Total	**5.7700e-003**	**3.1900e-003**	**0.0355**	**1.1000e-004**	**0.0142**	**8.0000e-005**	**0.0143**	**3.7900e-003**	**8.0000e-005**	**3.8600e-003**	**0.0000**	**10.1553**	**10.1553**	**2.1000e-004**	**0.0000**	**10.1606**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.2011					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7000e-003	0.0315	0.0498	8.0000e-005		1.4200e-003	1.4200e-003		1.4200e-003	1.4200e-003	0.0000	7.0214	7.0214	3.8000e-004	0.0000	7.0310
Total	**4.2058**	**0.0315**	**0.0498**	**8.0000e-005**		**1.4200e-003**	**1.4200e-003**		**1.4200e-003**	**1.4200e-003**	**0.0000**	**7.0214**	**7.0214**	**3.8000e-004**	**0.0000**	**7.0310**

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.7700e-003	3.1900e-003	0.0355	1.1000e-004	0.0142	8.0000e-005	0.0143	3.7900e-003	8.0000e-005	3.8600e-003	0.0000	10.1553	10.1553	2.1000e-004	0.0000	10.1606
Total	**5.7700e-003**	**3.1900e-003**	**0.0355**	**1.1000e-004**	**0.0142**	**8.0000e-005**	**0.0143**	**3.7900e-003**	**8.0000e-005**	**3.8600e-003**	**0.0000**	**10.1553**	**10.1553**	**2.1000e-004**	**0.0000**	**10.1606**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6939	1.7881	5.1690	0.0143	1.3874	0.0115	1.3989	0.3709	0.0107	0.3816	0.0000	1,312.8321	1,312.8321	0.0696	0.0000	1,314.5723
Unmitigated	0.8039	2.4816	9.0623	0.0295	3.1118	0.0220	3.1338	0.8320	0.0204	0.8523	0.0000	2,710.4797	2,710.4797	0.1250	0.0000	2,713.6045

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,252.90	1,252.90	1252.90	3,531,592	1,574,587
City Park	93.03	93.03	93.03	198,605	88,550
Condo/Townhouse	294.80	294.80	294.80	830,963	370,491
Single Family Housing	1,342.44	1,342.44	1342.44	3,783,981	1,687,117
Total	2,983.17	2,983.17	2,983.17	8,345,142	3,720,746

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Condo/Townhouse	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.524400	0.212000	0.167700	0.056300	0.000800	0.000900	0.007600	0.021200	0.000000	0.004300	0.002500	0.000100	0.002200
City Park	0.524400	0.212000	0.167700	0.056300	0.000800	0.000900	0.007600	0.021200	0.000000	0.004300	0.002500	0.000100	0.002200
Condo/Townhouse	0.524400	0.212000	0.167700	0.056300	0.000800	0.000900	0.007600	0.021200	0.000000	0.004300	0.002500	0.000100	0.002200
Single Family Housing	0.524400	0.212000	0.167700	0.056300	0.000800	0.000900	0.007600	0.021200	0.000000	0.004300	0.002500	0.000100	0.002200

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	622.8718	622.8718	0.0282	5.8300e-003	625.3124
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	622.8718	622.8718	0.0282	5.8300e-003	625.3124
NaturalGas Mitigated	0.0337	0.2875	0.1224	1.8400e-003		0.0233	0.0233		0.0233	0.0233	0.0000	332.9918	332.9918	6.3800e-003	6.1000e-003	334.9706
NaturalGas Unmitigated	0.0337	0.2875	0.1224	1.8400e-003		0.0233	0.0233		0.0233	0.0233	0.0000	332.9918	332.9918	6.3800e-003	6.1000e-003	334.9706

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.07024e+006	0.0112	0.0954	0.0406	6.1000e-004		7.7100e-003	7.7100e-003		7.7100e-003	7.7100e-003	0.0000	110.4757	110.4757	2.1200e-003	2.0300e-003	111.1322
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	718623	3.8700e-003	0.0331	0.0141	2.1000e-004		2.6800e-003	2.6800e-003		2.6800e-003	2.6800e-003	0.0000	38.3485	38.3485	7.4000e-004	7.0000e-004	38.5764
Single Family Housing	3.45117e+006	0.0186	0.1590	0.0677	1.0200e-003		0.0129	0.0129		0.0129	0.0129	0.0000	184.1677	184.1677	3.5300e-003	3.3800e-003	185.2621
Total		**0.0336**	**0.2875**	**0.1224**	**1.8400e-003**		**0.0233**	**0.0233**		**0.0233**	**0.0233**	**0.0000**	**332.9918**	**332.9918**	**6.3900e-003**	**6.1100e-003**	**334.9706**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.07024e+006	0.0112	0.0954	0.0406	6.1000e-004		7.7100e-003	7.7100e-003		7.7100e-003	7.7100e-003	0.0000	110.4757	110.4757	2.1200e-003	2.0300e-003	111.1322
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	718623	3.8700e-003	0.0331	0.0141	2.1000e-004		2.6800e-003	2.6800e-003		2.6800e-003	2.6800e-003	0.0000	38.3485	38.3485	7.4000e-004	7.0000e-004	38.5764
Single Family Housing	3.45117e+006	0.0186	0.1590	0.0677	1.0200e-003		0.0129	0.0129		0.0129	0.0129	0.0000	184.1677	184.1677	3.5300e-003	3.3800e-003	185.2621
Total		**0.0336**	**0.2875**	**0.1224**	**1.8400e-003**		**0.0233**	**0.0233**		**0.0233**	**0.0233**	**0.0000**	**332.9918**	**332.9918**	**6.3900e-003**	**6.1100e-003**	**334.9706**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	764363	222.3618	0.0101	2.0800e-003	223.2331
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	220324	64.0948	2.9000e-003	6.0000e-004	64.3459
Single Family Housing	1.15642e+006	336.4152	0.0152	3.1500e-003	337.7333
Total		**622.8718**	**0.0282**	**5.8300e-003**	**625.3124**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	764363	222.3618	0.0101	2.0800e-003	223.2331
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	220324	64.0948	2.9000e-003	6.0000e-004	64.3459
Single Family Housing	1.15642e+006	336.4152	0.0152	3.1500e-003	337.7333
Total		**622.8718**	**0.0282**	**5.8300e-003**	**625.3124**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.2462	0.0290	2.5188	1.3000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	4.1108	4.1108	3.9200e-003	0.0000	4.2087
Unmitigated	3.1263	0.2852	10.4388	0.0266		1.3046	1.3046		1.3046	1.3046	171.4115	152.3051	323.7166	0.8081	2.7200e-003	344.7291

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4201					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.7510					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.8791	0.2559	7.9017	0.0264		1.2905	1.2905		1.2905	1.2905	171.4115	148.1569	319.5684	0.8042	2.7200e-003	340.4817
Landscaping	0.0762	0.0292	2.5371	1.3000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1482	4.1482	3.9700e-003	0.0000	4.2475
Total	**3.1263**	**0.2852**	**10.4388**	**0.0266**		**1.3046**	**1.3046**		**1.3046**	**1.3046**	**171.4115**	**152.3051**	**323.7166**	**0.8081**	**2.7200e-003**	**344.7291**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4201					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.7510					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0751	0.0290	2.5188	1.3000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	4.1108	4.1108	3.9200e-003	0.0000	4.2087
Total	**2.2462**	**0.0290**	**2.5188**	**1.3000e-004**		**0.0140**	**0.0140**		**0.0140**	**0.0140**	**0.0000**	**4.1108**	**4.1108**	**3.9200e-003**	**0.0000**	**4.2087**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	64.9403	0.7287	0.0177	88.4281
Unmitigated	64.9403	0.7287	0.0177	88.4281

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	11.0762 / 6.98281	28.0591	0.3620	8.7500e-003	39.7177
City Park	0 / 8.34037	8.4921	3.8000e-004	8.0000e-005	8.5254
Condo/Townhouse	2.60616 / 1.64301	6.6021	0.0852	2.0600e-003	9.3454
Single Family Housing	8.60033 / 5.42195	21.7870	0.2811	6.8000e-003	30.8397
Total		**64.9403**	**0.7287**	**0.0177**	**88.4281**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	11.0762 / 6.98281	28.0591	0.3620	8.7500e-003	39.7177
City Park	0 / 8.34037	8.4921	3.8000e-004	8.0000e-005	8.5254
Condo/Townhouse	2.60616 / 1.64301	6.6021	0.0852	2.0600e-003	9.3454
Single Family Housing	8.60033 / 5.42195	21.7870	0.2811	6.8000e-003	30.8397
Total		**64.9403**	**0.7287**	**0.0177**	**88.4281**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	47.3537	2.7985	0.0000	117.3169
Unmitigated	47.3537	2.7985	0.0000	117.3169

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	78.2	15.8739	0.9381	0.0000	39.3269
City Park	0.6	0.1218	7.2000e-003	0.0000	0.3017
Condo/Townhouse	18.4	3.7350	0.2207	0.0000	9.2534
Single Family Housing	136.08	27.6230	1.6325	0.0000	68.4348
Total		**47.3537**	**2.7985**	**0.0000**	**117.3169**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	78.2	15.8739	0.9381	0.0000	39.3269
City Park	0.6	0.1218	7.2000e-003	0.0000	0.3017
Condo/Townhouse	18.4	3.7350	0.2207	0.0000	9.2534
Single Family Housing	136.08	27.6230	1.6325	0.0000	68.4348
Total		**47.3537**	**2.7985**	**0.0000**	**117.3169**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

QK Cartmill Crossing AQIA - Phase 3

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Regional Shopping Center	630.40	1000sqft	53.60	630,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2029
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Actual Acreage

Construction Phase -

Vehicle Trips - Adjusted to match traffic study

Fleet Mix - ADjusted to account for actual fewer HHDT than default number

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Paint VOC based on Behr's MSDS. Landscape is an approved APCD assumption

QK Cartmill Crossing AQIA - Phase 3 - Tulare County, Annual

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	150	100
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	150	47
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	PhaseEndDate	8/31/2029	5/25/2029
tblConstructionPhase	PhaseEndDate	2/2/2029	10/27/2028
tblConstructionPhase	PhaseEndDate	11/1/2024	7/26/2024
tblConstructionPhase	PhaseEndDate	5/18/2029	2/9/2029
tblConstructionPhase	PhaseEndDate	5/31/2024	2/23/2024
tblConstructionPhase	PhaseStartDate	5/19/2029	2/10/2029
tblConstructionPhase	PhaseStartDate	11/2/2024	7/27/2024
tblConstructionPhase	PhaseStartDate	6/1/2024	2/24/2024
tblConstructionPhase	PhaseStartDate	2/3/2029	10/28/2028
tblConstructionPhase	PhaseStartDate	4/6/2024	1/1/2024
tblFleetMix	HHD	0.08	3.0200e-004
tblFleetMix	LDA	0.57	0.63
tblFleetMix	LDT1	0.03	0.03
tblFleetMix	LDT2	0.18	0.20
tblFleetMix	LHD1	0.01	8.5500e-003
tblFleetMix	LHD2	3.6510e-003	3.4540e-003
tblFleetMix	MCY	3.8850e-003	4.0720e-003
tblFleetMix	MDV	0.10	0.10
tblFleetMix	MH	4.8600e-004	4.3500e-004
tblFleetMix	MHD	0.02	0.02
tblFleetMix	OBUS	1.7750e-003	1.8660e-003
tblFleetMix	SBUS	9.9400e-004	9.0000e-004
tblFleetMix	UBUS	1.0180e-003	9.6700e-004

tblLandUse	LotAcreage	14.47	53.60
tblVehicleTrips	ST_TR	49.97	30.83
tblVehicleTrips	SU_TR	25.24	30.83
tblVehicleTrips	WD_TR	42.70	30.83

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.3683	3.5722	3.1616	8.0700e-003	0.9782	0.1335	1.1117	0.4345	0.1235	0.5580	0.0000	719.5034	719.5034	0.1559	0.0000	723.4005
2025	0.2899	2.7593	2.8179	8.7600e-003	0.2988	0.0712	0.3700	0.0815	0.0670	0.1485	0.0000	793.6423	793.6423	0.0858	0.0000	795.7879
2026	0.2841	2.7450	2.7715	8.6700e-003	0.2988	0.0711	0.3700	0.0815	0.0669	0.1484	0.0000	785.1124	785.1124	0.0859	0.0000	787.2588
2027	0.2787	2.7312	2.7288	8.6000e-003	0.2988	0.0710	0.3699	0.0815	0.0668	0.1483	0.0000	778.5304	778.5304	0.0859	0.0000	780.6779
2028	0.2465	2.4346	2.5503	7.5600e-003	0.2489	0.0679	0.3167	0.0679	0.0637	0.1315	0.0000	683.4181	683.4181	0.0855	0.0000	685.5548
2029	4.4072	0.1738	0.3120	5.5000e-004	0.0137	8.2700e-003	0.0220	3.6500e-003	7.7700e-003	0.0114	0.0000	48.1252	48.1252	0.0104	0.0000	48.3845
Maximum	**4.4072**	**3.5722**	**3.1616**	**8.7600e-003**	**0.9782**	**0.1335**	**1.1117**	**0.4345**	**0.1235**	**0.5580**	**0.0000**	**793.6423**	**793.6423**	**0.1559**	**0.0000**	**795.7879**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.3683	3.5722	3.1616	8.0700e-003	0.4668	0.1335	0.6003	0.1927	0.1235	0.3162	0.0000	719.5028	719.5028	0.1559	0.0000	723.3999
2025	0.2899	2.7593	2.8179	8.7600e-003	0.2988	0.0712	0.3700	0.0815	0.0670	0.1485	0.0000	793.6420	793.6420	0.0858	0.0000	795.7875
2026	0.2841	2.7450	2.7714	8.6700e-003	0.2988	0.0711	0.3700	0.0815	0.0669	0.1484	0.0000	785.1121	785.1121	0.0859	0.0000	787.2584
2027	0.2787	2.7312	2.7288	8.6000e-003	0.2988	0.0710	0.3699	0.0815	0.0668	0.1483	0.0000	778.5301	778.5301	0.0859	0.0000	780.6775
2028	0.2465	2.4346	2.5503	7.5600e-003	0.2489	0.0679	0.3167	0.0679	0.0637	0.1315	0.0000	683.4177	683.4177	0.0855	0.0000	685.5545
2029	4.4072	0.1738	0.3120	5.5000e-004	0.0137	8.2700e-003	0.0220	3.6500e-003	7.7700e-003	0.0114	0.0000	48.1251	48.1251	0.0104	0.0000	48.3844
Maximum	**4.4072**	**3.5722**	**3.1616**	**8.7600e-003**	**0.4668**	**0.1335**	**0.6003**	**0.1927**	**0.1235**	**0.3162**	**0.0000**	**793.6420**	**793.6420**	**0.1559**	**0.0000**	**795.7875**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**23.93**	**0.00**	**19.97**	**32.22**	**0.00**	**21.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2024**	**3-31-2024**	1.0493	1.0493
2	**4-1-2024**	**6-30-2024**	1.1606	1.1606
3	**7-1-2024**	**9-30-2024**	0.9115	0.9115
4	**10-1-2024**	**12-31-2024**	0.8105	0.8105
5	**1-1-2025**	**3-31-2025**	0.7527	0.7527

6	**4-1-2025**	**6-30-2025**	0.7591	0.7591
7	**7-1-2025**	**9-30-2025**	0.7674	0.7674
8	**10-1-2025**	**12-31-2025**	0.7695	0.7695
9	**1-1-2026**	**3-31-2026**	0.7476	0.7476
10	**4-1-2026**	**6-30-2026**	0.7540	0.7540
11	**7-1-2026**	**9-30-2026**	0.7623	0.7623
12	**10-1-2026**	**12-31-2026**	0.7642	0.7642
13	**1-1-2027**	**3-31-2027**	0.7427	0.7427
14	**4-1-2027**	**6-30-2027**	0.7492	0.7492
15	**7-1-2027**	**9-30-2027**	0.7574	0.7574
16	**10-1-2027**	**12-31-2027**	0.7592	0.7592
17	**1-1-2028**	**3-31-2028**	0.7468	0.7468
18	**4-1-2028**	**6-30-2028**	0.7451	0.7451
19	**7-1-2028**	**9-30-2028**	0.7533	0.7533
20	**10-1-2028**	**12-31-2028**	0.4435	0.4435
21	**1-1-2029**	**3-31-2029**	2.2499	2.2499
22	**4-1-2029**	**6-30-2029**	2.3247	2.3247
		Highest	2.3247	2.3247

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.9008	5.0000e-005	5.7800e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0113	0.0113	3.0000e-005	0.0000	0.0120
Energy	0.0364	0.3307	0.2778	1.9800e-003		0.0251	0.0251		0.0251	0.0251	0.0000	1,854.5871	1,854.5871	0.0745	0.0206	1,862.5826
Mobile	3.0448	6.7569	28.5386	0.1004	12.6891	0.0738	12.7629	3.3933	0.0684	3.4617	0.0000	9,151.7160	9,151.7160	0.2438	0.0000	9,157.8099
Waste						0.0000	0.0000		0.0000	0.0000	134.3638	0.0000	134.3638	7.9407	0.0000	332.8806
Water						0.0000	0.0000		0.0000	0.0000	14.8143	102.6444	117.4587	1.5262	0.0369	166.6065
Total	**5.9821**	**7.0876**	**28.8221**	**0.1024**	**12.6891**	**0.0990**	**12.7880**	**3.3933**	**0.0935**	**3.4868**	**149.1781**	**11,108.9588**	**11,258.1369**	**9.7851**	**0.0575**	**11,519.8915**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.9008	5.0000e-005	5.7000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118
Energy	0.0364	0.3307	0.2778	1.9800e-003		0.0251	0.0251		0.0251	0.0251	0.0000	1,854.5871	1,854.5871	0.0745	0.0206	1,862.5826
Mobile	2.8030	5.5379	21.2648	0.0665	8.1864	0.0533	8.2397	2.1892	0.0493	2.2385	0.0000	6,055.0310	6,055.0310	0.1738	0.0000	6,059.3770
Waste						0.0000	0.0000		0.0000	0.0000	134.3638	0.0000	134.3638	7.9407	0.0000	332.8806
Water						0.0000	0.0000		0.0000	0.0000	14.8143	102.6444	117.4587	1.5262	0.0369	166.6065
Total	**5.7402**	**5.8686**	**21.5482**	**0.0685**	**8.1864**	**0.0784**	**8.2648**	**2.1892**	**0.0745**	**2.2637**	**149.1781**	**8,012.2736**	**8,161.4517**	**9.7152**	**0.0575**	**8,421.4584**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**4.04**	**17.20**	**25.24**	**33.13**	**35.48**	**20.74**	**35.37**	**35.48**	**20.36**	**35.08**	**0.00**	**27.88**	**27.51**	**0.71**	**0.00**	**26.90**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2024	2/23/2024	5	40	
2	Grading	Grading	2/24/2024	7/26/2024	5	110	
3	Building Construction	Building Construction	7/27/2024	10/27/2028	5	1110	
4	Paving	Paving	10/28/2028	2/9/2029	5	75	
5	Architectural Coating	Architectural Coating	2/10/2029	5/25/2029	5	75	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 275

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 945,600; Non-Residential Outdoor: 315,200; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

QK Cartmill Crossing AQIA - Phase 3 - Tulare County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	40.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	202.00	103.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3613	0.0000	0.3613	0.1986	0.0000	0.1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0532	0.5435	0.3667	7.6000e-004		0.0246	0.0246		0.0226	0.0226	0.0000	66.9141	66.9141	0.0216	0.0000	67.4552
Total	**0.0532**	**0.5435**	**0.3667**	**7.6000e-004**	**0.3613**	**0.0246**	**0.3859**	**0.1986**	**0.0226**	**0.2212**	**0.0000**	**66.9141**	**66.9141**	**0.0216**	**0.0000**	**67.4552**

3.2 Site Preparation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	7.1000e-004	7.7900e-003	2.0000e-005	2.8700e-003	2.0000e-005	2.8800e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.1288	2.1288	5.0000e-005	0.0000	2.1300
Total	**1.2400e-003**	**7.1000e-004**	**7.7900e-003**	**2.0000e-005**	**2.8700e-003**	**2.0000e-005**	**2.8800e-003**	**7.6000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.1288**	**2.1288**	**5.0000e-005**	**0.0000**	**2.1300**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1409	0.0000	0.1409	0.0775	0.0000	0.0775	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0532	0.5435	0.3667	7.6000e-004		0.0246	0.0246		0.0226	0.0226	0.0000	66.9141	66.9141	0.0216	0.0000	67.4551
Total	**0.0532**	**0.5435**	**0.3667**	**7.6000e-004**	**0.1409**	**0.0246**	**0.1655**	**0.0775**	**0.0226**	**0.1001**	**0.0000**	**66.9141**	**66.9141**	**0.0216**	**0.0000**	**67.4551**

3.2 Site Preparation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	7.1000e-004	7.7900e-003	2.0000e-005	2.8700e-003	2.0000e-005	2.8800e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.1288	2.1288	5.0000e-005	0.0000	2.1300
Total	**1.2400e-003**	**7.1000e-004**	**7.7900e-003**	**2.0000e-005**	**2.8700e-003**	**2.0000e-005**	**2.8800e-003**	**7.6000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.1288**	**2.1288**	**5.0000e-005**	**0.0000**	**2.1300**

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4770	0.0000	0.4770	0.1978	0.0000	0.1978	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1770	1.7807	1.5248	3.4100e-003		0.0735	0.0735		0.0676	0.0676	0.0000	299.8574	299.8574	0.0970	0.0000	302.2819
Total	**0.1770**	**1.7807**	**1.5248**	**3.4100e-003**	**0.4770**	**0.0735**	**0.5505**	**0.1978**	**0.0676**	**0.2654**	**0.0000**	**299.8574**	**299.8574**	**0.0970**	**0.0000**	**302.2819**

3.3 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-003	2.1800e-003	0.0238	7.0000e-005	8.7600e-003	5.0000e-005	8.8200e-003	2.3300e-003	5.0000e-005	2.3800e-003	0.0000	6.5045	6.5045	1.5000e-004	0.0000	6.5082
Total	**3.8000e-003**	**2.1800e-003**	**0.0238**	**7.0000e-005**	**8.7600e-003**	**5.0000e-005**	**8.8200e-003**	**2.3300e-003**	**5.0000e-005**	**2.3800e-003**	**0.0000**	**6.5045**	**6.5045**	**1.5000e-004**	**0.0000**	**6.5082**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1860	0.0000	0.1860	0.0771	0.0000	0.0771	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1770	1.7807	1.5248	3.4100e-003		0.0735	0.0735		0.0676	0.0676	0.0000	299.8570	299.8570	0.0970	0.0000	302.2815
Total	**0.1770**	**1.7807**	**1.5248**	**3.4100e-003**	**0.1860**	**0.0735**	**0.2595**	**0.0771**	**0.0676**	**0.1447**	**0.0000**	**299.8570**	**299.8570**	**0.0970**	**0.0000**	**302.2815**

3.3 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-003	2.1800e-003	0.0238	7.0000e-005	8.7600e-003	5.0000e-005	8.8200e-003	2.3300e-003	5.0000e-005	2.3800e-003	0.0000	6.5045	6.5045	1.5000e-004	0.0000	6.5082
Total	**3.8000e-003**	**2.1800e-003**	**0.0238**	**7.0000e-005**	**8.7600e-003**	**5.0000e-005**	**8.8200e-003**	**2.3300e-003**	**5.0000e-005**	**2.3800e-003**	**0.0000**	**6.5045**	**6.5045**	**1.5000e-004**	**0.0000**	**6.5082**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0824	0.7529	0.9053	1.5100e-003		0.0344	0.0344		0.0323	0.0323	0.0000	129.8355	129.8355	0.0307	0.0000	130.6031
Total	**0.0824**	**0.7529**	**0.9053**	**1.5100e-003**		**0.0344**	**0.0344**		**0.0323**	**0.0323**	**0.0000**	**129.8355**	**129.8355**	**0.0307**	**0.0000**	**130.6031**

3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0116	0.4698	0.0883	1.5500e-003	0.0381	4.8000e-004	0.0386	0.0110	4.6000e-004	0.0115	0.0000	147.3729	147.3729	4.8600e-003	0.0000	147.4943
Worker	0.0391	0.0224	0.2449	7.4000e-004	0.0901	5.5000e-004	0.0907	0.0240	5.0000e-004	0.0245	0.0000	66.8902	66.8902	1.5100e-003	0.0000	66.9279
Total	**0.0506**	**0.4922**	**0.3332**	**2.2900e-003**	**0.1282**	**1.0300e-003**	**0.1293**	**0.0350**	**9.6000e-004**	**0.0359**	**0.0000**	**214.2631**	**214.2631**	**6.3700e-003**	**0.0000**	**214.4223**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0824	0.7529	0.9053	1.5100e-003		0.0344	0.0344		0.0323	0.0323	0.0000	129.8353	129.8353	0.0307	0.0000	130.6029
Total	**0.0824**	**0.7529**	**0.9053**	**1.5100e-003**		**0.0344**	**0.0344**		**0.0323**	**0.0323**	**0.0000**	**129.8353**	**129.8353**	**0.0307**	**0.0000**	**130.6029**

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0116	0.4698	0.0883	1.5500e-003	0.0381	4.8000e-004	0.0386	0.0110	4.6000e-004	0.0115	0.0000	147.3729	147.3729	4.8600e-003	0.0000	147.4943
Worker	0.0391	0.0224	0.2449	7.4000e-004	0.0901	5.5000e-004	0.0907	0.0240	5.0000e-004	0.0245	0.0000	66.8902	66.8902	1.5100e-003	0.0000	66.9279
Total	**0.0506**	**0.4922**	**0.3332**	**2.2900e-003**	**0.1282**	**1.0300e-003**	**0.1293**	**0.0350**	**9.6000e-004**	**0.0359**	**0.0000**	**214.2631**	**214.2631**	**6.3700e-003**	**0.0000**	**214.4223**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.4 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0263	1.0850	0.1948	3.5900e-003	0.0889	1.1000e-003	0.0900	0.0257	1.0600e-003	0.0267	0.0000	341.2232	341.2232	0.0115	0.0000	341.5112
Worker	0.0852	0.0470	0.5240	1.6600e-003	0.2100	1.2400e-003	0.2112	0.0558	1.1400e-003	0.0570	0.0000	149.7642	149.7642	3.1600e-003	0.0000	149.8432
Total	**0.1114**	**1.1320**	**0.7188**	**5.2500e-003**	**0.2988**	**2.3400e-003**	**0.3012**	**0.0815**	**2.2000e-003**	**0.0837**	**0.0000**	**490.9874**	**490.9874**	**0.0147**	**0.0000**	**491.3544**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.4 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0263	1.0850	0.1948	3.5900e-003	0.0889	1.1000e-003	0.0900	0.0257	1.0600e-003	0.0267	0.0000	341.2232	341.2232	0.0115	0.0000	341.5112
Worker	0.0852	0.0470	0.5240	1.6600e-003	0.2100	1.2400e-003	0.2112	0.0558	1.1400e-003	0.0570	0.0000	149.7642	149.7642	3.1600e-003	0.0000	149.8432
Total	**0.1114**	**1.1320**	**0.7188**	**5.2500e-003**	**0.2988**	**2.3400e-003**	**0.3012**	**0.0815**	**2.2000e-003**	**0.0837**	**0.0000**	**490.9874**	**490.9874**	**0.0147**	**0.0000**	**491.3544**

3.4 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.4 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0256	1.0753	0.1865	3.5700e-003	0.0889	1.0800e-003	0.0899	0.0257	1.0300e-003	0.0267	0.0000	339.2588	339.2588	0.0119	0.0000	339.5555
Worker	0.0800	0.0425	0.4859	1.5800e-003	0.2100	1.1900e-003	0.2112	0.0558	1.1000e-003	0.0569	0.0000	143.1988	143.1988	2.8400e-003	0.0000	143.2698
Total	**0.1056**	**1.1177**	**0.6724**	**5.1500e-003**	**0.2988**	**2.2700e-003**	**0.3011**	**0.0815**	**2.1300e-003**	**0.0836**	**0.0000**	**482.4576**	**482.4576**	**0.0147**	**0.0000**	**482.8253**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.4 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0256	1.0753	0.1865	3.5700e-003	0.0889	1.0800e-003	0.0899	0.0257	1.0300e-003	0.0267	0.0000	339.2588	339.2588	0.0119	0.0000	339.5555
Worker	0.0800	0.0425	0.4859	1.5800e-003	0.2100	1.1900e-003	0.2112	0.0558	1.1000e-003	0.0569	0.0000	143.1988	143.1988	2.8400e-003	0.0000	143.2698
Total	**0.1056**	**1.1177**	**0.6724**	**5.1500e-003**	**0.2988**	**2.2700e-003**	**0.3011**	**0.0815**	**2.1300e-003**	**0.0836**	**0.0000**	**482.4576**	**482.4576**	**0.0147**	**0.0000**	**482.8253**

3.4 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.4 Building Construction - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0251	1.0653	0.1795	3.5500e-003	0.0889	1.0600e-003	0.0899	0.0257	1.0100e-003	0.0267	0.0000	337.5150	337.5150	0.0122	0.0000	337.8196
Worker	0.0751	0.0386	0.4502	1.5300e-003	0.2100	1.1300e-003	0.2111	0.0558	1.0400e-003	0.0569	0.0000	138.3606	138.3606	2.5700e-003	0.0000	138.4248
Total	**0.1002**	**1.1039**	**0.6297**	**5.0800e-003**	**0.2988**	**2.1900e-003**	**0.3010**	**0.0815**	**2.0500e-003**	**0.0836**	**0.0000**	**475.8755**	**475.8755**	**0.0148**	**0.0000**	**476.2444**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.4 Building Construction - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0251	1.0653	0.1795	3.5500e-003	0.0889	1.0600e-003	0.0899	0.0257	1.0100e-003	0.0267	0.0000	337.5150	337.5150	0.0122	0.0000	337.8196
Worker	0.0751	0.0386	0.4502	1.5300e-003	0.2100	1.1300e-003	0.2111	0.0558	1.0400e-003	0.0569	0.0000	138.3606	138.3606	2.5700e-003	0.0000	138.4248
Total	**0.1002**	**1.1039**	**0.6297**	**5.0800e-003**	**0.2988**	**2.1900e-003**	**0.3010**	**0.0815**	**2.0500e-003**	**0.0836**	**0.0000**	**475.8755**	**475.8755**	**0.0148**	**0.0000**	**476.2444**

3.4 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1470	1.3405	1.7291	2.9000e-003		0.0567	0.0567		0.0534	0.0534	0.0000	249.3134	249.3134	0.0586	0.0000	250.7786
Total	**0.1470**	**1.3405**	**1.7291**	**2.9000e-003**		**0.0567**	**0.0567**		**0.0534**	**0.0534**	**0.0000**	**249.3134**	**249.3134**	**0.0586**	**0.0000**	**250.7786**

3.4 Building Construction - 2028

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0203	0.8716	0.1427	2.9100e-003	0.0732	8.6000e-004	0.0741	0.0212	8.2000e-004	0.0220	0.0000	276.9130	276.9130	0.0103	0.0000	277.1716
Worker	0.0577	0.0290	0.3452	1.2200e-003	0.1730	8.7000e-004	0.1738	0.0460	8.0000e-004	0.0468	0.0000	110.4319	110.4319	1.9200e-003	0.0000	110.4800
Total	**0.0780**	**0.9006**	**0.4878**	**4.1300e-003**	**0.2462**	**1.7300e-003**	**0.2479**	**0.0672**	**1.6200e-003**	**0.0688**	**0.0000**	**387.3450**	**387.3450**	**0.0123**	**0.0000**	**387.6516**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1470	1.3405	1.7291	2.9000e-003		0.0567	0.0567		0.0534	0.0534	0.0000	249.3131	249.3131	0.0586	0.0000	250.7783
Total	**0.1470**	**1.3405**	**1.7291**	**2.9000e-003**		**0.0567**	**0.0567**		**0.0534**	**0.0534**	**0.0000**	**249.3131**	**249.3131**	**0.0586**	**0.0000**	**250.7783**

3.4 Building Construction - 2028

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0203	0.8716	0.1427	2.9100e-003	0.0732	8.6000e-004	0.0741	0.0212	8.2000e-004	0.0220	0.0000	276.9130	276.9130	0.0103	0.0000	277.1716
Worker	0.0577	0.0290	0.3452	1.2200e-003	0.1730	8.7000e-004	0.1738	0.0460	8.0000e-004	0.0468	0.0000	110.4319	110.4319	1.9200e-003	0.0000	110.4800
Total	**0.0780**	**0.9006**	**0.4878**	**4.1300e-003**	**0.2462**	**1.7300e-003**	**0.2479**	**0.0672**	**1.6200e-003**	**0.0688**	**0.0000**	**387.3450**	**387.3450**	**0.0123**	**0.0000**	**387.6516**

3.5 Paving - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0206	0.1931	0.3280	5.1000e-004		9.4200e-003	9.4200e-003		8.6600e-003	8.6600e-003	0.0000	45.0433	45.0433	0.0146	0.0000	45.4075
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0206**	**0.1931**	**0.3280**	**5.1000e-004**		**9.4200e-003**	**9.4200e-003**		**8.6600e-003**	**8.6600e-003**	**0.0000**	**45.0433**	**45.0433**	**0.0146**	**0.0000**	**45.4075**

3.5 Paving - 2028

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-004	4.5000e-004	5.3600e-003	2.0000e-005	2.6900e-003	1.0000e-005	2.7000e-003	7.1000e-004	1.0000e-005	7.3000e-004	0.0000	1.7164	1.7164	3.0000e-005	0.0000	1.7171
Total	**9.0000e-004**	**4.5000e-004**	**5.3600e-003**	**2.0000e-005**	**2.6900e-003**	**1.0000e-005**	**2.7000e-003**	**7.1000e-004**	**1.0000e-005**	**7.3000e-004**	**0.0000**	**1.7164**	**1.7164**	**3.0000e-005**	**0.0000**	**1.7171**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0206	0.1931	0.3280	5.1000e-004		9.4200e-003	9.4200e-003		8.6600e-003	8.6600e-003	0.0000	45.0433	45.0433	0.0146	0.0000	45.4075
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0206**	**0.1931**	**0.3280**	**5.1000e-004**		**9.4200e-003**	**9.4200e-003**		**8.6600e-003**	**8.6600e-003**	**0.0000**	**45.0433**	**45.0433**	**0.0146**	**0.0000**	**45.4075**

3.5 Paving - 2028

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-004	4.5000e-004	5.3600e-003	2.0000e-005	2.6900e-003	1.0000e-005	2.7000e-003	7.1000e-004	1.0000e-005	7.3000e-004	0.0000	1.7164	1.7164	3.0000e-005	0.0000	1.7171
Total	**9.0000e-004**	**4.5000e-004**	**5.3600e-003**	**2.0000e-005**	**2.6900e-003**	**1.0000e-005**	**2.7000e-003**	**7.1000e-004**	**1.0000e-005**	**7.3000e-004**	**0.0000**	**1.7164**	**1.7164**	**3.0000e-005**	**0.0000**	**1.7171**

3.5 Paving - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0137	0.1287	0.2187	3.4000e-004		6.2800e-003	6.2800e-003		5.7800e-003	5.7800e-003	0.0000	30.0289	30.0289	9.7100e-003	0.0000	30.2717
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0137**	**0.1287**	**0.2187**	**3.4000e-004**		**6.2800e-003**	**6.2800e-003**		**5.7800e-003**	**5.7800e-003**	**0.0000**	**30.0289**	**30.0289**	**9.7100e-003**	**0.0000**	**30.2717**

3.5 Paving - 2029

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	2.7000e-004	3.3200e-003	1.0000e-005	1.7900e-003	1.0000e-005	1.8000e-003	4.8000e-004	1.0000e-005	4.8000e-004	0.0000	1.1115	1.1115	2.0000e-005	0.0000	1.1120
Total	**5.5000e-004**	**2.7000e-004**	**3.3200e-003**	**1.0000e-005**	**1.7900e-003**	**1.0000e-005**	**1.8000e-003**	**4.8000e-004**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**1.1115**	**1.1115**	**2.0000e-005**	**0.0000**	**1.1120**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0137	0.1287	0.2187	3.4000e-004		6.2800e-003	6.2800e-003		5.7800e-003	5.7800e-003	0.0000	30.0289	30.0289	9.7100e-003	0.0000	30.2717
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0137**	**0.1287**	**0.2187**	**3.4000e-004**		**6.2800e-003**	**6.2800e-003**		**5.7800e-003**	**5.7800e-003**	**0.0000**	**30.0289**	**30.0289**	**9.7100e-003**	**0.0000**	**30.2717**

3.5 Paving - 2029

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	2.7000e-004	3.3200e-003	1.0000e-005	1.7900e-003	1.0000e-005	1.8000e-003	4.8000e-004	1.0000e-005	4.8000e-004	0.0000	1.1115	1.1115	2.0000e-005	0.0000	1.1120
Total	**5.5000e-004**	**2.7000e-004**	**3.3200e-003**	**1.0000e-005**	**1.7900e-003**	**1.0000e-005**	**1.8000e-003**	**4.8000e-004**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**1.1115**	**1.1115**	**2.0000e-005**	**0.0000**	**1.1120**

3.6 Architectural Coating - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.3829					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.4100e-003	0.0430	0.0678	1.1000e-004		1.9300e-003	1.9300e-003		1.9300e-003	1.9300e-003	0.0000	9.5747	9.5747	5.2000e-004	0.0000	9.5878
Total	**4.3893**	**0.0430**	**0.0678**	**1.1000e-004**		**1.9300e-003**	**1.9300e-003**		**1.9300e-003**	**1.9300e-003**	**0.0000**	**9.5747**	**9.5747**	**5.2000e-004**	**0.0000**	**9.5878**

3.6 Architectural Coating - 2029

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6700e-003	1.8100e-003	0.0221	8.0000e-005	0.0120	6.0000e-005	0.0120	3.1800e-003	5.0000e-005	3.2300e-003	0.0000	7.4101	7.4101	1.2000e-004	0.0000	7.4131
Total	**3.6700e-003**	**1.8100e-003**	**0.0221**	**8.0000e-005**	**0.0120**	**6.0000e-005**	**0.0120**	**3.1800e-003**	**5.0000e-005**	**3.2300e-003**	**0.0000**	**7.4101**	**7.4101**	**1.2000e-004**	**0.0000**	**7.4131**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.3829					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.4100e-003	0.0430	0.0678	1.1000e-004		1.9300e-003	1.9300e-003		1.9300e-003	1.9300e-003	0.0000	9.5747	9.5747	5.2000e-004	0.0000	9.5878
Total	**4.3893**	**0.0430**	**0.0678**	**1.1000e-004**		**1.9300e-003**	**1.9300e-003**		**1.9300e-003**	**1.9300e-003**	**0.0000**	**9.5747**	**9.5747**	**5.2000e-004**	**0.0000**	**9.5878**

3.6 Architectural Coating - 2029

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6700e-003	1.8100e-003	0.0221	8.0000e-005	0.0120	6.0000e-005	0.0120	3.1800e-003	5.0000e-005	3.2300e-003	0.0000	7.4101	7.4101	1.2000e-004	0.0000	7.4131
Total	**3.6700e-003**	**1.8100e-003**	**0.0221**	**8.0000e-005**	**0.0120**	**6.0000e-005**	**0.0120**	**3.1800e-003**	**5.0000e-005**	**3.2300e-003**	**0.0000**	**7.4101**	**7.4101**	**1.2000e-004**	**0.0000**	**7.4131**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.8030	5.5379	21.2648	0.0665	8.1864	0.0533	8.2397	2.1892	0.0493	2.2385	0.0000	6,055.0310	6,055.0310	0.1738	0.0000	6,059.3770
Unmitigated	3.0448	6.7569	28.5386	0.1004	12.6891	0.0738	12.7629	3.3933	0.0684	3.4617	0.0000	9,151.7160	9,151.7160	0.2438	0.0000	9,157.8099

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Regional Shopping Center	19,435.23	19,435.23	19435.23	34,075,886	21,984,139
Total	19,435.23	19,435.23	19,435.23	34,075,886	21,984,139

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Regional Shopping Center	0.628883	0.031499	0.198999	0.100287	0.008550	0.003454	0.019785	0.000302	0.001866	0.000967	0.004072	0.000900	0.000435

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,494.6333	1,494.6333	0.0676	0.0140	1,500.4897
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,494.6333	1,494.6333	0.0676	0.0140	1,500.4897
NaturalGas Mitigated	0.0364	0.3307	0.2778	1.9800e-003		0.0251	0.0251		0.0251	0.0251	0.0000	359.9538	359.9538	6.9000e-003	6.6000e-003	362.0929
NaturalGas Unmitigated	0.0364	0.3307	0.2778	1.9800e-003		0.0251	0.0251		0.0251	0.0251	0.0000	359.9538	359.9538	6.9000e-003	6.6000e-003	362.0929

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Regional Shopping Center	6.74528e+006	0.0364	0.3307	0.2778	1.9800e-003		0.0251	0.0251		0.0251	0.0251	0.0000	359.9538	359.9538	6.9000e-003	6.6000e-003	362.0929
Total		**0.0364**	**0.3307**	**0.2778**	**1.9800e-003**		**0.0251**	**0.0251**		**0.0251**	**0.0251**	**0.0000**	**359.9538**	**359.9538**	**6.9000e-003**	**6.6000e-003**	**362.0929**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Regional Shopping Center	6.74528e+006	0.0364	0.3307	0.2778	1.9800e-003		0.0251	0.0251		0.0251	0.0251	0.0000	359.9538	359.9538	6.9000e-003	6.6000e-003	362.0929
Total		**0.0364**	**0.3307**	**0.2778**	**1.9800e-003**		**0.0251**	**0.0251**		**0.0251**	**0.0251**	**0.0000**	**359.9538**	**359.9538**	**6.9000e-003**	**6.6000e-003**	**362.0929**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Regional Shopping Center	5.13776e+006	1,494.6333	0.0676	0.0140	1,500.4897
Total		**1,494.6333**	**0.0676**	**0.0140**	**1,500.4897**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Regional Shopping Center	5.13776e+006	1,494.6333	0.0676	0.0140	1,500.4897
Total		**1,494.6333**	**0.0676**	**0.0140**	**1,500.4897**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.9008	5.0000e-005	5.7000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118
Unmitigated	2.9008	5.0000e-005	5.7800e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0113	0.0113	3.0000e-005	0.0000	0.0120

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4383					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.4620					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.3000e-004	5.0000e-005	5.7800e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0113	0.0113	3.0000e-005	0.0000	0.0120
Total	**2.9009**	**5.0000e-005**	**5.7800e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0113**	**0.0113**	**3.0000e-005**	**0.0000**	**0.0120**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4383					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.4620					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.2000e-004	5.0000e-005	5.7000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118
Total	**2.9008**	**5.0000e-005**	**5.7000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0111**	**0.0111**	**3.0000e-005**	**0.0000**	**0.0118**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	117.4587	1.5262	0.0369	166.6065
Unmitigated	117.4587	1.5262	0.0369	166.6065

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Regional Shopping Center	46.6953 / 28.6197	117.4587	1.5262	0.0369	166.6065
Total		**117.4587**	**1.5262**	**0.0369**	**166.6065**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Regional Shopping Center	46.6953 / 28.6197	117.4587	1.5262	0.0369	166.6065
Total		**117.4587**	**1.5262**	**0.0369**	**166.6065**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	134.3638	7.9407	0.0000	332.8806
Unmitigated	134.3638	7.9407	0.0000	332.8806

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Regional Shopping Center	661.92	134.3638	7.9407	0.0000	332.8806
Total		**134.3638**	**7.9407**	**0.0000**	**332.8806**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Regional Shopping Center	661.92	134.3638	7.9407	0.0000	332.8806
Total		**134.3638**	**7.9407**	**0.0000**	**332.8806**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

QK Cartmill Crossing AQIA - Phase 1-2

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	7.00	Acre	7.00	304,920.00	0
Apartments Mid Rise	170.00	Dwelling Unit	7.70	170,000.00	486
Condo/Townhouse	40.00	Dwelling Unit	4.40	40,000.00	114
Single Family Housing	132.00	Dwelling Unit	30.30	237,600.00	378
Regional Shopping Center	176.00	1000sqft	15.00	176,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

QK Cartmill Crossing AQIA - Phase 1-2 - Tulare County, Annual

Project Characteristics -

Land Use - According to project description and site map

Construction Phase - Operational Run Only

Vehicle Trips - Adjusted to match Traffic Study

Woodstoves - According to Rule 4901

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Paint VOC based on Behr's MSDS. Landscape is an approved APCD assumption

Fleet Mix - Residential fleet mix for 2025, Retail fleet mix adjusted for actual fewer HHDT than default

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	100
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	150	47
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	150	100
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	150	47
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	40.00	0.00
tblConstructionPhase	NumDays	110.00	0.00
tblConstructionPhase	NumDays	1,110.00	0.00
tblConstructionPhase	NumDays	75.00	0.00
tblConstructionPhase	NumDays	75.00	0.00
tblFleetMix	HHD	0.08	0.02
tblFleetMix	HHD	0.08	0.02
tblFleetMix	HHD	0.08	0.02
tblFleetMix	HHD	0.08	0.02
tblFleetMix	HHD	0.08	4.9200e-004
tblFleetMix	LDA	0.55	0.52

tblFleetMix	LDA	0.55	0.52
tblFleetMix	LDA	0.55	0.52
tblFleetMix	LDA	0.55	0.52
tblFleetMix	LDA	0.55	0.55
tblFleetMix	LDT1	0.03	0.21
tblFleetMix	LDT1	0.03	0.21
tblFleetMix	LDT1	0.03	0.21
tblFleetMix	LDT1	0.03	0.21
tblFleetMix	LDT1	0.03	0.04
tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LDT2	0.18	0.19
tblFleetMix	LHD1	0.02	8.0000e-004
tblFleetMix	LHD1	0.02	8.0000e-004
tblFleetMix	LHD1	0.02	8.0000e-004
tblFleetMix	LHD1	0.02	8.0000e-004
tblFleetMix	LHD1	0.02	0.03
tblFleetMix	LHD2	4.3040e-003	9.0000e-004
tblFleetMix	LHD2	4.3040e-003	9.0000e-004
tblFleetMix	LHD2	4.3040e-003	9.0000e-004
tblFleetMix	LHD2	4.3040e-003	9.0000e-004
tblFleetMix	LHD2	4.3040e-003	6.2810e-003
tblFleetMix	MCY	4.0600e-003	2.5000e-003
tblFleetMix	MCY	4.0600e-003	2.5000e-003
tblFleetMix	MCY	4.0600e-003	2.5000e-003

tblFleetMix	MCY	4.0600e-003	2.5000e-003
tblFleetMix	MCY	4.0600e-003	4.7690e-003
tblFleetMix	MDV	0.12	0.06
tblFleetMix	MDV	0.12	0.06
tblFleetMix	MDV	0.12	0.06
tblFleetMix	MDV	0.12	0.06
tblFleetMix	MDV	0.12	0.16
tblFleetMix	MH	5.8700e-004	2.2000e-003
tblFleetMix	MH	5.8700e-004	2.2000e-003
tblFleetMix	MH	5.8700e-004	2.2000e-003
tblFleetMix	MH	5.8700e-004	2.2000e-003
tblFleetMix	MH	5.8700e-004	8.8600e-004
tblFleetMix	MHD	0.02	7.6000e-003
tblFleetMix	MHD	0.02	7.6000e-003
tblFleetMix	MHD	0.02	7.6000e-003
tblFleetMix	MHD	0.02	7.6000e-003
tblFleetMix	MHD	0.02	0.02
tblFleetMix	OBUS	1.8020e-003	0.00
tblFleetMix	OBUS	1.8020e-003	0.00
tblFleetMix	OBUS	1.8020e-003	0.00
tblFleetMix	OBUS	1.8020e-003	0.00
tblFleetMix	OBUS	1.8020e-003	1.9710e-003
tblFleetMix	SBUS	1.0580e-003	1.0000e-004
tblFleetMix	SBUS	1.0580e-003	1.0000e-004
tblFleetMix	SBUS	1.0580e-003	1.0000e-004
tblFleetMix	SBUS	1.0580e-003	1.0000e-004
tblFleetMix	SBUS	1.0580e-003	1.2510e-003

tblFleetMix	UBUS	1.1360e-003	4.3000e-003
tblFleetMix	UBUS	1.1360e-003	4.3000e-003
tblFleetMix	UBUS	1.1360e-003	4.3000e-003
tblFleetMix	UBUS	1.1360e-003	4.3000e-003
tblFleetMix	UBUS	1.1360e-003	1.4850e-003
tblGrading	AcresOfGrading	0.00	275.00
tblLandUse	LotAcreage	4.47	7.70
tblLandUse	LotAcreage	2.50	4.40
tblLandUse	LotAcreage	42.86	30.30
tblLandUse	LotAcreage	4.04	15.00
tblVehicleTrips	ST_TR	6.39	7.37
tblVehicleTrips	ST_TR	22.75	13.29
tblVehicleTrips	ST_TR	5.67	7.37
tblVehicleTrips	ST_TR	9.91	10.17
tblVehicleTrips	ST_TR	49.97	30.83
tblVehicleTrips	SU_TR	5.86	7.37
tblVehicleTrips	SU_TR	16.74	13.29
tblVehicleTrips	SU_TR	4.84	7.37
tblVehicleTrips	SU_TR	8.62	10.17
tblVehicleTrips	SU_TR	25.24	30.83
tblVehicleTrips	WD_TR	6.65	7.37
tblVehicleTrips	WD_TR	1.89	13.29
tblVehicleTrips	WD_TR	5.81	7.37
tblVehicleTrips	WD_TR	9.52	10.17
tblVehicleTrips	WD_TR	42.70	30.83

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.9362	0.2852	10.4404	0.0266		1.3046	1.3046		1.3046	1.3046	171.4115	152.3083	323.7197	0.8081	2.7200e-003	344.7325
Energy	0.0438	0.3798	0.1999	2.3900e-003		0.0303	0.0303		0.0303	0.0303	0.0000	1,473.6417	1,473.6417	0.0553	0.0177	1,480.2933
Mobile	2.0349	5.5178	20.2633	0.0642	6.6727	0.0523	6.7249	1.7870	0.0486	1.8356	0.0000	5,875.9338	5,875.9338	0.2312	0.0000	5,881.7133
Waste						0.0000	0.0000		0.0000	0.0000	84.8665	0.0000	84.8665	5.0155	0.0000	210.2531
Water						0.0000	0.0000		0.0000	0.0000	11.2052	86.5281	97.7333	1.1548	0.0280	134.9426
Total	**6.0149**	**6.1828**	**30.9036**	**0.0931**	**6.6727**	**1.3871**	**8.0598**	**1.7870**	**1.3834**	**3.1705**	**267.4831**	**7,588.4119**	**7,855.8950**	**7.2649**	**0.0484**	**8,051.9348**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.7315	0.0291	2.5204	1.3000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	4.1139	4.1139	3.9200e-003	0.0000	4.2120
Energy	0.0438	0.3798	0.1999	2.3900e-003		0.0303	0.0303		0.0303	0.0303	0.0000	1,473.6417	1,473.6417	0.0553	0.0177	1,480.2933
Mobile	1.7632	3.8160	12.0331	0.0306	2.9751	0.0278	3.0029	0.7968	0.0258	0.8226	0.0000	2,803.5135	2,803.5135	0.1286	0.0000	2,806.7294
Waste						0.0000	0.0000		0.0000	0.0000	84.8665	0.0000	84.8665	5.0155	0.0000	210.2531
Water						0.0000	0.0000		0.0000	0.0000	11.2052	86.5281	97.7333	1.1548	0.0280	134.9426
Total	**4.5385**	**4.2249**	**14.7534**	**0.0332**	**2.9751**	**0.0720**	**3.0471**	**0.7968**	**0.0700**	**0.8668**	**96.0717**	**4,367.7972**	**4,463.8689**	**6.3582**	**0.0457**	**4,636.4304**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**24.55**	**31.67**	**52.26**	**64.38**	**55.41**	**94.81**	**62.19**	**55.41**	**94.94**	**72.66**	**64.08**	**42.44**	**43.18**	**12.48**	**5.62**	**42.42**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/3/2022	1/2/2022	5	0	
2	Grading	Grading	2/12/2022	2/11/2022	5	0	
3	Building Construction	Building Construction	5/28/2022	5/27/2022	5	0	
4	Paving	Paving	3/29/2025	3/28/2025	5	0	
5	Architectural Coating	Architectural Coating	6/14/2025	6/13/2025	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 275

Acres of Paving: 0

Residential Indoor: 906,390; Residential Outdoor: 302,130; Non-Residential Indoor: 264,000; Non-Residential Outdoor: 88,000; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	383.00	115.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	77.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.7632	3.8160	12.0331	0.0306	2.9751	0.0278	3.0029	0.7968	0.0258	0.8226	0.0000	2,803.5135	2,803.5135	0.1286	0.0000	2,806.7294
Unmitigated	2.0349	5.5178	20.2633	0.0642	6.6727	0.0523	6.7249	1.7870	0.0486	1.8356	0.0000	5,875.9338	5,875.9338	0.2312	0.0000	5,881.7133

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,252.90	1,252.90	1252.90	3,531,592	1,574,587
City Park	93.03	93.03	93.03	198,605	88,550
Condo/Townhouse	294.80	294.80	294.80	830,963	370,491
Single Family Housing	1,342.44	1,342.44	1342.44	3,783,981	1,687,117
Regional Shopping Center	5,426.08	5,426.08	5426.08	9,513,572	4,241,699
Total	8,409.25	8,409.25	8,409.25	17,858,714	7,962,445

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Condo/Townhouse	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.524400	0.212000	0.167700	0.056300	0.000800	0.000900	0.007600	0.021200	0.000000	0.004300	0.002500	0.000100	0.002200
City Park	0.524400	0.212000	0.167700	0.056300	0.000800	0.000900	0.007600	0.021200	0.000000	0.004300	0.002500	0.000100	0.002200
Condo/Townhouse	0.524400	0.212000	0.167700	0.056300	0.000800	0.000900	0.007600	0.021200	0.000000	0.004300	0.002500	0.000100	0.002200
Single Family Housing	0.524400	0.212000	0.167700	0.056300	0.000800	0.000900	0.007600	0.021200	0.000000	0.004300	0.002500	0.000100	0.002200
Regional Shopping Center	0.549133	0.037447	0.185470	0.161640	0.026392	0.006281	0.022783	0.000492	0.001971	0.001485	0.004769	0.001251	0.000886

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,040.1552	1,040.1552	0.0470	9.7300e-003	1,044.2308
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,040.1552	1,040.1552	0.0470	9.7300e-003	1,044.2308
NaturalGas Mitigated	0.0438	0.3798	0.1999	2.3900e-003		0.0303	0.0303		0.0303	0.0303	0.0000	433.4866	433.4866	8.3100e-003	7.9500e-003	436.0625
NaturalGas Unmitigated	0.0438	0.3798	0.1999	2.3900e-003		0.0303	0.0303		0.0303	0.0303	0.0000	433.4866	433.4866	8.3100e-003	7.9500e-003	436.0625

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.07024e+006	0.0112	0.0954	0.0406	6.1000e-004		7.7100e-003	7.7100e-003		7.7100e-003	7.7100e-003	0.0000	110.4757	110.4757	2.1200e-003	2.0300e-003	111.1322
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	718623	3.8700e-003	0.0331	0.0141	2.1000e-004		2.6800e-003	2.6800e-003		2.6800e-003	2.6800e-003	0.0000	38.3485	38.3485	7.4000e-004	7.0000e-004	38.5764
Regional Shopping Center	1.8832e+006	0.0102	0.0923	0.0775	5.5000e-004		7.0200e-003	7.0200e-003		7.0200e-003	7.0200e-003	0.0000	100.4947	100.4947	1.9300e-003	1.8400e-003	101.0919
Single Family Housing	3.45117e+006	0.0186	0.1590	0.0677	1.0200e-003		0.0129	0.0129		0.0129	0.0129	0.0000	184.1677	184.1677	3.5300e-003	3.3800e-003	185.2621
Total		**0.0438**	**0.3798**	**0.1999**	**2.3900e-003**		**0.0303**	**0.0303**		**0.0303**	**0.0303**	**0.0000**	**433.4865**	**433.4865**	**8.3200e-003**	**7.9500e-003**	**436.0625**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.07024e+006	0.0112	0.0954	0.0406	6.1000e-004		7.7100e-003	7.7100e-003		7.7100e-003	7.7100e-003	0.0000	110.4757	110.4757	2.1200e-003	2.0300e-003	111.1322
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	718623	3.8700e-003	0.0331	0.0141	2.1000e-004		2.6800e-003	2.6800e-003		2.6800e-003	2.6800e-003	0.0000	38.3485	38.3485	7.4000e-004	7.0000e-004	38.5764
Regional Shopping Center	1.8832e+006	0.0102	0.0923	0.0775	5.5000e-004		7.0200e-003	7.0200e-003		7.0200e-003	7.0200e-003	0.0000	100.4947	100.4947	1.9300e-003	1.8400e-003	101.0919
Single Family Housing	3.45117e+006	0.0186	0.1590	0.0677	1.0200e-003		0.0129	0.0129		0.0129	0.0129	0.0000	184.1677	184.1677	3.5300e-003	3.3800e-003	185.2621
Total		**0.0438**	**0.3798**	**0.1999**	**2.3900e-003**		**0.0303**	**0.0303**		**0.0303**	**0.0303**	**0.0000**	**433.4865**	**433.4865**	**8.3200e-003**	**7.9500e-003**	**436.0625**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	764363	222.3618	0.0101	2.0800e-003	223.2331
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	220324	64.0948	2.9000e-003	6.0000e-004	64.3459
Regional Shopping Center	1.4344e+006	417.2834	0.0189	3.9000e-003	418.9185
Single Family Housing	1.15642e+006	336.4152	0.0152	3.1500e-003	337.7333
Total		**1,040.1552**	**0.0470**	**9.7300e-003**	**1,044.2308**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	764363	222.3618	0.0101	2.0800e-003	223.2331
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	220324	64.0948	2.9000e-003	6.0000e-004	64.3459
Regional Shopping Center	1.4344e+006	417.2834	0.0189	3.9000e-003	418.9185
Single Family Housing	1.15642e+006	336.4152	0.0152	3.1500e-003	337.7333
Total		**1,040.1552**	**0.0470**	**9.7300e-003**	**1,044.2308**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.7315	0.0291	2.5204	1.3000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	4.1139	4.1139	3.9200e-003	0.0000	4.2120
Unmitigated	3.9362	0.2852	10.4404	0.0266		1.3046	1.3046		1.3046	1.3046	171.4115	152.3083	323.7197	0.8081	2.7200e-003	344.7325

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.5425					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.4383					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.8791	0.2559	7.9017	0.0264		1.2905	1.2905		1.2905	1.2905	171.4115	148.1569	319.5684	0.8042	2.7200e-003	340.4817
Landscaping	0.0763	0.0292	2.5387	1.3000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1513	4.1513	3.9800e-003	0.0000	4.2508
Total	**3.9362**	**0.2852**	**10.4404**	**0.0266**		**1.3046**	**1.3046**		**1.3046**	**1.3046**	**171.4115**	**152.3083**	**323.7197**	**0.8081**	**2.7200e-003**	**344.7325**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.4383					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0753	0.0291	2.5204	1.3000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	4.1139	4.1139	3.9200e-003	0.0000	4.2120
Total	**2.7315**	**0.0291**	**2.5204**	**1.3000e-004**		**0.0140**	**0.0140**		**0.0140**	**0.0140**	**0.0000**	**4.1139**	**4.1139**	**3.9200e-003**	**0.0000**	**4.2120**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	97.7333	1.1548	0.0280	134.9426
Unmitigated	97.7333	1.1548	0.0280	134.9426

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	11.0762 / 6.98281	28.0591	0.3620	8.7500e-003	39.7177
City Park	0 / 8.34037	8.4921	3.8000e-004	8.0000e-005	8.5254
Condo/Townhouse	2.60616 / 1.64301	6.6021	0.0852	2.0600e-003	9.3454
Regional Shopping Center	13.0368 / 7.99027	32.7930	0.4261	0.0103	46.5145
Single Family Housing	8.60033 / 5.42195	21.7870	0.2811	6.8000e-003	30.8397
Total		**97.7333**	**1.1548**	**0.0280**	**134.9426**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	11.0762 / 6.98281	28.0591	0.3620	8.7500e-003	39.7177
City Park	0 / 8.34037	8.4921	3.8000e-004	8.0000e-005	8.5254
Condo/Townhouse	2.60616 / 1.64301	6.6021	0.0852	2.0600e-003	9.3454
Regional Shopping Center	13.0368 / 7.99027	32.7930	0.4261	0.0103	46.5145
Single Family Housing	8.60033 / 5.42195	21.7870	0.2811	6.8000e-003	30.8397
Total		**97.7333**	**1.1548**	**0.0280**	**134.9426**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	84.8665	5.0155	0.0000	210.2531
Unmitigated	84.8665	5.0155	0.0000	210.2531

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	78.2	15.8739	0.9381	0.0000	39.3269
City Park	0.6	0.1218	7.2000e-003	0.0000	0.3017
Condo/Townhouse	18.4	3.7350	0.2207	0.0000	9.2534
Regional Shopping Center	184.8	37.5127	2.2169	0.0000	92.9362
Single Family Housing	136.08	27.6230	1.6325	0.0000	68.4348
Total		**84.8665**	**5.0155**	**0.0000**	**210.2531**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	78.2	15.8739	0.9381	0.0000	39.3269
City Park	0.6	0.1218	7.2000e-003	0.0000	0.3017
Condo/Townhouse	18.4	3.7350	0.2207	0.0000	9.2534
Regional Shopping Center	184.8	37.5127	2.2169	0.0000	92.9362
Single Family Housing	136.08	27.6230	1.6325	0.0000	68.4348
Total		**84.8665**	**5.0155**	**0.0000**	**210.2531**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

QK Cartmill Crossing AQIA - Phase 1-3

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	7.00	Acre	7.00	304,920.00	0
Apartments Mid Rise	170.00	Dwelling Unit	7.70	170,000.00	486
Condo/Townhouse	40.00	Dwelling Unit	4.40	40,000.00	114
Single Family Housing	132.00	Dwelling Unit	30.30	237,600.00	378
Regional Shopping Center	806.40	1000sqft	68.60	806,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2029
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

QK Cartmill Crossing AQIA - Phase 1-3 - Tulare County, Annual

Project Characteristics -

Land Use - According to project description and site map

Construction Phase - Operational Run only

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves - X

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Paint VOC based on Behr's MSDS. Landscape is an approved APCD assumption

Fleet Mix - Changes to Default Fleet Mix to acount for HHD Trucks being less than default

Vehicle Trips - Adjusted to match Traffic Study

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	100
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	150	47
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	150	100
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	150	47
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	120.00	0.00
tblConstructionPhase	NumDays	310.00	0.00
tblConstructionPhase	NumDays	3,100.00	0.00
tblConstructionPhase	NumDays	220.00	0.00
tblConstructionPhase	NumDays	220.00	0.00
tblFleetMix	HHD	0.08	0.02
tblFleetMix	HHD	0.08	0.02
tblFleetMix	HHD	0.08	0.02

tblFleetMix	HHD	0.08	3.4400e-004
tblFleetMix	HHD	0.08	0.02
tblFleetMix	LDA	0.57	0.51
tblFleetMix	LDA	0.57	0.51
tblFleetMix	LDA	0.57	0.51
tblFleetMix	LDA	0.57	0.61
tblFleetMix	LDA	0.57	0.51
tblFleetMix	LDT1	0.03	0.22
tblFleetMix	LDT1	0.03	0.22
tblFleetMix	LDT1	0.03	0.22
tblFleetMix	LDT1	0.03	0.03
tblFleetMix	LDT1	0.03	0.22
tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LDT2	0.18	0.20
tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LHD1	0.01	8.0000e-004
tblFleetMix	LHD1	0.01	8.0000e-004
tblFleetMix	LHD1	0.01	8.0000e-004
tblFleetMix	LHD1	0.01	0.01
tblFleetMix	LHD1	0.01	8.0000e-004
tblFleetMix	LHD2	3.6510e-003	1.0000e-003
tblFleetMix	LHD2	3.6510e-003	1.0000e-003
tblFleetMix	LHD2	3.6510e-003	1.0000e-003
tblFleetMix	LHD2	3.6510e-003	3.9580e-003
tblFleetMix	LHD2	3.6510e-003	1.0000e-003

tblFleetMix	MCY	3.8850e-003	2.5000e-003
tblFleetMix	MCY	3.8850e-003	2.5000e-003
tblFleetMix	MCY	3.8850e-003	2.5000e-003
tblFleetMix	MCY	3.8850e-003	4.2120e-003
tblFleetMix	MCY	3.8850e-003	2.5000e-003
tblFleetMix	MDV	0.10	0.06
tblFleetMix	MDV	0.10	0.06
tblFleetMix	MDV	0.10	0.06
tblFleetMix	MDV	0.10	0.11
tblFleetMix	MDV	0.10	0.06
tblFleetMix	MH	4.8600e-004	2.8000e-003
tblFleetMix	MH	4.8600e-004	2.8000e-003
tblFleetMix	MH	4.8600e-004	2.8000e-003
tblFleetMix	MH	4.8600e-004	5.2700e-004
tblFleetMix	MH	4.8600e-004	2.8000e-003
tblFleetMix	MHD	0.02	7.4000e-003
tblFleetMix	MHD	0.02	7.4000e-003
tblFleetMix	MHD	0.02	7.4000e-003
tblFleetMix	MHD	0.02	0.02
tblFleetMix	MHD	0.02	7.4000e-003
tblFleetMix	OBUS	1.7750e-003	0.00
tblFleetMix	OBUS	1.7750e-003	0.00
tblFleetMix	OBUS	1.7750e-003	0.00
tblFleetMix	OBUS	1.7750e-003	1.9240e-003
tblFleetMix	OBUS	1.7750e-003	0.00
tblFleetMix	SBUS	9.9400e-004	9.0000e-004
tblFleetMix	SBUS	9.9400e-004	9.0000e-004

tblFleetMix	SBUS	9.9400e-004	9.0000e-004
tblFleetMix	SBUS	9.9400e-004	1.0780e-003
tblFleetMix	SBUS	9.9400e-004	9.0000e-004
tblFleetMix	UBUS	1.0180e-003	4.4000e-003
tblFleetMix	UBUS	1.0180e-003	4.4000e-003
tblFleetMix	UBUS	1.0180e-003	4.4000e-003
tblFleetMix	UBUS	1.0180e-003	1.1040e-003
tblFleetMix	UBUS	1.0180e-003	4.4000e-003
tblGrading	AcresOfGrading	0.00	775.00
tblLandUse	LotAcreage	4.47	7.70
tblLandUse	LotAcreage	2.50	4.40
tblLandUse	LotAcreage	42.86	30.30
tblLandUse	LotAcreage	18.51	68.60
tblVehicleTrips	ST_TR	6.39	7.37
tblVehicleTrips	ST_TR	22.75	13.29
tblVehicleTrips	ST_TR	5.67	7.37
tblVehicleTrips	ST_TR	49.97	30.83
tblVehicleTrips	ST_TR	9.91	10.17
tblVehicleTrips	SU_TR	5.86	7.37
tblVehicleTrips	SU_TR	16.74	13.29
tblVehicleTrips	SU_TR	4.84	7.37
tblVehicleTrips	SU_TR	25.24	30.83
tblVehicleTrips	SU_TR	8.62	10.17
tblVehicleTrips	WD_TR	6.65	7.37
tblVehicleTrips	WD_TR	1.89	13.29
tblVehicleTrips	WD_TR	5.81	7.37
tblVehicleTrips	WD_TR	42.70	30.83

tblVehicleTrips	WD_TR	9.52	10.17
tblWoodstoves	NumberCatalytic	0.00	7.70
tblWoodstoves	NumberCatalytic	0.00	4.40
tblWoodstoves	NumberCatalytic	0.00	30.30
tblWoodstoves	NumberNoncatalytic	0.00	7.70
tblWoodstoves	NumberNoncatalytic	0.00	4.40
tblWoodstoves	NumberNoncatalytic	0.00	30.30

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2037	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2038	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2037	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2038	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	6.8371	0.2852	10.4461	0.0266		1.3046	1.3046		1.3046	1.3046	171.4115	152.3195	323.7310	0.8082	2.7200e-003	344.7445
Energy	0.0802	0.7105	0.4776	4.3700e-003		0.0554	0.0554		0.0554	0.0554	0.0000	3,328.2288	3,328.2288	0.1298	0.0383	3,342.8759
Mobile	4.6467	11.4547	44.2292	0.1571	19.3702	0.1168	19.4870	5.1845	0.1083	5.2928	0.0000	14,356.6898	14,356.6898	0.4309	0.0000	14,367.4618
Waste						0.0000	0.0000		0.0000	0.0000	219.2302	0.0000	219.2302	12.9561	0.0000	543.1336
Water						0.0000	0.0000		0.0000	0.0000	26.0195	189.1725	215.1920	2.6810	0.0649	301.5491
Total	**11.5639**	**12.4505**	**55.1530**	**0.1880**	**19.3702**	**1.4768**	**20.8470**	**5.1845**	**1.4683**	**6.6528**	**416.6612**	**18,026.4107**	**18,443.0719**	**17.0060**	**0.1059**	**18,899.7649**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.3701	0.0291	2.5261	1.3000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	4.1250	4.1250	3.9500e-003	0.0000	4.2238
Energy	0.0802	0.7105	0.4776	4.3700e-003		0.0554	0.0554		0.0554	0.0554	0.0000	3,328.2288	3,328.2288	0.1298	0.0383	3,342.8759
Mobile	4.0491	8.2180	26.3931	0.0745	8.6363	0.0649	8.7012	2.3115	0.0601	2.3716	0.0000	6,796.2995	6,796.2995	0.2402	0.0000	6,802.3048
Waste						0.0000	0.0000		0.0000	0.0000	219.2302	0.0000	219.2302	12.9561	0.0000	543.1336
Water						0.0000	0.0000		0.0000	0.0000	26.0195	189.1725	215.1920	2.6810	0.0649	301.5491
Total	**9.4994**	**8.9576**	**29.3968**	**0.0790**	**8.6363**	**0.1343**	**8.7706**	**2.3115**	**0.1295**	**2.4410**	**245.2497**	**10,317.8258**	**10,563.0756**	**16.0111**	**0.1031**	**10,994.0873**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**17.85**	**28.05**	**46.70**	**58.00**	**55.41**	**90.91**	**57.93**	**55.41**	**91.18**	**63.31**	**41.14**	**42.76**	**42.73**	**5.85**	**2.57**	**41.83**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2024	12/31/2023	5	0	
2	Grading	Grading	6/15/2024	6/14/2024	5	0	
3	Building Construction	Building Construction	8/23/2025	8/22/2025	5	0	
4	Paving	Paving	7/11/2037	7/10/2037	5	0	
5	Architectural Coating	Architectural Coating	5/15/2038	5/14/2038	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 775

Acres of Paving: 0

Residential Indoor: 906,390; Residential Outdoor: 302,130; Non-Residential Indoor: 1,209,600; Non-Residential Outdoor: 403,200; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

QK Cartmill Crossing AQIA - Phase 1-3 - Tulare County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	585.00	219.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	117.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Paving - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Paving - 2037

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Paving - 2037

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2038

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2038

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.0491	8.2180	26.3931	0.0745	8.6363	0.0649	8.7012	2.3115	0.0601	2.3716	0.0000	6,796.2995	6,796.2995	0.2402	0.0000	6,802.3048
Unmitigated	4.6467	11.4547	44.2292	0.1571	19.3702	0.1168	19.4870	5.1845	0.1083	5.2928	0.0000	14,356.6898	14,356.6898	0.4309	0.0000	14,367.4618

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,252.90	1,252.90	1252.90	3,531,592	1,574,587
City Park	93.00	93.00	93.00	198,546	88,523
Condo/Townhouse	294.80	294.80	294.80	830,963	370,491
Regional Shopping Center	24,858.09	24,858.09	24858.09	43,583,803	19,432,174
Single Family Housing	1,342.04	1,342.04	1342.04	3,782,865	1,686,620
Total	27,840.83	27,840.83	27,840.83	51,927,768	23,152,395

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Condo/Townhouse	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	54	35	11
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.513400	0.221200	0.168800	0.058700	0.000800	0.001000	0.007400	0.018100	0.000000	0.004400	0.002500	0.000900	0.002800
City Park	0.513400	0.221200	0.168800	0.058700	0.000800	0.001000	0.007400	0.018100	0.000000	0.004400	0.002500	0.000900	0.002800
Condo/Townhouse	0.513400	0.221200	0.168800	0.058700	0.000800	0.001000	0.007400	0.018100	0.000000	0.004400	0.002500	0.000900	0.002800
Regional Shopping Center	0.614082	0.032276	0.195879	0.110911	0.012803	0.003958	0.020903	0.000344	0.001924	0.001104	0.004212	0.001078	0.000527
Single Family Housing	0.513400	0.221200	0.168800	0.058700	0.000800	0.001000	0.007400	0.018100	0.000000	0.004400	0.002500	0.000900	0.002800

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,534.7885	2,534.7885	0.1146	0.0237	2,544.7205
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,534.7885	2,534.7885	0.1146	0.0237	2,544.7205
NaturalGas Mitigated	0.0802	0.7105	0.4776	4.3700e-003		0.0554	0.0554		0.0554	0.0554	0.0000	793.4404	793.4404	0.0152	0.0146	798.1554
NaturalGas Unmitigated	0.0802	0.7105	0.4776	4.3700e-003		0.0554	0.0554		0.0554	0.0554	0.0000	793.4404	793.4404	0.0152	0.0146	798.1554

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.07024e+006	0.0112	0.0954	0.0406	6.1000e-004		7.7100e-003	7.7100e-003		7.7100e-003	7.7100e-003	0.0000	110.4757	110.4757	2.1200e-003	2.0300e-003	111.1322
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	718623	3.8700e-003	0.0331	0.0141	2.1000e-004		2.6800e-003	2.6800e-003		2.6800e-003	2.6800e-003	0.0000	38.3485	38.3485	7.4000e-004	7.0000e-004	38.5764
Regional Shopping Center	8.62848e+006	0.0465	0.4230	0.3553	2.5400e-003		0.0322	0.0322		0.0322	0.0322	0.0000	460.4486	460.4486	8.8300e-003	8.4400e-003	463.1848
Single Family Housing	3.45117e+006	0.0186	0.1590	0.0677	1.0200e-003		0.0129	0.0129		0.0129	0.0129	0.0000	184.1677	184.1677	3.5300e-003	3.3800e-003	185.2621
Total		**0.0802**	**0.7105**	**0.4776**	**4.3800e-003**		**0.0554**	**0.0554**		**0.0554**	**0.0554**	**0.0000**	**793.4404**	**793.4404**	**0.0152**	**0.0146**	**798.1554**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.07024e+006	0.0112	0.0954	0.0406	6.1000e-004		7.7100e-003	7.7100e-003		7.7100e-003	7.7100e-003	0.0000	110.4757	110.4757	2.1200e-003	2.0300e-003	111.1322
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	718623	3.8700e-003	0.0331	0.0141	2.1000e-004		2.6800e-003	2.6800e-003		2.6800e-003	2.6800e-003	0.0000	38.3485	38.3485	7.4000e-004	7.0000e-004	38.5764
Regional Shopping Center	8.62848e+006	0.0465	0.4230	0.3553	2.5400e-003		0.0322	0.0322		0.0322	0.0322	0.0000	460.4486	460.4486	8.8300e-003	8.4400e-003	463.1848
Single Family Housing	3.45117e+006	0.0186	0.1590	0.0677	1.0200e-003		0.0129	0.0129		0.0129	0.0129	0.0000	184.1677	184.1677	3.5300e-003	3.3800e-003	185.2621
Total		**0.0802**	**0.7105**	**0.4776**	**4.3800e-003**		**0.0554**	**0.0554**		**0.0554**	**0.0554**	**0.0000**	**793.4404**	**793.4404**	**0.0152**	**0.0146**	**798.1554**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	764363	222.3618	0.0101	2.0800e-003	223.2331
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	220324	64.0948	2.9000e-003	6.0000e-004	64.3459
Regional Shopping Center	6.57216e+006	1,911.9167	0.0865	0.0179	1,919.4082
Single Family Housing	1.15642e+006	336.4152	0.0152	3.1500e-003	337.7333
Total		**2,534.7885**	**0.1146**	**0.0237**	**2,544.7205**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	764363	222.3618	0.0101	2.0800e-003	223.2331
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	220324	64.0948	2.9000e-003	6.0000e-004	64.3459
Regional Shopping Center	6.57216e+006	1,911.9167	0.0865	0.0179	1,919.4082
Single Family Housing	1.15642e+006	336.4152	0.0152	3.1500e-003	337.7333
Total		**2,534.7885**	**0.1146**	**0.0237**	**2,544.7205**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.3701	0.0291	2.5261	1.3000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	4.1250	4.1250	3.9500e-003	0.0000	4.2238
Unmitigated	6.8371	0.2852	10.4461	0.0266		1.3046	1.3046		1.3046	1.3046	171.4115	152.3195	323.7310	0.8082	2.7200e-003	344.7445

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.9808					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.9004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.8791	0.2559	7.9017	0.0264		1.2905	1.2905		1.2905	1.2905	171.4115	148.1569	319.5684	0.8042	2.7200e-003	340.4817
Landscaping	0.0769	0.0293	2.5444	1.3000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1626	4.1626	4.0100e-003	0.0000	4.2628
Total	**6.8371**	**0.2852**	**10.4461**	**0.0266**		**1.3046**	**1.3046**		**1.3046**	**1.3046**	**171.4115**	**152.3195**	**323.7310**	**0.8082**	**2.7200e-003**	**344.7445**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3939					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.9004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0758	0.0291	2.5261	1.3000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	4.1250	4.1250	3.9500e-003	0.0000	4.2238
Total	**5.3701**	**0.0291**	**2.5261**	**1.3000e-004**		**0.0140**	**0.0140**		**0.0140**	**0.0140**	**0.0000**	**4.1250**	**4.1250**	**3.9500e-003**	**0.0000**	**4.2238**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	215.1920	2.6810	0.0649	301.5491
Unmitigated	215.1920	2.6810	0.0649	301.5491

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	11.0762 / 6.98281	28.0591	0.3620	8.7500e-003	39.7177
City Park	0 / 8.34037	8.4921	3.8000e-004	8.0000e-005	8.5254
Condo/Townhouse	2.60616 / 1.64301	6.6021	0.0852	2.0600e-003	9.3454
Regional Shopping Center	59.7321 / 36.61	150.2517	1.9523	0.0472	213.1210
Single Family Housing	8.60033 / 5.42195	21.7870	0.2811	6.8000e-003	30.8397
Total		**215.1920**	**2.6810**	**0.0649**	**301.5491**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	11.0762 / 6.98281	28.0591	0.3620	8.7500e-003	39.7177
City Park	0 / 8.34037	8.4921	3.8000e-004	8.0000e-005	8.5254
Condo/Townhouse	2.60616 / 1.64301	6.6021	0.0852	2.0600e-003	9.3454
Regional Shopping Center	59.7321 / 36.61	150.2517	1.9523	0.0472	213.1210
Single Family Housing	8.60033 / 5.42195	21.7870	0.2811	6.8000e-003	30.8397
Total		**215.1920**	**2.6810**	**0.0649**	**301.5491**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	219.2302	12.9561	0.0000	543.1336
Unmitigated	219.2302	12.9561	0.0000	543.1336

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	78.2	15.8739	0.9381	0.0000	39.3269
City Park	0.6	0.1218	7.2000e-003	0.0000	0.3017
Condo/Townhouse	18.4	3.7350	0.2207	0.0000	9.2534
Regional Shopping Center	846.72	171.8765	10.1576	0.0000	425.8168
Single Family Housing	136.08	27.6230	1.6325	0.0000	68.4348
Total		**219.2302**	**12.9561**	**0.0000**	**543.1336**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	78.2	15.8739	0.9381	0.0000	39.3269
City Park	0.6	0.1218	7.2000e-003	0.0000	0.3017
Condo/Townhouse	18.4	3.7350	0.2207	0.0000	9.2534
Regional Shopping Center	846.72	171.8765	10.1576	0.0000	425.8168
Single Family Housing	136.08	27.6230	1.6325	0.0000	68.4348
Total		**219.2302**	**12.9561**	**0.0000**	**543.1336**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Changes to CalEEMod Default Fleet Mix - Phase 1

	CalEEMod Default Fleet %	CalEEMod Default Weekly Trips	Project's Weekly Trips	Project's Fleet %	Avg Trip length (miles)	Annual VMT	Project fleet %
Light Auto	50.69	25757.09	27903.05	54.9133%	7.66	11,114,344.03	54.9133%
Light Truck < 3750 lbs.	3.46	1756.45	1902.79	3.7447%	7.66	757,919.77	3.7447%
Light truck 3751-5750 lbs	17.12	8699.48	9424.29	18.5470%	7.66	3,753,881.21	18.5470%
Med Truck 5751-8500 lbs	14.92	7581.70	8213.37	16.1640%	7.66	3,271,550.69	16.1640%
Lite-heavy truck 8501-10,000 lbs	2.44	1237.91	1341.04	2.6392%	7.66	534,163.84	2.6392%
Lite-heavy truck 10,001-14,000lbs	0.58	294.61	319.16	0.6281%	7.66	127,127.57	0.6281%
Med-heavy truck 14,001-33,000 lbs	2.10	1068.65	1157.68	2.2783%	7.66	461,127.97	2.2783%
Heavy-heavy truck 33,001-60,000 lbs	7.74	3930.99	25.00	0.0492%	7.66	9,958.00	0.0492%
Other Bus	0.18	92.43	100.13	0.1971%	7.66	39,883.59	0.1971%
Urban Bus	0.14	69.66	75.47	0.1485%	7.66	30,060.69	0.1485%
Motorcycle	0.44	223.68	242.31	0.4769%	7.66	96,518.73	0.4769%
School Bus	0.12	58.69	63.58	0.1251%	7.66	25,324.65	0.1251%
Motor Home	0.08	41.57	45.03	0.0886%	7.66	17,935.56	0.0886%
Total =	100.00	50812.96	50812.90	100.00%		20239796.30	100%

Notes:

1) The Heavy-heavy truck percentage was based on 25 trucks/week (project assumptions) and 50813 overall average weekly trips (as per default ADTs from CalEEMod) which is 0.05%.

2) The left over ADT's were added to all remaining categories' based on there original percentages to better respresent typical fleet mixes for this project.

3) Average trip length was based on CalEEMod default trips distances.

4) Trips and miles calculated do not include reductions for Diverted Trips, Passby Trips, or any Mitigation Factors.

Changes to CalEEMod Default Fleet Mix - Phase 1

	CalEEMod Default Fleet %	CalEEMod Default Weekly Trips	Project's Weekly Trips	Project's Fleet %	Avg Trip length (miles)	Annual VMT	Project fleet %
Light Auto	58.18	105893.95	114458.59	62.8883%	7.66	45,591,146.73	62.8883%
Light Truck < 3750 lbs.	2.91	5303.93	5732.90	3.1499%	7.66	2,283,530.12	3.1499%
Light truck 3751-5750 lbs	18.41	33508.35	36218.49	19.8999%	7.66	14,426,547.51	19.8999%
Med Truck 5751-8500 lbs	9.28	16886.76	18252.56	10.0287%	7.66	7,270,358.09	10.0287%
Lite-heavy truck 8501-10,000 lbs	0.79	1439.64	1556.08	0.8550%	7.66	619,817.56	0.8550%
Lite-heavy truck 10,001-14,000lbs	0.32	581.68	628.73	0.3454%	7.66	250,434.50	0.3454%
Med-heavy truck 14,001-33,000 lbs	1.83	3331.56	3601.02	1.9785%	7.66	1,434,356.56	1.9785%
Heavy-heavy truck 33,001-60,000 lbs	7.51	13669.68	55.00	0.0302%	7.66	21,907.60	0.0302%
Other Bus	0.17	314.14	339.54	0.1866%	7.66	135,247.17	0.1866%
Urban Bus	0.09	162.89	176.07	0.0967%	7.66	70,131.06	0.0967%
Motorcycle	0.38	685.60	741.06	0.4072%	7.66	295,177.34	0.4072%
School Bus	0.08	151.61	163.87	0.0900%	7.66	65,272.82	0.0900%
Motor Home	0.04	73.17	79.08	0.0435%	7.66	31,500.21	0.0435%
Total =	100.00	182002.78	182002.98	100.00%		72495427.28	100%

Notes:

1) The Heavy-heavy truck percentage was based on 55 trucks/week (project assumptions) and 182,003 overall average weekly trips (as per default ADTs from CalEEMod) which is 0.03%.

2) The left over ADT's were added to all remaining categories' based on there original percentages to better respresent typical fleet mixes for this project.

3) Average trip length was based on CalEEMod default trips distances.

4) Trips and miles calculated do not include reductions for Diverted Trips, Passby Trips, or any Mitigation Factors.

Changes to CalEEMod Default Fleet Mix - Phase 1 and 3

	CalEEMod Default Fleet %	CalEEMod Default Weekly Trips	Project's Weekly Trips	Project's Fleet %	Avg Trip length (miles)	Annual VMT	Project fleet %
Light Auto	56.65	131878.71	142967.88	61.4082%	7.66	56,946,964.40	61.4082%
Light Truck < 3750 lbs.	2.98	6931.62	7514.48	3.2276%	7.66	2,993,166.17	3.2276%
Light truck 3751-5750 lbs	18.07	42066.55	45603.76	19.5879%	7.66	18,164,888.42	19.5879%
Med Truck 5751-8500 lbs	10.23	23818.91	25821.75	11.0911%	7.66	10,285,320.41	11.0911%
Lite-heavy truck 8501-10,000 lbs	1.18	2749.55	2980.75	1.2803%	7.66	1,187,293.60	1.2803%
Lite-heavy truck 10,001-14,000lbs	0.37	850.01	921.48	0.3958%	7.66	367,045.64	0.3958%
Med-heavy truck 14,001-33,000 lbs	1.93	4489.15	4866.63	2.0903%	7.66	1,938,475.47	2.0903%
Heavy-heavy truck 33,001-60,000 lbs	7.79	18131.92	80.00	0.0344%	7.66	31,865.60	0.0344%
Other Bus	0.18	413.25	448.00	0.1924%	7.66	178,445.91	0.1924%
Urban Bus	0.10	237.01	256.94	0.1104%	7.66	102,342.50	0.1104%
Motorcycle	0.39	904.49	980.54	0.4212%	7.66	390,570.33	0.4212%
School Bus	0.10	231.42	250.88	0.1078%	7.66	99,929.71	0.1078%
Motor Home	0.05	113.15	122.66	0.0527%	7.66	48,858.99	0.0527%
Total =	100.00	232815.74	232815.74	100.00%		92735167.15	100%

Notes:

1) The Heavy-heavy truck percentage was based on 80 trucks/week (project assumptions) and 232,816 overall average weekly trips (as per default ADTs from CalEEMod) which is 0.03%.

2) The left over ADT's were added to all remaining categories' based on there original percentages to better respresent typical fleet mixes for this project.

3) Average trip length was based on CalEEMod default trips distances.

4) Trips and miles calculated do not include reductions for Diverted Trips, Passby Trips, or any Mitigation Factors.

Ventana CUP / TSM

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	11.58	1000sqft	0.27	11,580.00	0
Apartments Mid Rise	104.00	Dwelling Unit	2.74	104,000.00	297
Single Family Housing	42.00	Dwelling Unit	13.64	75,600.00	120
Regional Shopping Center	23.88	1000sqft	0.55	23,875.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Table Name	Column Name	Default Value	New Value

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2226	2.1759	1.4356	2.5600e-003	0.2478	0.1094	0.3572	0.1110	0.1016	0.2126	0.0000	231.6662	231.6662	0.0574	0.0000	233.1021
2019	0.3835	3.1220	2.7679	5.2400e-003	0.1190	0.1696	0.2886	0.0320	0.1594	0.1914	0.0000	466.5270	466.5270	0.0819	0.0000	468.5757
2020	1.9427	0.0880	0.1004	1.6000e-004	2.1900e-003	4.8900e-003	7.0800e-003	5.8000e-004	4.5900e-003	5.1700e-003	0.0000	14.4491	14.4491	3.5000e-003	0.0000	14.5365
Maximum	**1.9427**	**3.1220**	**2.7679**	**5.2400e-003**	**0.2478**	**0.1696**	**0.3572**	**0.1110**	**0.1594**	**0.2126**	**0.0000**	**466.5270**	**466.5270**	**0.0819**	**0.0000**	**468.5757**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2226	2.1759	1.4356	2.5600e-003	0.2478	0.1094	0.3572	0.1110	0.1016	0.2126	0.0000	231.6660	231.6660	0.0574	0.0000	233.1019
2019	0.3835	3.1220	2.7679	5.2400e-003	0.1190	0.1696	0.2886	0.0320	0.1594	0.1914	0.0000	466.5267	466.5267	0.0819	0.0000	468.5753
2020	1.9427	0.0880	0.1004	1.6000e-004	2.1900e-003	4.8900e-003	7.0800e-003	5.8000e-004	4.5900e-003	5.1700e-003	0.0000	14.4491	14.4491	3.5000e-003	0.0000	14.5365
Maximum	**1.9427**	**3.1220**	**2.7679**	**5.2400e-003**	**0.2478**	**0.1696**	**0.3572**	**0.1110**	**0.1594**	**0.2126**	**0.0000**	**466.5267**	**466.5267**	**0.0819**	**0.0000**	**468.5753**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**8-1-2018**	**10-31-2018**	1.7456	1.7456
2	**11-1-2018**	**1-31-2019**	0.9621	0.9621
3	**2-1-2019**	**4-30-2019**	0.8679	0.8679
4	**5-1-2019**	**7-31-2019**	0.8957	0.8957
5	**8-1-2019**	**10-31-2019**	0.8965	0.8965
6	**11-1-2019**	**1-31-2020**	1.8065	1.8065
7	**2-1-2020**	**4-30-2020**	0.7673	0.7673
		Highest	1.8065	1.8065

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4065	0.1167	4.1428	0.0103		0.5049	0.5049		0.5049	0.5049	66.2198	65.0197	131.2395	0.3125	1.1600e-003	139.3977
Energy	0.0149	0.1289	0.0631	8.2000e-004		0.0103	0.0103		0.0103	0.0103	0.0000	478.2839	478.2839	0.0178	5.8000e-003	480.4573
Mobile	0.8115	6.6526	8.2956	0.0294	1.8847	0.0333	1.9180	0.5066	0.0315	0.5381	0.0000	2,720.9337	2,720.9337	0.1350	0.0000	2,724.3085
Waste						0.0000	0.0000		0.0000	0.0000	25.7555	0.0000	25.7555	1.5221	0.0000	63.8081
Water						0.0000	0.0000		0.0000	0.0000	4.2320	29.4923	33.7243	0.4360	0.0105	47.7651
Total	**2.2330**	**6.8982**	**12.5015**	**0.0406**	**1.8847**	**0.5486**	**2.4333**	**0.5066**	**0.5468**	**1.0534**	**96.2073**	**3,293.7297**	**3,389.9370**	**2.4234**	**0.0175**	**3,455.7368**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4065	0.1167	4.1428	0.0103		0.5049	0.5049		0.5049	0.5049	66.2198	65.0197	131.2395	0.3125	1.1600e-003	139.3977
Energy	0.0149	0.1289	0.0631	8.2000e-004		0.0103	0.0103		0.0103	0.0103	0.0000	478.2839	478.2839	0.0178	5.8000e-003	480.4573
Mobile	0.8115	6.6526	8.2956	0.0294	1.8847	0.0333	1.9180	0.5066	0.0315	0.5381	0.0000	2,720.9337	2,720.9337	0.1350	0.0000	2,724.3085
Waste						0.0000	0.0000		0.0000	0.0000	25.7555	0.0000	25.7555	1.5221	0.0000	63.8081
Water						0.0000	0.0000		0.0000	0.0000	4.2320	29.4923	33.7243	0.4360	0.0105	47.7651
Total	**2.2330**	**6.8982**	**12.5015**	**0.0406**	**1.8847**	**0.5486**	**2.4333**	**0.5066**	**0.5468**	**1.0534**	**96.2073**	**3,293.7297**	**3,389.9370**	**2.4234**	**0.0175**	**3,455.7368**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2018	8/28/2018	5	20	
2	Site Preparation	Site Preparation	8/29/2018	9/11/2018	5	10	
3	Grading	Grading	9/12/2018	10/23/2018	5	30	
4	Building Construction	Building Construction	10/24/2018	12/17/2019	5	300	
5	Paving	Paving	12/18/2019	1/14/2020	5	20	
6	Architectural Coating	Architectural Coating	1/15/2020	2/11/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 363,690; Residential Outdoor: 121,230; Non-Residential Indoor: 53,183; Non-Residential Outdoor: 17,728; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Ventana CUP / TSM - Tulare County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	101.00	21.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1241	35.1241	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**		**0.0194**	**0.0194**		**0.0181**	**0.0181**	**0.0000**	**35.1241**	**35.1241**	**9.6800e-003**	**0.0000**	**35.3660**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1240	35.1240	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**		**0.0194**	**0.0194**		**0.0181**	**0.0181**	**0.0000**	**35.1240**	**35.1240**	**9.6800e-003**	**0.0000**	**35.3660**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

3.3 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3800**	**17.3800**	**5.4100e-003**	**0.0000**	**17.5152**

3.3 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.8000e-004	3.7800e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6546	0.6546	3.0000e-005	0.0000	0.6552
Total	**5.3000e-004**	**3.8000e-004**	**3.7800e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6546**	**0.6546**	**3.0000e-005**	**0.0000**	**0.6552**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3799**	**17.3799**	**5.4100e-003**	**0.0000**	**17.5152**

3.3 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.8000e-004	3.7800e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6546	0.6546	3.0000e-005	0.0000	0.6552
Total	**5.3000e-004**	**3.8000e-004**	**3.7800e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6546**	**0.6546**	**3.0000e-005**	**0.0000**	**0.6552**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9728	84.9728	0.0265	0.0000	85.6341
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9728**	**84.9728**	**0.0265**	**0.0000**	**85.6341**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.2500e-003	0.0126	2.0000e-005	2.3900e-003	2.0000e-005	2.4100e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1819	2.1819	9.0000e-005	0.0000	2.1841
Total	**1.7600e-003**	**1.2500e-003**	**0.0126**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1819**	**2.1819**	**9.0000e-005**	**0.0000**	**2.1841**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9727	84.9727	0.0265	0.0000	85.6340
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9727**	**84.9727**	**0.0265**	**0.0000**	**85.6340**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.2500e-003	0.0126	2.0000e-005	2.3900e-003	2.0000e-005	2.4100e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1819	2.1819	9.0000e-005	0.0000	2.1841
Total	**1.7600e-003**	**1.2500e-003**	**0.0126**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1819**	**2.1819**	**9.0000e-005**	**0.0000**	**2.1841**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0657	0.5731	0.4307	6.6000e-004		0.0368	0.0368		0.0345	0.0345	0.0000	58.2530	58.2530	0.0143	0.0000	58.6098
Total	**0.0657**	**0.5731**	**0.4307**	**6.6000e-004**		**0.0368**	**0.0368**		**0.0345**	**0.0345**	**0.0000**	**58.2530**	**58.2530**	**0.0143**	**0.0000**	**58.6098**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.9600e-003	0.0733	0.0167	1.5000e-004	3.4000e-003	6.5000e-004	4.0500e-003	9.8000e-004	6.3000e-004	1.6100e-003	0.0000	14.0116	14.0116	7.5000e-004	0.0000	14.0304
Worker	0.0145	0.0103	0.1038	2.0000e-004	0.0197	1.5000e-004	0.0199	5.2400e-003	1.4000e-004	5.3800e-003	0.0000	17.9974	17.9974	7.2000e-004	0.0000	18.0153
Total	**0.0175**	**0.0836**	**0.1205**	**3.5000e-004**	**0.0231**	**8.0000e-004**	**0.0239**	**6.2200e-003**	**7.7000e-004**	**6.9900e-003**	**0.0000**	**32.0089**	**32.0089**	**1.4700e-003**	**0.0000**	**32.0457**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0657	0.5731	0.4307	6.6000e-004		0.0368	0.0368		0.0345	0.0345	0.0000	58.2529	58.2529	0.0143	0.0000	58.6097
Total	**0.0657**	**0.5731**	**0.4307**	**6.6000e-004**		**0.0368**	**0.0368**		**0.0345**	**0.0345**	**0.0000**	**58.2529**	**58.2529**	**0.0143**	**0.0000**	**58.6097**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.9600e-003	0.0733	0.0167	1.5000e-004	3.4000e-003	6.5000e-004	4.0500e-003	9.8000e-004	6.3000e-004	1.6100e-003	0.0000	14.0116	14.0116	7.5000e-004	0.0000	14.0304
Worker	0.0145	0.0103	0.1038	2.0000e-004	0.0197	1.5000e-004	0.0199	5.2400e-003	1.4000e-004	5.3800e-003	0.0000	17.9974	17.9974	7.2000e-004	0.0000	18.0153
Total	**0.0175**	**0.0836**	**0.1205**	**3.5000e-004**	**0.0231**	**8.0000e-004**	**0.0239**	**6.2200e-003**	**7.7000e-004**	**6.9900e-003**	**0.0000**	**32.0089**	**32.0089**	**1.4700e-003**	**0.0000**	**32.0457**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2963	2.6454	2.1541	3.3800e-003		0.1619	0.1619		0.1522	0.1522	0.0000	295.0558	295.0558	0.0719	0.0000	296.8527
Total	**0.2963**	**2.6454**	**2.1541**	**3.3800e-003**		**0.1619**	**0.1619**		**0.1522**	**0.1522**	**0.0000**	**295.0558**	**295.0558**	**0.0719**	**0.0000**	**296.8527**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0133	0.3544	0.0753	7.5000e-004	0.0174	2.8300e-003	0.0203	5.0300e-003	2.7100e-003	7.7400e-003	0.0000	71.2129	71.2129	3.6100e-003	0.0000	71.3032
Worker	0.0663	0.0457	0.4624	9.9000e-004	0.1010	7.4000e-004	0.1017	0.0268	6.9000e-004	0.0275	0.0000	89.4913	89.4913	3.2000e-003	0.0000	89.5712
Total	**0.0796**	**0.4001**	**0.5378**	**1.7400e-003**	**0.1184**	**3.5700e-003**	**0.1220**	**0.0319**	**3.4000e-003**	**0.0353**	**0.0000**	**160.7042**	**160.7042**	**6.8100e-003**	**0.0000**	**160.8744**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2963	2.6454	2.1541	3.3800e-003		0.1619	0.1619		0.1522	0.1522	0.0000	295.0554	295.0554	0.0719	0.0000	296.8524
Total	**0.2963**	**2.6454**	**2.1541**	**3.3800e-003**		**0.1619**	**0.1619**		**0.1522**	**0.1522**	**0.0000**	**295.0554**	**295.0554**	**0.0719**	**0.0000**	**296.8524**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0133	0.3544	0.0753	7.5000e-004	0.0174	2.8300e-003	0.0203	5.0300e-003	2.7100e-003	7.7400e-003	0.0000	71.2129	71.2129	3.6100e-003	0.0000	71.3032
Worker	0.0663	0.0457	0.4624	9.9000e-004	0.1010	7.4000e-004	0.1017	0.0268	6.9000e-004	0.0275	0.0000	89.4913	89.4913	3.2000e-003	0.0000	89.5712
Total	**0.0796**	**0.4001**	**0.5378**	**1.7400e-003**	**0.1184**	**3.5700e-003**	**0.1220**	**0.0319**	**3.4000e-003**	**0.0353**	**0.0000**	**160.7042**	**160.7042**	**6.8100e-003**	**0.0000**	**160.8744**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.2700e-003	0.0762	0.0733	1.1000e-004		4.1200e-003	4.1200e-003		3.7900e-003	3.7900e-003	0.0000	10.2376	10.2376	3.2400e-003	0.0000	10.3186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.2700e-003**	**0.0762**	**0.0733**	**1.1000e-004**		**4.1200e-003**	**4.1200e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**10.2376**	**10.2376**	**3.2400e-003**	**0.0000**	**10.3186**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.7000e-004	2.7400e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5295	0.5295	2.0000e-005	0.0000	0.5300
Total	**3.9000e-004**	**2.7000e-004**	**2.7400e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5295**	**0.5295**	**2.0000e-005**	**0.0000**	**0.5300**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.2700e-003	0.0762	0.0733	1.1000e-004		4.1200e-003	4.1200e-003		3.7900e-003	3.7900e-003	0.0000	10.2376	10.2376	3.2400e-003	0.0000	10.3186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.2700e-003**	**0.0762**	**0.0733**	**1.1000e-004**		**4.1200e-003**	**4.1200e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**10.2376**	**10.2376**	**3.2400e-003**	**0.0000**	**10.3186**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.7000e-004	2.7400e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5295	0.5295	2.0000e-005	0.0000	0.5300
Total	**3.9000e-004**	**2.7000e-004**	**2.7400e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5295**	**0.5295**	**2.0000e-005**	**0.0000**	**0.5300**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

3.6 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.4000e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5132	0.5132	2.0000e-005	0.0000	0.5136
Total	**3.5000e-004**	**2.4000e-004**	**2.4000e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5132**	**0.5132**	**2.0000e-005**	**0.0000**	**0.5136**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

3.6 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.4000e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5132	0.5132	2.0000e-005	0.0000	0.5136
Total	**3.5000e-004**	**2.4000e-004**	**2.4000e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5132**	**0.5132**	**2.0000e-005**	**0.0000**	**0.5136**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.9322					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.9346**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.4000e-004	6.3000e-004	6.3900e-003	2.0000e-005	1.5900e-003	1.0000e-005	1.6000e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3686	1.3686	4.0000e-005	0.0000	1.3696
Total	**9.4000e-004**	**6.3000e-004**	**6.3900e-003**	**2.0000e-005**	**1.5900e-003**	**1.0000e-005**	**1.6000e-003**	**4.2000e-004**	**1.0000e-005**	**4.3000e-004**	**0.0000**	**1.3686**	**1.3686**	**4.0000e-005**	**0.0000**	**1.3696**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.9322					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.9346**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.4000e-004	6.3000e-004	6.3900e-003	2.0000e-005	1.5900e-003	1.0000e-005	1.6000e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3686	1.3686	4.0000e-005	0.0000	1.3696
Total	**9.4000e-004**	**6.3000e-004**	**6.3900e-003**	**2.0000e-005**	**1.5900e-003**	**1.0000e-005**	**1.6000e-003**	**4.2000e-004**	**1.0000e-005**	**4.3000e-004**	**0.0000**	**1.3686**	**1.3686**	**4.0000e-005**	**0.0000**	**1.3696**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8115	6.6526	8.2956	0.0294	1.8847	0.0333	1.9180	0.5066	0.0315	0.5381	0.0000	2,720.9337	2,720.9337	0.1350	0.0000	2,724.3085
Unmitigated	0.8115	6.6526	8.2956	0.0294	1.8847	0.0333	1.9180	0.5066	0.0315	0.5381	0.0000	2,720.9337	2,720.9337	0.1350	0.0000	2,724.3085

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	691.60	664.56	609.44	1,905,464	1,905,464
General Office Building	127.73	28.49	12.16	231,903	231,903
Regional Shopping Center	1,019.46	1,193.03	602.61	1,726,492	1,726,492
Single Family Housing	399.84	416.22	362.04	1,118,417	1,118,417
Total	2,238.63	2,302.30	1,586.24	4,982,276	4,982,276

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	54	35	11
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.506900	0.034567	0.171206	0.149208	0.024362	0.005798	0.021031	0.077362	0.001819	0.001371	0.004402	0.001155	0.000818
General Office Building	0.506900	0.034567	0.171206	0.149208	0.024362	0.005798	0.021031	0.077362	0.001819	0.001371	0.004402	0.001155	0.000818
Regional Shopping Center	0.506900	0.034567	0.171206	0.149208	0.024362	0.005798	0.021031	0.077362	0.001819	0.001371	0.004402	0.001155	0.000818
Single Family Housing	0.506900	0.034567	0.171206	0.149208	0.024362	0.005798	0.021031	0.077362	0.001819	0.001371	0.004402	0.001155	0.000818

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	330.4033	330.4033	0.0149	3.0900e-003	331.6979
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	330.4033	330.4033	0.0149	3.0900e-003	331.6979
NaturalGas Mitigated	0.0149	0.1289	0.0631	8.2000e-004		0.0103	0.0103		0.0103	0.0103	0.0000	147.8807	147.8807	2.8300e-003	2.7100e-003	148.7595
NaturalGas Unmitigated	0.0149	0.1289	0.0631	8.2000e-004		0.0103	0.0103		0.0103	0.0103	0.0000	147.8807	147.8807	2.8300e-003	2.7100e-003	148.7595

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.2665e+006	6.8300e-003	0.0584	0.0248	3.7000e-004		4.7200e-003	4.7200e-003		4.7200e-003	4.7200e-003	0.0000	67.5851	67.5851	1.3000e-003	1.2400e-003	67.9868
General Office Building	151119	8.1000e-004	7.4100e-003	6.2200e-003	4.0000e-005		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	8.0643	8.0643	1.5000e-004	1.5000e-004	8.1122
Regional Shopping Center	255462	1.3800e-003	0.0125	0.0105	8.0000e-005		9.5000e-004	9.5000e-004		9.5000e-004	9.5000e-004	0.0000	13.6325	13.6325	2.6000e-004	2.5000e-004	13.7135
Single Family Housing	1.0981e+006	5.9200e-003	0.0506	0.0215	3.2000e-004		4.0900e-003	4.0900e-003		4.0900e-003	4.0900e-003	0.0000	58.5988	58.5988	1.1200e-003	1.0700e-003	58.9470
Total		**0.0149**	**0.1289**	**0.0631**	**8.1000e-004**		**0.0103**	**0.0103**		**0.0103**	**0.0103**	**0.0000**	**147.8807**	**147.8807**	**2.8300e-003**	**2.7100e-003**	**148.7595**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.2665e+006	6.8300e-003	0.0584	0.0248	3.7000e-004		4.7200e-003	4.7200e-003		4.7200e-003	4.7200e-003	0.0000	67.5851	67.5851	1.3000e-003	1.2400e-003	67.9868
General Office Building	151119	8.1000e-004	7.4100e-003	6.2200e-003	4.0000e-005		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	8.0643	8.0643	1.5000e-004	1.5000e-004	8.1122
Regional Shopping Center	255462	1.3800e-003	0.0125	0.0105	8.0000e-005		9.5000e-004	9.5000e-004		9.5000e-004	9.5000e-004	0.0000	13.6325	13.6325	2.6000e-004	2.5000e-004	13.7135
Single Family Housing	1.0981e+006	5.9200e-003	0.0506	0.0215	3.2000e-004		4.0900e-003	4.0900e-003		4.0900e-003	4.0900e-003	0.0000	58.5988	58.5988	1.1200e-003	1.0700e-003	58.9470
Total		**0.0149**	**0.1289**	**0.0631**	**8.1000e-004**		**0.0103**	**0.0103**		**0.0103**	**0.0103**	**0.0000**	**147.8807**	**147.8807**	**2.8300e-003**	**2.7100e-003**	**148.7595**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	467610	136.0331	6.1500e-003	1.2700e-003	136.5661
General Office Building	105610	30.7230	1.3900e-003	2.9000e-004	30.8434
Regional Shopping Center	194581	56.6059	2.5600e-003	5.3000e-004	56.8277
Single Family Housing	367951	107.0412	4.8400e-003	1.0000e-003	107.4606
Total		**330.4033**	**0.0149**	**3.0900e-003**	**331.6979**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	467610	136.0331	6.1500e-003	1.2700e-003	136.5661
General Office Building	105610	30.7230	1.3900e-003	2.9000e-004	30.8434
Regional Shopping Center	194581	56.6059	2.5600e-003	5.3000e-004	56.8277
Single Family Housing	367951	107.0412	4.8400e-003	1.0000e-003	107.4606
Total		**330.4033**	**0.0149**	**3.0900e-003**	**331.6979**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4065	0.1167	4.1428	0.0103		0.5049	0.5049		0.5049	0.5049	66.2198	65.0197	131.2395	0.3125	1.1600e-003	139.3977
Unmitigated	1.4065	0.1167	4.1428	0.0103		0.5049	0.5049		0.5049	0.5049	66.2198	65.0197	131.2395	0.3125	1.1600e-003	139.3977

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1932					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8399					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.3402	0.1041	3.0548	0.0102		0.4990	0.4990		0.4990	0.4990	66.2198	63.2483	129.4681	0.3108	1.1600e-003	137.5830
Landscaping	0.0332	0.0126	1.0880	6.0000e-005		5.9800e-003	5.9800e-003		5.9800e-003	5.9800e-003	0.0000	1.7714	1.7714	1.7300e-003	0.0000	1.8147
Total	**1.4065**	**0.1167**	**4.1428**	**0.0103**		**0.5049**	**0.5049**		**0.5049**	**0.5049**	**66.2198**	**65.0197**	**131.2395**	**0.3125**	**1.1600e-003**	**139.3977**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1932					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8399					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.3402	0.1041	3.0548	0.0102		0.4990	0.4990		0.4990	0.4990	66.2198	63.2483	129.4681	0.3108	1.1600e-003	137.5830
Landscaping	0.0332	0.0126	1.0880	6.0000e-005		5.9800e-003	5.9800e-003		5.9800e-003	5.9800e-003	0.0000	1.7714	1.7714	1.7300e-003	0.0000	1.8147
Total	**1.4065**	**0.1167**	**4.1428**	**0.0103**		**0.5049**	**0.5049**		**0.5049**	**0.5049**	**66.2198**	**65.0197**	**131.2395**	**0.3125**	**1.1600e-003**	**139.3977**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	33.7243	0.4360	0.0105	47.7651
Unmitigated	33.7243	0.4360	0.0105	47.7651

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	6.77602 / 4.27184	17.1655	0.2215	5.3500e-003	24.2979
General Office Building	2.05816 / 1.26145	5.1771	0.0673	1.6300e-003	7.3434
Regional Shopping Center	1.76885 / 1.08413	4.4494	0.0578	1.4000e-003	6.3112
Single Family Housing	2.73647 / 1.72517	6.9322	0.0894	2.1600e-003	9.8126
Total		**33.7243**	**0.4360**	**0.0105**	**47.7651**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	6.77602 / 4.27184	17.1655	0.2215	5.3500e-003	24.2979
General Office Building	2.05816 / 1.26145	5.1771	0.0673	1.6300e-003	7.3434
Regional Shopping Center	1.76885 / 1.08413	4.4494	0.0578	1.4000e-003	6.3112
Single Family Housing	2.73647 / 1.72517	6.9322	0.0894	2.1600e-003	9.8126
Total		**33.7243**	**0.4360**	**0.0105**	**47.7651**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	25.7555	1.5221	0.0000	63.8081
Unmitigated	25.7555	1.5221	0.0000	63.8081

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	47.84	9.7111	0.5739	0.0000	24.0588
General Office Building	10.77	2.1862	0.1292	0.0000	5.4163
Regional Shopping Center	25.07	5.0890	0.3008	0.0000	12.6077
Single Family Housing	43.2	8.7692	0.5183	0.0000	21.7254
Total		**25.7555**	**1.5221**	**0.0000**	**63.8082**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	47.84	9.7111	0.5739	0.0000	24.0588
General Office Building	10.77	2.1862	0.1292	0.0000	5.4163
Regional Shopping Center	25.07	5.0890	0.3008	0.0000	12.6077
Single Family Housing	43.2	8.7692	0.5183	0.0000	21.7254
Total		**25.7555**	**1.5221**	**0.0000**	**63.8082**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CUP 2017-05

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Congregate Care (Assisted Living)	168.00	Dwelling Unit	5.82	168,000.00	480

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - According to site description

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	10.50	5.82

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.1931	1.7131	1.2031	2.1400e-003	0.1909	0.0930	0.2839	0.0927	0.0866	0.1794	0.0000	193.0111	193.0111	0.0426	0.0000	194.0770
2019	1.8598	2.2187	2.0682	3.8400e-003	0.0957	0.1221	0.2178	0.0257	0.1147	0.1404	0.0000	341.4218	341.4218	0.0605	0.0000	342.9338
Maximum	**1.8598**	**2.2187**	**2.0682**	**3.8400e-003**	**0.1909**	**0.1221**	**0.2839**	**0.0927**	**0.1147**	**0.1794**	**0.0000**	**341.4218**	**341.4218**	**0.0605**	**0.0000**	**342.9338**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.1931	1.7131	1.2031	2.1400e-003	0.1909	0.0930	0.2839	0.0927	0.0866	0.1794	0.0000	193.0110	193.0110	0.0426	0.0000	194.0768
2019	1.8598	2.2187	2.0682	3.8400e-003	0.0957	0.1221	0.2178	0.0257	0.1147	0.1404	0.0000	341.4216	341.4216	0.0605	0.0000	342.9335
Maximum	**1.8598**	**2.2187**	**2.0682**	**3.8400e-003**	**0.1909**	**0.1221**	**0.2839**	**0.0927**	**0.1147**	**0.1794**	**0.0000**	**341.4216**	**341.4216**	**0.0605**	**0.0000**	**342.9335**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	8-1-2018	10-31-2018	1.2589	1.2589
2	11-1-2018	1-31-2019	0.9545	0.9545
3	2-1-2019	4-30-2019	0.8607	0.8607
4	5-1-2019	7-31-2019	0.8884	0.8884
5	8-1-2019	9-30-2019	0.7720	0.7720
		Highest	1.2589	1.2589

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9781	0.0949	2.3575	3.9800e-003		0.1877	0.1877		0.1877	0.1877	23.5287	74.8165	98.3451	0.1134	1.3300e-003	101.5774
Energy	0.0110	0.0943	0.0401	6.0000e-004		7.6200e-003	7.6200e-003		7.6200e-003	7.6200e-003	0.0000	328.9218	328.9218	0.0120	4.0600e-003	330.4316
Mobile	0.1988	1.6122	2.1884	7.3000e-003	0.4695	0.0102	0.4796	0.1262	9.6200e-003	0.1358	0.0000	674.2771	674.2771	0.0334	0.0000	675.1110
Waste						0.0000	0.0000		0.0000	0.0000	31.1185	0.0000	31.1185	1.8391	0.0000	77.0948
Water						0.0000	0.0000		0.0000	0.0000	3.4726	24.2563	27.7290	0.3578	8.6500e-003	39.2505
Total	**1.1879**	**1.8014**	**4.5860**	**0.0119**	**0.4695**	**0.2054**	**0.6749**	**0.1262**	**0.2049**	**0.3311**	**58.1198**	**1,102.2717**	**1,160.3914**	**2.3556**	**0.0140**	**1,223.4653**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9781	0.0949	2.3575	3.9800e-003		0.1877	0.1877		0.1877	0.1877	23.5287	74.8165	98.3451	0.1134	1.3300e-003	101.5774
Energy	0.0110	0.0943	0.0401	6.0000e-004		7.6200e-003	7.6200e-003		7.6200e-003	7.6200e-003	0.0000	328.9218	328.9218	0.0120	4.0600e-003	330.4316
Mobile	0.1988	1.6122	2.1884	7.3000e-003	0.4695	0.0102	0.4796	0.1262	9.6200e-003	0.1358	0.0000	674.2771	674.2771	0.0334	0.0000	675.1110
Waste						0.0000	0.0000		0.0000	0.0000	31.1185	0.0000	31.1185	1.8391	0.0000	77.0948
Water						0.0000	0.0000		0.0000	0.0000	3.4726	24.2563	27.7290	0.3578	8.6500e-003	39.2505
Total	**1.1879**	**1.8014**	**4.5860**	**0.0119**	**0.4695**	**0.2054**	**0.6749**	**0.1262**	**0.2049**	**0.3311**	**58.1198**	**1,102.2717**	**1,160.3914**	**2.3556**	**0.0140**	**1,223.4653**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2018	8/28/2018	5	20	
2	Site Preparation	Site Preparation	8/29/2018	9/11/2018	5	10	
3	Grading	Grading	9/12/2018	10/9/2018	5	20	
4	Building Construction	Building Construction	10/10/2018	8/27/2019	5	230	
5	Paving	Paving	8/28/2019	9/24/2019	5	20	
6	Architectural Coating	Architectural Coating	9/25/2019	10/22/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 340,200; Residential Outdoor: 113,400; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	24.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	121.00	18.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1241	35.1241	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**		**0.0194**	**0.0194**		**0.0181**	**0.0181**	**0.0000**	**35.1241**	**35.1241**	**9.6800e-003**	**0.0000**	**35.3660**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1240	35.1240	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**		**0.0194**	**0.0194**		**0.0181**	**0.0181**	**0.0000**	**35.1240**	**35.1240**	**9.6800e-003**	**0.0000**	**35.3660**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

3.3 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3800**	**17.3800**	**5.4100e-003**	**0.0000**	**17.5152**

3.3 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.8000e-004	3.7800e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6546	0.6546	3.0000e-005	0.0000	0.6552
Total	**5.3000e-004**	**3.8000e-004**	**3.7800e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6546**	**0.6546**	**3.0000e-005**	**0.0000**	**0.6552**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3799**	**17.3799**	**5.4100e-003**	**0.0000**	**17.5152**

3.3 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.8000e-004	3.7800e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6546	0.6546	3.0000e-005	0.0000	0.6552
Total	**5.3000e-004**	**3.8000e-004**	**3.7800e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6546**	**0.6546**	**3.0000e-005**	**0.0000**	**0.6552**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0277	0.3067	0.1658	3.0000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	27.1069	27.1069	8.4400e-003	0.0000	27.3178
Total	**0.0277**	**0.3067**	**0.1658**	**3.0000e-004**	**0.0655**	**0.0155**	**0.0810**	**0.0337**	**0.0143**	**0.0479**	**0.0000**	**27.1069**	**27.1069**	**8.4400e-003**	**0.0000**	**27.3178**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0277	0.3067	0.1658	3.0000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	27.1068	27.1068	8.4400e-003	0.0000	27.3178
Total	**0.0277**	**0.3067**	**0.1658**	**3.0000e-004**	**0.0655**	**0.0155**	**0.0810**	**0.0337**	**0.0143**	**0.0479**	**0.0000**	**27.1068**	**27.1068**	**8.4400e-003**	**0.0000**	**27.3178**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0790	0.6900	0.5186	7.9000e-004		0.0443	0.0443		0.0416	0.0416	0.0000	70.1413	70.1413	0.0172	0.0000	70.5710
Total	**0.0790**	**0.6900**	**0.5186**	**7.9000e-004**		**0.0443**	**0.0443**		**0.0416**	**0.0416**	**0.0000**	**70.1413**	**70.1413**	**0.0172**	**0.0000**	**70.5710**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0500e-003	0.0756	0.0172	1.5000e-004	3.5100e-003	6.8000e-004	4.1800e-003	1.0100e-003	6.5000e-004	1.6600e-003	0.0000	14.4609	14.4609	7.8000e-004	0.0000	14.4803
Worker	0.0209	0.0149	0.1497	2.9000e-004	0.0284	2.2000e-004	0.0287	7.5600e-003	2.0000e-004	7.7600e-003	0.0000	25.9615	25.9615	1.0300e-003	0.0000	25.9873
Total	**0.0240**	**0.0905**	**0.1669**	**4.4000e-004**	**0.0319**	**9.0000e-004**	**0.0328**	**8.5700e-003**	**8.5000e-004**	**9.4200e-003**	**0.0000**	**40.4224**	**40.4224**	**1.8100e-003**	**0.0000**	**40.4676**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0790	0.6900	0.5186	7.9000e-004		0.0443	0.0443		0.0416	0.0416	0.0000	70.1413	70.1413	0.0172	0.0000	70.5709
Total	**0.0790**	**0.6900**	**0.5186**	**7.9000e-004**		**0.0443**	**0.0443**		**0.0416**	**0.0416**	**0.0000**	**70.1413**	**70.1413**	**0.0172**	**0.0000**	**70.5709**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0500e-003	0.0756	0.0172	1.5000e-004	3.5100e-003	6.8000e-004	4.1800e-003	1.0100e-003	6.5000e-004	1.6600e-003	0.0000	14.4609	14.4609	7.8000e-004	0.0000	14.4803
Worker	0.0209	0.0149	0.1497	2.9000e-004	0.0284	2.2000e-004	0.0287	7.5600e-003	2.0000e-004	7.7600e-003	0.0000	25.9615	25.9615	1.0300e-003	0.0000	25.9873
Total	**0.0240**	**0.0905**	**0.1669**	**4.4000e-004**	**0.0319**	**9.0000e-004**	**0.0328**	**8.5700e-003**	**8.5000e-004**	**9.4200e-003**	**0.0000**	**40.4224**	**40.4224**	**1.8100e-003**	**0.0000**	**40.4676**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2019	1.8022	1.4675	2.3000e-003		0.1103	0.1103		0.1037	0.1037	0.0000	201.0141	201.0141	0.0490	0.0000	202.2383
Total	**0.2019**	**1.8022**	**1.4675**	**2.3000e-003**		**0.1103**	**0.1103**		**0.1037**	**0.1037**	**0.0000**	**201.0141**	**201.0141**	**0.0490**	**0.0000**	**202.2383**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7600e-003	0.2070	0.0440	4.4000e-004	0.0102	1.6500e-003	0.0118	2.9400e-003	1.5800e-003	4.5200e-003	0.0000	41.5848	41.5848	2.1100e-003	0.0000	41.6375
Worker	0.0541	0.0373	0.3774	8.1000e-004	0.0824	6.1000e-004	0.0830	0.0219	5.6000e-004	0.0225	0.0000	73.0411	73.0411	2.6100e-003	0.0000	73.1063
Total	**0.0618**	**0.2443**	**0.4214**	**1.2500e-003**	**0.0926**	**2.2600e-003**	**0.0948**	**0.0249**	**2.1400e-003**	**0.0270**	**0.0000**	**114.6258**	**114.6258**	**4.7200e-003**	**0.0000**	**114.7438**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2019	1.8022	1.4675	2.3000e-003		0.1103	0.1103		0.1037	0.1037	0.0000	201.0139	201.0139	0.0490	0.0000	202.2381
Total	**0.2019**	**1.8022**	**1.4675**	**2.3000e-003**		**0.1103**	**0.1103**		**0.1037**	**0.1037**	**0.0000**	**201.0139**	**201.0139**	**0.0490**	**0.0000**	**202.2381**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7600e-003	0.2070	0.0440	4.4000e-004	0.0102	1.6500e-003	0.0118	2.9400e-003	1.5800e-003	4.5200e-003	0.0000	41.5848	41.5848	2.1100e-003	0.0000	41.6375
Worker	0.0541	0.0373	0.3774	8.1000e-004	0.0824	6.1000e-004	0.0830	0.0219	5.6000e-004	0.0225	0.0000	73.0411	73.0411	2.6100e-003	0.0000	73.1063
Total	**0.0618**	**0.2443**	**0.4214**	**1.2500e-003**	**0.0926**	**2.2600e-003**	**0.0948**	**0.0249**	**2.1400e-003**	**0.0270**	**0.0000**	**114.6258**	**114.6258**	**4.7200e-003**	**0.0000**	**114.7438**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.4000e-004	5.4700e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0590	1.0590	4.0000e-005	0.0000	1.0600
Total	**7.8000e-004**	**5.4000e-004**	**5.4700e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0590**	**1.0590**	**4.0000e-005**	**0.0000**	**1.0600**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.4000e-004	5.4700e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0590	1.0590	4.0000e-005	0.0000	1.0600
Total	**7.8000e-004**	**5.4000e-004**	**5.4700e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0590**	**1.0590**	**4.0000e-005**	**0.0000**	**1.0600**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5768					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6600e-003	0.0184	0.0184	3.0000e-005		1.2900e-003	1.2900e-003		1.2900e-003	1.2900e-003	0.0000	2.5533	2.5533	2.2000e-004	0.0000	2.5587
Total	**1.5795**	**0.0184**	**0.0184**	**3.0000e-005**		**1.2900e-003**	**1.2900e-003**		**1.2900e-003**	**1.2900e-003**	**0.0000**	**2.5533**	**2.5533**	**2.2000e-004**	**0.0000**	**2.5587**

3.7 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	8.7000e-004	8.7600e-003	2.0000e-005	1.9100e-003	1.0000e-005	1.9300e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.6944	1.6944	6.0000e-005	0.0000	1.6960
Total	**1.2500e-003**	**8.7000e-004**	**8.7600e-003**	**2.0000e-005**	**1.9100e-003**	**1.0000e-005**	**1.9300e-003**	**5.1000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.6944**	**1.6944**	**6.0000e-005**	**0.0000**	**1.6960**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5768					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6600e-003	0.0184	0.0184	3.0000e-005		1.2900e-003	1.2900e-003		1.2900e-003	1.2900e-003	0.0000	2.5533	2.5533	2.2000e-004	0.0000	2.5586
Total	**1.5795**	**0.0184**	**0.0184**	**3.0000e-005**		**1.2900e-003**	**1.2900e-003**		**1.2900e-003**	**1.2900e-003**	**0.0000**	**2.5533**	**2.5533**	**2.2000e-004**	**0.0000**	**2.5586**

3.7 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	8.7000e-004	8.7600e-003	2.0000e-005	1.9100e-003	1.0000e-005	1.9300e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.6944	1.6944	6.0000e-005	0.0000	1.6960
Total	**1.2500e-003**	**8.7000e-004**	**8.7600e-003**	**2.0000e-005**	**1.9100e-003**	**1.0000e-005**	**1.9300e-003**	**5.1000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.6944**	**1.6944**	**6.0000e-005**	**0.0000**	**1.6960**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1988	1.6122	2.1884	7.3000e-003	0.4695	0.0102	0.4796	0.1262	9.6200e-003	0.1358	0.0000	674.2771	674.2771	0.0334	0.0000	675.1110
Unmitigated	0.1988	1.6122	2.1884	7.3000e-003	0.4695	0.0102	0.4796	0.1262	9.6200e-003	0.1358	0.0000	674.2771	674.2771	0.0334	0.0000	675.1110

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Congregate Care (Assisted Living)	460.32	369.60	409.92	1,240,694	1,240,694
Total	460.32	369.60	409.92	1,240,694	1,240,694

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Congregate Care (Assisted	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Congregate Care (Assisted Living)	0.496227	0.035864	0.170091	0.158035	0.026569	0.006201	0.020975	0.076251	0.001816	0.001427	0.004483	0.001181	0.000880

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	219.7458	219.7458	9.9400e-003	2.0600e-003	220.6068
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	219.7458	219.7458	9.9400e-003	2.0600e-003	220.6068
NaturalGas Mitigated	0.0110	0.0943	0.0401	6.0000e-004		7.6200e-003	7.6200e-003		7.6200e-003	7.6200e-003	0.0000	109.1760	109.1760	2.0900e-003	2.0000e-003	109.8248
NaturalGas Unmitigated	0.0110	0.0943	0.0401	6.0000e-004		7.6200e-003	7.6200e-003		7.6200e-003	7.6200e-003	0.0000	109.1760	109.1760	2.0900e-003	2.0000e-003	109.8248

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Congregate Care (Assisted Living)	2.04588e+006	0.0110	0.0943	0.0401	6.0000e-004		7.6200e-003	7.6200e-003		7.6200e-003	7.6200e-003	0.0000	109.1760	109.1760	2.0900e-003	2.0000e-003	109.8248
Total		**0.0110**	**0.0943**	**0.0401**	**6.0000e-004**		**7.6200e-003**	**7.6200e-003**		**7.6200e-003**	**7.6200e-003**	**0.0000**	**109.1760**	**109.1760**	**2.0900e-003**	**2.0000e-003**	**109.8248**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Congregate Care (Assisted Living)	2.04588e+006	0.0110	0.0943	0.0401	6.0000e-004		7.6200e-003	7.6200e-003		7.6200e-003	7.6200e-003	0.0000	109.1760	109.1760	2.0900e-003	2.0000e-003	109.8248
Total		**0.0110**	**0.0943**	**0.0401**	**6.0000e-004**		**7.6200e-003**	**7.6200e-003**		**7.6200e-003**	**7.6200e-003**	**0.0000**	**109.1760**	**109.1760**	**2.0900e-003**	**2.0000e-003**	**109.8248**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Congregate Care (Assisted Living)	755370	219.7458	9.9400e-003	2.0600e-003	220.6068
Total		**219.7458**	**9.9400e-003**	**2.0600e-003**	**220.6068**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Congregate Care (Assisted Living)	755370	219.7458	9.9400e-003	2.0600e-003	220.6068
Total		**219.7458**	**9.9400e-003**	**2.0600e-003**	**220.6068**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9781	0.0949	2.3575	3.9800e-003		0.1877	0.1877		0.1877	0.1877	23.5287	74.8165	98.3451	0.1134	1.3300e-003	101.5774
Unmitigated	0.9781	0.0949	2.3575	3.9800e-003		0.1877	0.1877		0.1877	0.1877	23.5287	74.8165	98.3451	0.1134	1.3300e-003	101.5774

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1577					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6561					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.1260	0.0804	1.1039	3.9200e-003		0.1808	0.1808		0.1808	0.1808	23.5287	72.7788	96.3075	0.1114	1.3300e-003	99.4898
Landscaping	0.0384	0.0145	1.2536	7.0000e-005		6.8700e-003	6.8700e-003		6.8700e-003	6.8700e-003	0.0000	2.0376	2.0376	2.0000e-003	0.0000	2.0876
Total	**0.9781**	**0.0949**	**2.3575**	**3.9900e-003**		**0.1877**	**0.1877**		**0.1877**	**0.1877**	**23.5287**	**74.8165**	**98.3451**	**0.1134**	**1.3300e-003**	**101.5774**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1577					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6561					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.1260	0.0804	1.1039	3.9200e-003		0.1808	0.1808		0.1808	0.1808	23.5287	72.7788	96.3075	0.1114	1.3300e-003	99.4898
Landscaping	0.0384	0.0145	1.2536	7.0000e-005		6.8700e-003	6.8700e-003		6.8700e-003	6.8700e-003	0.0000	2.0376	2.0376	2.0000e-003	0.0000	2.0876
Total	**0.9781**	**0.0949**	**2.3575**	**3.9900e-003**		**0.1877**	**0.1877**		**0.1877**	**0.1877**	**23.5287**	**74.8165**	**98.3451**	**0.1134**	**1.3300e-003**	**101.5774**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	27.7290	0.3578	8.6500e-003	39.2505
Unmitigated	27.7290	0.3578	8.6500e-003	39.2505

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Congregate Care (Assisted Living)	10.9459 / 6.90066	27.7290	0.3578	8.6500e-003	39.2505
Total		**27.7290**	**0.3578**	**8.6500e-003**	**39.2505**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Congregate Care (Assisted Living)	10.9459 / 6.90066	27.7290	0.3578	8.6500e-003	39.2505
Total		**27.7290**	**0.3578**	**8.6500e-003**	**39.2505**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	31.1185	1.8391	0.0000	77.0948
Unmitigated	31.1185	1.8391	0.0000	77.0948

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Congregate Care (Assisted Living)	153.3	31.1185	1.8391	0.0000	77.0948
Total		**31.1185**	**1.8391**	**0.0000**	**77.0948**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Congregate Care (Assisted Living)	153.3	31.1185	1.8391	0.0000	77.0948
Total		**31.1185**	**1.8391**	**0.0000**	**77.0948**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CUP 2017-06

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Place of Worship	126.78	1000sqft	16.10	126,785.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - According to project description

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	126,780.00	126,785.00
tblLandUse	LotAcreage	2.91	16.10

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2157	2.1710	1.3863	2.4600e-003	0.2385	0.1093	0.3478	0.1085	0.1015	0.2100	0.0000	223.1130	223.1130	0.0571	0.0000	224.5404
2019	0.3521	3.1003	2.5481	4.7700e-003	0.0710	0.1692	0.2402	0.0193	0.1591	0.1783	0.0000	423.9965	423.9965	0.0804	0.0000	426.0072
2020	0.8916	0.0878	0.0975	1.6000e-004	1.4700e-003	4.8800e-003	6.3600e-003	3.9000e-004	4.5800e-003	4.9700e-003	0.0000	13.8333	13.8333	3.4800e-003	0.0000	13.9202
Maximum	**0.8916**	**3.1003**	**2.5481**	**4.7700e-003**	**0.2385**	**0.1692**	**0.3478**	**0.1085**	**0.1591**	**0.2100**	**0.0000**	**423.9965**	**423.9965**	**0.0804**	**0.0000**	**426.0072**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2157	2.1710	1.3863	2.4600e-003	0.2385	0.1093	0.3478	0.1085	0.1015	0.2100	0.0000	223.1127	223.1127	0.0571	0.0000	224.5402
2019	0.3521	3.1003	2.5481	4.7700e-003	0.0710	0.1692	0.2402	0.0193	0.1591	0.1783	0.0000	423.9962	423.9962	0.0804	0.0000	426.0068
2020	0.8916	0.0878	0.0975	1.6000e-004	1.4700e-003	4.8800e-003	6.3600e-003	3.9000e-004	4.5800e-003	4.9700e-003	0.0000	13.8333	13.8333	3.4800e-003	0.0000	13.9202
Maximum	**0.8916**	**3.1003**	**2.5481**	**4.7700e-003**	**0.2385**	**0.1692**	**0.3478**	**0.1085**	**0.1591**	**0.2100**	**0.0000**	**423.9962**	**423.9962**	**0.0804**	**0.0000**	**426.0068**

CUP 2017-06 - Tulare County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**8-1-2018**	**10-31-2018**	1.7442	1.7442
2	**11-1-2018**	**1-31-2019**	0.9458	0.9458
3	**2-1-2019**	**4-30-2019**	0.8536	0.8536
4	**5-1-2019**	**7-31-2019**	0.8810	0.8810
5	**8-1-2019**	**10-31-2019**	0.8817	0.8817
6	**11-1-2019**	**1-31-2020**	1.1605	1.1605
7	**2-1-2020**	**4-30-2020**	0.3542	0.3542
		Highest	1.7442	1.7442

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5834	1.0000e-005	1.1700e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2700e-003	2.2700e-003	1.0000e-005	0.0000	2.4200e-003
Energy	0.0143	0.1297	0.1090	7.8000e-004		9.8600e-003	9.8600e-003		9.8600e-003	9.8600e-003	0.0000	466.5107	466.5107	0.0174	5.6300e-003	468.6245
Mobile	0.5918	4.7111	5.5721	0.0192	1.1862	0.0216	1.2077	0.3188	0.0204	0.3392	0.0000	1,772.4084	1,772.4084	0.0953	0.0000	1,774.7919
Waste						0.0000	0.0000		0.0000	0.0000	146.6914	0.0000	146.6914	8.6692	0.0000	363.4218
Water						0.0000	0.0000		0.0000	0.0000	1.2585	12.5616	13.8201	0.1298	3.1700e-003	18.0103
Total	**1.1895**	**4.8408**	**5.6822**	**0.0199**	**1.1862**	**0.0314**	**1.2176**	**0.3188**	**0.0303**	**0.3491**	**147.9499**	**2,251.4829**	**2,399.4329**	**8.9118**	**8.8000e-003**	**2,624.8509**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5834	1.0000e-005	1.1700e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2700e-003	2.2700e-003	1.0000e-005	0.0000	2.4200e-003
Energy	0.0143	0.1297	0.1090	7.8000e-004		9.8600e-003	9.8600e-003		9.8600e-003	9.8600e-003	0.0000	466.5107	466.5107	0.0174	5.6300e-003	468.6245
Mobile	0.5918	4.7111	5.5721	0.0192	1.1862	0.0216	1.2077	0.3188	0.0204	0.3392	0.0000	1,772.4084	1,772.4084	0.0953	0.0000	1,774.7919
Waste						0.0000	0.0000		0.0000	0.0000	146.6914	0.0000	146.6914	8.6692	0.0000	363.4218
Water						0.0000	0.0000		0.0000	0.0000	1.2585	12.5616	13.8201	0.1298	3.1700e-003	18.0103
Total	**1.1895**	**4.8408**	**5.6822**	**0.0199**	**1.1862**	**0.0314**	**1.2176**	**0.3188**	**0.0303**	**0.3491**	**147.9499**	**2,251.4829**	**2,399.4329**	**8.9118**	**8.8000e-003**	**2,624.8509**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2018	8/28/2018	5	20	
2	Site Preparation	Site Preparation	8/29/2018	9/11/2018	5	10	
3	Grading	Grading	9/12/2018	10/23/2018	5	30	
4	Building Construction	Building Construction	10/24/2018	12/17/2019	5	300	
5	Paving	Paving	12/18/2019	1/14/2020	5	20	
6	Architectural Coating	Architectural Coating	1/15/2020	2/11/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 190,178; Non-Residential Outdoor: 63,393; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	11.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	53.00	21.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1241	35.1241	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**		**0.0194**	**0.0194**		**0.0181**	**0.0181**	**0.0000**	**35.1241**	**35.1241**	**9.6800e-003**	**0.0000**	**35.3660**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1240	35.1240	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**		**0.0194**	**0.0194**		**0.0181**	**0.0181**	**0.0000**	**35.1240**	**35.1240**	**9.6800e-003**	**0.0000**	**35.3660**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

3.3 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3800**	**17.3800**	**5.4100e-003**	**0.0000**	**17.5152**

3.3 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.8000e-004	3.7800e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6546	0.6546	3.0000e-005	0.0000	0.6552
Total	**5.3000e-004**	**3.8000e-004**	**3.7800e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6546**	**0.6546**	**3.0000e-005**	**0.0000**	**0.6552**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3799**	**17.3799**	**5.4100e-003**	**0.0000**	**17.5152**

3.3 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.8000e-004	3.7800e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6546	0.6546	3.0000e-005	0.0000	0.6552
Total	**5.3000e-004**	**3.8000e-004**	**3.7800e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6546**	**0.6546**	**3.0000e-005**	**0.0000**	**0.6552**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9728	84.9728	0.0265	0.0000	85.6341
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9728**	**84.9728**	**0.0265**	**0.0000**	**85.6341**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.2500e-003	0.0126	2.0000e-005	2.3900e-003	2.0000e-005	2.4100e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1819	2.1819	9.0000e-005	0.0000	2.1841
Total	**1.7600e-003**	**1.2500e-003**	**0.0126**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1819**	**2.1819**	**9.0000e-005**	**0.0000**	**2.1841**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9727	84.9727	0.0265	0.0000	85.6340
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9727**	**84.9727**	**0.0265**	**0.0000**	**85.6340**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.2500e-003	0.0126	2.0000e-005	2.3900e-003	2.0000e-005	2.4100e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1819	2.1819	9.0000e-005	0.0000	2.1841
Total	**1.7600e-003**	**1.2500e-003**	**0.0126**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1819**	**2.1819**	**9.0000e-005**	**0.0000**	**2.1841**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0657	0.5731	0.4307	6.6000e-004		0.0368	0.0368		0.0345	0.0345	0.0000	58.2530	58.2530	0.0143	0.0000	58.6098
Total	**0.0657**	**0.5731**	**0.4307**	**6.6000e-004**		**0.0368**	**0.0368**		**0.0345**	**0.0345**	**0.0000**	**58.2530**	**58.2530**	**0.0143**	**0.0000**	**58.6098**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.9600e-003	0.0733	0.0167	1.5000e-004	3.4000e-003	6.5000e-004	4.0500e-003	9.8000e-004	6.3000e-004	1.6100e-003	0.0000	14.0116	14.0116	7.5000e-004	0.0000	14.0304
Worker	7.6100e-003	5.4100e-003	0.0545	1.0000e-004	0.0103	8.0000e-005	0.0104	2.7500e-003	7.0000e-005	2.8200e-003	0.0000	9.4442	9.4442	3.8000e-004	0.0000	9.4536
Total	**0.0106**	**0.0787**	**0.0711**	**2.5000e-004**	**0.0137**	**7.3000e-004**	**0.0145**	**3.7300e-003**	**7.0000e-004**	**4.4300e-003**	**0.0000**	**23.4557**	**23.4557**	**1.1300e-003**	**0.0000**	**23.4839**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0657	0.5731	0.4307	6.6000e-004		0.0368	0.0368		0.0345	0.0345	0.0000	58.2529	58.2529	0.0143	0.0000	58.6097
Total	**0.0657**	**0.5731**	**0.4307**	**6.6000e-004**		**0.0368**	**0.0368**		**0.0345**	**0.0345**	**0.0000**	**58.2529**	**58.2529**	**0.0143**	**0.0000**	**58.6097**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.9600e-003	0.0733	0.0167	1.5000e-004	3.4000e-003	6.5000e-004	4.0500e-003	9.8000e-004	6.3000e-004	1.6100e-003	0.0000	14.0116	14.0116	7.5000e-004	0.0000	14.0304
Worker	7.6100e-003	5.4100e-003	0.0545	1.0000e-004	0.0103	8.0000e-005	0.0104	2.7500e-003	7.0000e-005	2.8200e-003	0.0000	9.4442	9.4442	3.8000e-004	0.0000	9.4536
Total	**0.0106**	**0.0787**	**0.0711**	**2.5000e-004**	**0.0137**	**7.3000e-004**	**0.0145**	**3.7300e-003**	**7.0000e-004**	**4.4300e-003**	**0.0000**	**23.4557**	**23.4557**	**1.1300e-003**	**0.0000**	**23.4839**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2963	2.6454	2.1541	3.3800e-003		0.1619	0.1619		0.1522	0.1522	0.0000	295.0558	295.0558	0.0719	0.0000	296.8527
Total	**0.2963**	**2.6454**	**2.1541**	**3.3800e-003**		**0.1619**	**0.1619**		**0.1522**	**0.1522**	**0.0000**	**295.0558**	**295.0558**	**0.0719**	**0.0000**	**296.8527**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0133	0.3544	0.0753	7.5000e-004	0.0174	2.8300e-003	0.0203	5.0300e-003	2.7100e-003	7.7400e-003	0.0000	71.2129	71.2129	3.6100e-003	0.0000	71.3032
Worker	0.0348	0.0240	0.2427	5.2000e-004	0.0530	3.9000e-004	0.0534	0.0141	3.6000e-004	0.0145	0.0000	46.9608	46.9608	1.6800e-003	0.0000	47.0027
Total	**0.0481**	**0.3784**	**0.3180**	**1.2700e-003**	**0.0704**	**3.2200e-003**	**0.0736**	**0.0191**	**3.0700e-003**	**0.0222**	**0.0000**	**118.1737**	**118.1737**	**5.2900e-003**	**0.0000**	**118.3059**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2963	2.6454	2.1541	3.3800e-003		0.1619	0.1619		0.1522	0.1522	0.0000	295.0554	295.0554	0.0719	0.0000	296.8524
Total	**0.2963**	**2.6454**	**2.1541**	**3.3800e-003**		**0.1619**	**0.1619**		**0.1522**	**0.1522**	**0.0000**	**295.0554**	**295.0554**	**0.0719**	**0.0000**	**296.8524**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0133	0.3544	0.0753	7.5000e-004	0.0174	2.8300e-003	0.0203	5.0300e-003	2.7100e-003	7.7400e-003	0.0000	71.2129	71.2129	3.6100e-003	0.0000	71.3032
Worker	0.0348	0.0240	0.2427	5.2000e-004	0.0530	3.9000e-004	0.0534	0.0141	3.6000e-004	0.0145	0.0000	46.9608	46.9608	1.6800e-003	0.0000	47.0027
Total	**0.0481**	**0.3784**	**0.3180**	**1.2700e-003**	**0.0704**	**3.2200e-003**	**0.0736**	**0.0191**	**3.0700e-003**	**0.0222**	**0.0000**	**118.1737**	**118.1737**	**5.2900e-003**	**0.0000**	**118.3059**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.2700e-003	0.0762	0.0733	1.1000e-004		4.1200e-003	4.1200e-003		3.7900e-003	3.7900e-003	0.0000	10.2376	10.2376	3.2400e-003	0.0000	10.3186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.2700e-003**	**0.0762**	**0.0733**	**1.1000e-004**		**4.1200e-003**	**4.1200e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**10.2376**	**10.2376**	**3.2400e-003**	**0.0000**	**10.3186**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.7000e-004	2.7400e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5295	0.5295	2.0000e-005	0.0000	0.5300
Total	**3.9000e-004**	**2.7000e-004**	**2.7400e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5295**	**0.5295**	**2.0000e-005**	**0.0000**	**0.5300**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.2700e-003	0.0762	0.0733	1.1000e-004		4.1200e-003	4.1200e-003		3.7900e-003	3.7900e-003	0.0000	10.2376	10.2376	3.2400e-003	0.0000	10.3186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.2700e-003**	**0.0762**	**0.0733**	**1.1000e-004**		**4.1200e-003**	**4.1200e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**10.2376**	**10.2376**	**3.2400e-003**	**0.0000**	**10.3186**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.7000e-004	2.7400e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5295	0.5295	2.0000e-005	0.0000	0.5300
Total	**3.9000e-004**	**2.7000e-004**	**2.7400e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5295**	**0.5295**	**2.0000e-005**	**0.0000**	**0.5300**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

3.6 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.4000e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5132	0.5132	2.0000e-005	0.0000	0.5136
Total	**3.5000e-004**	**2.4000e-004**	**2.4000e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5132**	**0.5132**	**2.0000e-005**	**0.0000**	**0.5136**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

3.6 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.4000e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5132	0.5132	2.0000e-005	0.0000	0.5136
Total	**3.5000e-004**	**2.4000e-004**	**2.4000e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5132**	**0.5132**	**2.0000e-005**	**0.0000**	**0.5136**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8815					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**0.8839**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.5000e-004	3.5200e-003	1.0000e-005	8.8000e-004	1.0000e-005	8.8000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7527	0.7527	2.0000e-005	0.0000	0.7533
Total	**5.2000e-004**	**3.5000e-004**	**3.5200e-003**	**1.0000e-005**	**8.8000e-004**	**1.0000e-005**	**8.8000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**0.7527**	**0.7527**	**2.0000e-005**	**0.0000**	**0.7533**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8815					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**0.8839**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.5000e-004	3.5200e-003	1.0000e-005	8.8000e-004	1.0000e-005	8.8000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7527	0.7527	2.0000e-005	0.0000	0.7533
Total	**5.2000e-004**	**3.5000e-004**	**3.5200e-003**	**1.0000e-005**	**8.8000e-004**	**1.0000e-005**	**8.8000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**0.7527**	**0.7527**	**2.0000e-005**	**0.0000**	**0.7533**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5918	4.7111	5.5721	0.0192	1.1862	0.0216	1.2077	0.3188	0.0204	0.3392	0.0000	1,772.4084	1,772.4084	0.0953	0.0000	1,774.7919
Unmitigated	0.5918	4.7111	5.5721	0.0192	1.1862	0.0216	1.2077	0.3188	0.0204	0.3392	0.0000	1,772.4084	1,772.4084	0.0953	0.0000	1,774.7919

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Place of Worship	1,154.97	1,314.71	4643.95	3,135,669	3,135,669
Total	1,154.97	1,314.71	4,643.95	3,135,669	3,135,669

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Place of Worship	9.50	7.30	7.30	0.00	95.00	5.00	64	25	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Place of Worship	0.506900	0.034567	0.171206	0.149208	0.024362	0.005798	0.021031	0.077362	0.001819	0.001371	0.004402	0.001155	0.000818

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	325.3099	325.3099	0.0147	3.0400e-003	326.5846
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	325.3099	325.3099	0.0147	3.0400e-003	326.5846
NaturalGas Mitigated	0.0143	0.1297	0.1090	7.8000e-004		9.8600e-003	9.8600e-003		9.8600e-003	9.8600e-003	0.0000	141.2008	141.2008	2.7100e-003	2.5900e-003	142.0399
NaturalGas Unmitigated	0.0143	0.1297	0.1090	7.8000e-004		9.8600e-003	9.8600e-003		9.8600e-003	9.8600e-003	0.0000	141.2008	141.2008	2.7100e-003	2.5900e-003	142.0399

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Place of Worship	2.646e+006	0.0143	0.1297	0.1090	7.8000e-004		9.8600e-003	9.8600e-003		9.8600e-003	9.8600e-003	0.0000	141.2008	141.2008	2.7100e-003	2.5900e-003	142.0399
Total		**0.0143**	**0.1297**	**0.1090**	**7.8000e-004**		**9.8600e-003**	**9.8600e-003**		**9.8600e-003**	**9.8600e-003**	**0.0000**	**141.2008**	**141.2008**	**2.7100e-003**	**2.5900e-003**	**142.0399**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Place of Worship	2.646e+006	0.0143	0.1297	0.1090	7.8000e-004		9.8600e-003	9.8600e-003		9.8600e-003	9.8600e-003	0.0000	141.2008	141.2008	2.7100e-003	2.5900e-003	142.0399
Total		**0.0143**	**0.1297**	**0.1090**	**7.8000e-004**		**9.8600e-003**	**9.8600e-003**		**9.8600e-003**	**9.8600e-003**	**0.0000**	**141.2008**	**141.2008**	**2.7100e-003**	**2.5900e-003**	**142.0399**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Place of Worship	1.11824e+006	325.3099	0.0147	3.0400e-003	326.5846
Total		**325.3099**	**0.0147**	**3.0400e-003**	**326.5846**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Place of Worship	1.11824e+006	325.3099	0.0147	3.0400e-003	326.5846
Total		**325.3099**	**0.0147**	**3.0400e-003**	**326.5846**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5834	1.0000e-005	1.1700e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2700e-003	2.2700e-003	1.0000e-005	0.0000	2.4200e-003
Unmitigated	0.5834	1.0000e-005	1.1700e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2700e-003	2.2700e-003	1.0000e-005	0.0000	2.4200e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0882					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4952					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1700e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2700e-003	2.2700e-003	1.0000e-005	0.0000	2.4200e-003
Total	**0.5834**	**1.0000e-005**	**1.1700e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.2700e-003**	**2.2700e-003**	**1.0000e-005**	**0.0000**	**2.4200e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0882					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4952					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1700e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2700e-003	2.2700e-003	1.0000e-005	0.0000	2.4200e-003
Total	**0.5834**	**1.0000e-005**	**1.1700e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.2700e-003**	**2.2700e-003**	**1.0000e-005**	**0.0000**	**2.4200e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	13.8201	0.1298	3.1700e-003	18.0103
Unmitigated	13.8201	0.1298	3.1700e-003	18.0103

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Place of Worship	3.96681 / 6.20449	13.8201	0.1298	3.1700e-003	18.0103
Total		**13.8201**	**0.1298**	**3.1700e-003**	**18.0103**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Place of Worship	3.96681 / 6.20449	13.8201	0.1298	3.1700e-003	18.0103
Total		**13.8201**	**0.1298**	**3.1700e-003**	**18.0103**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	146.6914	8.6692	0.0000	363.4218
Unmitigated	146.6914	8.6692	0.0000	363.4218

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Place of Worship	722.65	146.6914	8.6692	0.0000	363.4218
Total		**146.6914**	**8.6692**	**0.0000**	**363.4218**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Place of Worship	722.65	146.6914	8.6692	0.0000	363.4218
Total		**146.6914**	**8.6692**	**0.0000**	**363.4218**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CUP 2018-11

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	84.55	1000sqft	1.94	84,550.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Table Name	Column Name	Default Value	New Value

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.1480	1.1098	0.8209	1.4700e-003	0.0296	0.0616	0.0913	0.0118	0.0589	0.0708	0.0000	127.3948	127.3948	0.0234	0.0000	127.9798
2019	0.7395	1.1060	0.9270	1.7400e-003	0.0187	0.0578	0.0765	5.1000e-003	0.0557	0.0608	0.0000	148.3011	148.3011	0.0241	0.0000	148.9037
Maximum	**0.7395**	**1.1098**	**0.9270**	**1.7400e-003**	**0.0296**	**0.0616**	**0.0913**	**0.0118**	**0.0589**	**0.0708**	**0.0000**	**148.3011**	**148.3011**	**0.0241**	**0.0000**	**148.9037**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.1480	1.1098	0.8209	1.4700e-003	0.0296	0.0616	0.0913	0.0118	0.0589	0.0708	0.0000	127.3947	127.3947	0.0234	0.0000	127.9797
2019	0.7395	1.1060	0.9270	1.7400e-003	0.0187	0.0578	0.0765	5.1000e-003	0.0557	0.0608	0.0000	148.3010	148.3010	0.0241	0.0000	148.9036
Maximum	**0.7395**	**1.1098**	**0.9270**	**1.7400e-003**	**0.0296**	**0.0616**	**0.0913**	**0.0118**	**0.0589**	**0.0708**	**0.0000**	**148.3010**	**148.3010**	**0.0241**	**0.0000**	**148.9036**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	8-1-2018	10-31-2018	0.7733	0.7733
2	11-1-2018	1-31-2019	0.7143	0.7143
3	2-1-2019	4-30-2019	0.6500	0.6500
4	5-1-2019	7-31-2019	0.9632	0.9632
		Highest	0.9632	0.9632

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3891	1.0000e-005	7.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5100e-003	1.5100e-003	0.0000	0.0000	1.6100e-003
Energy	5.9500e-003	0.0541	0.0454	3.2000e-004		4.1100e-003	4.1100e-003		4.1100e-003	4.1100e-003	0.0000	283.2011	283.2011	0.0113	3.1800e-003	284.4300
Mobile	0.9216	7.0551	8.8449	0.0280	1.7100	0.0386	1.7487	0.4598	0.0366	0.4964	0.0000	2,587.3094	2,587.3094	0.1460	0.0000	2,590.9603
Waste						0.0000	0.0000		0.0000	0.0000	185.3592	0.0000	185.3592	10.9544	0.0000	459.2195
Water						0.0000	0.0000		0.0000	0.0000	3.3659	18.7581	22.1239	0.3466	8.3400e-003	33.2726
Total	**1.3166**	**7.1092**	**8.8911**	**0.0283**	**1.7100**	**0.0427**	**1.7528**	**0.4598**	**0.0407**	**0.5005**	**188.7250**	**2,889.2700**	**3,077.9951**	**11.4583**	**0.0115**	**3,367.8839**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3891	1.0000e-005	7.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5100e-003	1.5100e-003	0.0000	0.0000	1.6100e-003
Energy	5.9500e-003	0.0541	0.0454	3.2000e-004		4.1100e-003	4.1100e-003		4.1100e-003	4.1100e-003	0.0000	283.2011	283.2011	0.0113	3.1800e-003	284.4300
Mobile	0.9216	7.0551	8.8449	0.0280	1.7100	0.0386	1.7487	0.4598	0.0366	0.4964	0.0000	2,587.3094	2,587.3094	0.1460	0.0000	2,590.9603
Waste						0.0000	0.0000		0.0000	0.0000	185.3592	0.0000	185.3592	10.9544	0.0000	459.2195
Water						0.0000	0.0000		0.0000	0.0000	3.3659	18.7581	22.1239	0.3466	8.3400e-003	33.2726
Total	**1.3166**	**7.1092**	**8.8911**	**0.0283**	**1.7100**	**0.0427**	**1.7528**	**0.4598**	**0.0407**	**0.5005**	**188.7250**	**2,889.2700**	**3,077.9951**	**11.4583**	**0.0115**	**3,367.8839**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2018	8/28/2018	5	20	
2	Site Preparation	Site Preparation	8/29/2018	8/30/2018	5	2	
3	Grading	Grading	8/31/2018	9/5/2018	5	4	
4	Building Construction	Building Construction	9/6/2018	6/12/2019	5	200	
5	Paving	Paving	6/13/2019	6/26/2019	5	10	
6	Architectural Coating	Architectural Coating	6/27/2019	7/10/2019	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 126,825; Non-Residential Outdoor: 42,275; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	27.00	14.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0248	0.2436	0.1511	2.4000e-004		0.0144	0.0144		0.0134	0.0134	0.0000	21.6923	21.6923	5.5000e-003	0.0000	21.8297
Total	**0.0248**	**0.2436**	**0.1511**	**2.4000e-004**		**0.0144**	**0.0144**		**0.0134**	**0.0134**	**0.0000**	**21.6923**	**21.6923**	**5.5000e-003**	**0.0000**	**21.8297**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.6000e-004	5.4000e-004	5.4500e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9455	0.9455	4.0000e-005	0.0000	0.9465
Total	**7.6000e-004**	**5.4000e-004**	**5.4500e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9455**	**0.9455**	**4.0000e-005**	**0.0000**	**0.9465**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0248	0.2436	0.1511	2.4000e-004		0.0144	0.0144		0.0134	0.0134	0.0000	21.6923	21.6923	5.5000e-003	0.0000	21.8297
Total	**0.0248**	**0.2436**	**0.1511**	**2.4000e-004**		**0.0144**	**0.0144**		**0.0134**	**0.0134**	**0.0000**	**21.6923**	**21.6923**	**5.5000e-003**	**0.0000**	**21.8297**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.6000e-004	5.4000e-004	5.4500e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9455	0.9455	4.0000e-005	0.0000	0.9465
Total	**7.6000e-004**	**5.4000e-004**	**5.4500e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9455**	**0.9455**	**4.0000e-005**	**0.0000**	**0.9465**

3.3 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8100e-003	0.0208	8.0800e-003	2.0000e-005		9.5000e-004	9.5000e-004		8.8000e-004	8.8000e-004	0.0000	1.5743	1.5743	4.9000e-004	0.0000	1.5866
Total	**1.8100e-003**	**0.0208**	**8.0800e-003**	**2.0000e-005**	**5.8000e-003**	**9.5000e-004**	**6.7500e-003**	**2.9500e-003**	**8.8000e-004**	**3.8300e-003**	**0.0000**	**1.5743**	**1.5743**	**4.9000e-004**	**0.0000**	**1.5866**

3.3 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	3.0000e-005	3.4000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0582	0.0582	0.0000	0.0000	0.0582
Total	**5.0000e-005**	**3.0000e-005**	**3.4000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0582**	**0.0582**	**0.0000**	**0.0000**	**0.0582**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8100e-003	0.0208	8.0800e-003	2.0000e-005		9.5000e-004	9.5000e-004		8.8000e-004	8.8000e-004	0.0000	1.5743	1.5743	4.9000e-004	0.0000	1.5866
Total	**1.8100e-003**	**0.0208**	**8.0800e-003**	**2.0000e-005**	**5.8000e-003**	**9.5000e-004**	**6.7500e-003**	**2.9500e-003**	**8.8000e-004**	**3.8300e-003**	**0.0000**	**1.5743**	**1.5743**	**4.9000e-004**	**0.0000**	**1.5866**

3.3 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	3.0000e-005	3.4000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0582	0.0582	0.0000	0.0000	0.0582
Total	**5.0000e-005**	**3.0000e-005**	**3.4000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0582**	**0.0582**	**0.0000**	**0.0000**	**0.0582**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8300e-003	0.0000	9.8300e-003	5.0500e-003	0.0000	5.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9900e-003	0.0341	0.0135	3.0000e-005		1.5900e-003	1.5900e-003		1.4600e-003	1.4600e-003	0.0000	2.5787	2.5787	8.0000e-004	0.0000	2.5988
Total	**2.9900e-003**	**0.0341**	**0.0135**	**3.0000e-005**	**9.8300e-003**	**1.5900e-003**	**0.0114**	**5.0500e-003**	**1.4600e-003**	**6.5100e-003**	**0.0000**	**2.5787**	**2.5787**	**8.0000e-004**	**0.0000**	**2.5988**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	7.0000e-005	6.7000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1164	0.1164	0.0000	0.0000	0.1165
Total	**9.0000e-005**	**7.0000e-005**	**6.7000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1164**	**0.1164**	**0.0000**	**0.0000**	**0.1165**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8300e-003	0.0000	9.8300e-003	5.0500e-003	0.0000	5.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9900e-003	0.0341	0.0135	3.0000e-005		1.5900e-003	1.5900e-003		1.4600e-003	1.4600e-003	0.0000	2.5787	2.5787	8.0000e-004	0.0000	2.5988
Total	**2.9900e-003**	**0.0341**	**0.0135**	**3.0000e-005**	**9.8300e-003**	**1.5900e-003**	**0.0114**	**5.0500e-003**	**1.4600e-003**	**6.5100e-003**	**0.0000**	**2.5787**	**2.5787**	**8.0000e-004**	**0.0000**	**2.5988**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	7.0000e-005	6.7000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1164	0.1164	0.0000	0.0000	0.1165
Total	**9.0000e-005**	**7.0000e-005**	**6.7000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1164**	**0.1164**	**0.0000**	**0.0000**	**0.1165**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1076	0.7233	0.5759	9.1000e-004		0.0439	0.0439		0.0424	0.0424	0.0000	76.4574	76.4574	0.0154	0.0000	76.8422
Total	**0.1076**	**0.7233**	**0.5759**	**9.1000e-004**		**0.0439**	**0.0439**		**0.0424**	**0.0424**	**0.0000**	**76.4574**	**76.4574**	**0.0154**	**0.0000**	**76.8422**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.3400e-003	0.0827	0.0188	1.7000e-004	3.8400e-003	7.4000e-004	4.5800e-003	1.1100e-003	7.1000e-004	1.8200e-003	0.0000	15.8226	15.8226	8.5000e-004	0.0000	15.8438
Worker	6.5700e-003	4.6700e-003	0.0470	9.0000e-005	8.9300e-003	7.0000e-005	8.9900e-003	2.3700e-003	6.0000e-005	2.4400e-003	0.0000	8.1496	8.1496	3.2000e-004	0.0000	8.1577
Total	**9.9100e-003**	**0.0874**	**0.0658**	**2.6000e-004**	**0.0128**	**8.1000e-004**	**0.0136**	**3.4800e-003**	**7.7000e-004**	**4.2600e-003**	**0.0000**	**23.9721**	**23.9721**	**1.1700e-003**	**0.0000**	**24.0015**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1076	0.7233	0.5759	9.1000e-004		0.0439	0.0439		0.0424	0.0424	0.0000	76.4573	76.4573	0.0154	0.0000	76.8421
Total	**0.1076**	**0.7233**	**0.5759**	**9.1000e-004**		**0.0439**	**0.0439**		**0.0424**	**0.0424**	**0.0000**	**76.4573**	**76.4573**	**0.0154**	**0.0000**	**76.8421**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.3400e-003	0.0827	0.0188	1.7000e-004	3.8400e-003	7.4000e-004	4.5800e-003	1.1100e-003	7.1000e-004	1.8200e-003	0.0000	15.8226	15.8226	8.5000e-004	0.0000	15.8438
Worker	6.5700e-003	4.6700e-003	0.0470	9.0000e-005	8.9300e-003	7.0000e-005	8.9900e-003	2.3700e-003	6.0000e-005	2.4400e-003	0.0000	8.1496	8.1496	3.2000e-004	0.0000	8.1577
Total	**9.9100e-003**	**0.0874**	**0.0658**	**2.6000e-004**	**0.0128**	**8.1000e-004**	**0.0136**	**3.4800e-003**	**7.7000e-004**	**4.2600e-003**	**0.0000**	**23.9721**	**23.9721**	**1.1700e-003**	**0.0000**	**24.0015**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1329	0.9348	0.7890	1.2900e-003		0.0536	0.0536		0.0518	0.0518	0.0000	107.0971	107.0971	0.0206	0.0000	107.6118
Total	**0.1329**	**0.9348**	**0.7890**	**1.2900e-003**		**0.0536**	**0.0536**		**0.0518**	**0.0518**	**0.0000**	**107.0971**	**107.0971**	**0.0206**	**0.0000**	**107.6118**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1300e-003	0.1101	0.0234	2.3000e-004	5.4100e-003	8.8000e-004	6.2900e-003	1.5600e-003	8.4000e-004	2.4100e-003	0.0000	22.1299	22.1299	1.1200e-003	0.0000	22.1580
Worker	8.2600e-003	5.6900e-003	0.0576	1.2000e-004	0.0126	9.0000e-005	0.0127	3.3400e-003	9.0000e-005	3.4300e-003	0.0000	11.1516	11.1516	4.0000e-004	0.0000	11.1615
Total	**0.0124**	**0.1158**	**0.0810**	**3.5000e-004**	**0.0180**	**9.7000e-004**	**0.0190**	**4.9000e-003**	**9.3000e-004**	**5.8400e-003**	**0.0000**	**33.2815**	**33.2815**	**1.5200e-003**	**0.0000**	**33.3195**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1329	0.9348	0.7890	1.2900e-003		0.0536	0.0536		0.0518	0.0518	0.0000	107.0969	107.0969	0.0206	0.0000	107.6117
Total	**0.1329**	**0.9348**	**0.7890**	**1.2900e-003**		**0.0536**	**0.0536**		**0.0518**	**0.0518**	**0.0000**	**107.0969**	**107.0969**	**0.0206**	**0.0000**	**107.6117**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1300e-003	0.1101	0.0234	2.3000e-004	5.4100e-003	8.8000e-004	6.2900e-003	1.5600e-003	8.4000e-004	2.4100e-003	0.0000	22.1299	22.1299	1.1200e-003	0.0000	22.1580
Worker	8.2600e-003	5.6900e-003	0.0576	1.2000e-004	0.0126	9.0000e-005	0.0127	3.3400e-003	9.0000e-005	3.4300e-003	0.0000	11.1516	11.1516	4.0000e-004	0.0000	11.1615
Total	**0.0124**	**0.1158**	**0.0810**	**3.5000e-004**	**0.0180**	**9.7000e-004**	**0.0190**	**4.9000e-003**	**9.3000e-004**	**5.8400e-003**	**0.0000**	**33.2815**	**33.2815**	**1.5200e-003**	**0.0000**	**33.3195**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.5200e-003	0.0459	0.0445	7.0000e-005		2.6100e-003	2.6100e-003		2.4100e-003	2.4100e-003	0.0000	6.0105	6.0105	1.8700e-003	0.0000	6.0572
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5200e-003**	**0.0459**	**0.0445**	**7.0000e-005**		**2.6100e-003**	**2.6100e-003**		**2.4100e-003**	**2.4100e-003**	**0.0000**	**6.0105**	**6.0105**	**1.8700e-003**	**0.0000**	**6.0572**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4000e-004	2.3000e-004	2.3700e-003	1.0000e-005	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4589	0.4589	2.0000e-005	0.0000	0.4593
Total	**3.4000e-004**	**2.3000e-004**	**2.3700e-003**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4589**	**0.4589**	**2.0000e-005**	**0.0000**	**0.4593**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.5200e-003	0.0459	0.0445	7.0000e-005		2.6100e-003	2.6100e-003		2.4100e-003	2.4100e-003	0.0000	6.0105	6.0105	1.8700e-003	0.0000	6.0572
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5200e-003**	**0.0459**	**0.0445**	**7.0000e-005**		**2.6100e-003**	**2.6100e-003**		**2.4100e-003**	**2.4100e-003**	**0.0000**	**6.0105**	**6.0105**	**1.8700e-003**	**0.0000**	**6.0572**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4000e-004	2.3000e-004	2.3700e-003	1.0000e-005	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4589	0.4589	2.0000e-005	0.0000	0.4593
Total	**3.4000e-004**	**2.3000e-004**	**2.3700e-003**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4589**	**0.4589**	**2.0000e-005**	**0.0000**	**0.4593**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5878					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3300e-003	9.1800e-003	9.2100e-003	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	1.2766	1.2766	1.1000e-004	0.0000	1.2793
Total	**0.5892**	**9.1800e-003**	**9.2100e-003**	**1.0000e-005**		**6.4000e-004**	**6.4000e-004**		**6.4000e-004**	**6.4000e-004**	**0.0000**	**1.2766**	**1.2766**	**1.1000e-004**	**0.0000**	**1.2793**

3.7 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	9.0000e-005	9.1000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1765	0.1765	1.0000e-005	0.0000	0.1767
Total	**1.3000e-004**	**9.0000e-005**	**9.1000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1765**	**0.1765**	**1.0000e-005**	**0.0000**	**0.1767**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5878					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3300e-003	9.1800e-003	9.2100e-003	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	1.2766	1.2766	1.1000e-004	0.0000	1.2793
Total	**0.5892**	**9.1800e-003**	**9.2100e-003**	**1.0000e-005**		**6.4000e-004**	**6.4000e-004**		**6.4000e-004**	**6.4000e-004**	**0.0000**	**1.2766**	**1.2766**	**1.1000e-004**	**0.0000**	**1.2793**

3.7 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	9.0000e-005	9.1000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1765	0.1765	1.0000e-005	0.0000	0.1767
Total	**1.3000e-004**	**9.0000e-005**	**9.1000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1765**	**0.1765**	**1.0000e-005**	**0.0000**	**0.1767**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9216	7.0551	8.8449	0.0280	1.7100	0.0386	1.7487	0.4598	0.0366	0.4964	0.0000	2,587.3094	2,587.3094	0.1460	0.0000	2,590.9603
Unmitigated	0.9216	7.0551	8.8449	0.0280	1.7100	0.0386	1.7487	0.4598	0.0366	0.4964	0.0000	2,587.3094	2,587.3094	0.1460	0.0000	2,590.9603

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Medical Office Building	3,054.79	757.57	131.05	4,519,172	4,519,172
Total	3,054.79	757.57	131.05	4,519,172	4,519,172

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Medical Office Building	9.50	7.30	7.30	29.60	51.40	19.00	60	30	10

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Medical Office Building	0.496227	0.035864	0.170091	0.158035	0.026569	0.006201	0.020975	0.076251	0.001816	0.001427	0.004483	0.001181	0.000880

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	224.3207	224.3207	0.0101	2.1000e-003	225.1996
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	224.3207	224.3207	0.0101	2.1000e-003	225.1996
NaturalGas Mitigated	5.9500e-003	0.0541	0.0454	3.2000e-004		4.1100e-003	4.1100e-003		4.1100e-003	4.1100e-003	0.0000	58.8804	58.8804	1.1300e-003	1.0800e-003	59.2303
NaturalGas Unmitigated	5.9500e-003	0.0541	0.0454	3.2000e-004		4.1100e-003	4.1100e-003		4.1100e-003	4.1100e-003	0.0000	58.8804	58.8804	1.1300e-003	1.0800e-003	59.2303

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Medical Office Building	1.10338e+006	5.9500e-003	0.0541	0.0454	3.2000e-004		4.1100e-003	4.1100e-003		4.1100e-003	4.1100e-003	0.0000	58.8804	58.8804	1.1300e-003	1.0800e-003	59.2303
Total		**5.9500e-003**	**0.0541**	**0.0454**	**3.2000e-004**		**4.1100e-003**	**4.1100e-003**		**4.1100e-003**	**4.1100e-003**	**0.0000**	**58.8804**	**58.8804**	**1.1300e-003**	**1.0800e-003**	**59.2303**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Medical Office Building	1.10338e+006	5.9500e-003	0.0541	0.0454	3.2000e-004		4.1100e-003	4.1100e-003		4.1100e-003	4.1100e-003	0.0000	58.8804	58.8804	1.1300e-003	1.0800e-003	59.2303
Total		**5.9500e-003**	**0.0541**	**0.0454**	**3.2000e-004**		**4.1100e-003**	**4.1100e-003**		**4.1100e-003**	**4.1100e-003**	**0.0000**	**58.8804**	**58.8804**	**1.1300e-003**	**1.0800e-003**	**59.2303**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Medical Office Building	771096	224.3207	0.0101	2.1000e-003	225.1996
Total		**224.3207**	**0.0101**	**2.1000e-003**	**225.1996**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Medical Office Building	771096	224.3207	0.0101	2.1000e-003	225.1996
Total		**224.3207**	**0.0101**	**2.1000e-003**	**225.1996**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3891	1.0000e-005	7.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5100e-003	1.5100e-003	0.0000	0.0000	1.6100e-003
Unmitigated	0.3891	1.0000e-005	7.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5100e-003	1.5100e-003	0.0000	0.0000	1.6100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0588					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3302					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-005	1.0000e-005	7.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5100e-003	1.5100e-003	0.0000	0.0000	1.6100e-003
Total	**0.3891**	**1.0000e-005**	**7.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.5100e-003**	**1.5100e-003**	**0.0000**	**0.0000**	**1.6100e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0588					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3302					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-005	1.0000e-005	7.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5100e-003	1.5100e-003	0.0000	0.0000	1.6100e-003
Total	**0.3891**	**1.0000e-005**	**7.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.5100e-003**	**1.5100e-003**	**0.0000**	**0.0000**	**1.6100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	22.1239	0.3466	8.3400e-003	33.2726
Unmitigated	22.1239	0.3466	8.3400e-003	33.2726

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Medical Office Building	10.6094 / 2.02083	22.1239	0.3466	8.3400e-003	33.2726
Total		**22.1239**	**0.3466**	**8.3400e-003**	**33.2726**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Medical Office Building	10.6094 / 2.02083	22.1239	0.3466	8.3400e-003	33.2726
Total		**22.1239**	**0.3466**	**8.3400e-003**	**33.2726**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	185.3592	10.9544	0.0000	459.2195
Unmitigated	185.3592	10.9544	0.0000	459.2195

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Medical Office Building	913.14	185.3592	10.9544	0.0000	459.2195
Total		**185.3592**	**10.9544**	**0.0000**	**459.2195**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Medical Office Building	913.14	185.3592	10.9544	0.0000	459.2195
Total		**185.3592**	**10.9544**	**0.0000**	**459.2195**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Retirement Community	100.00	Dwelling Unit	20.00	122,235.00	286

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - According to project description

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	100,000.00	122,235.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2171	2.1381	1.3979	2.4300e-003	0.2406	0.1090	0.3496	0.1090	0.1013	0.2102	0.0000	219.8265	219.8265	0.0569	0.0000	221.2483
2019	0.3582	2.9401	2.5992	4.6000e-003	0.0817	0.1680	0.2497	0.0219	0.1579	0.1798	0.0000	406.9206	406.9206	0.0793	0.0000	408.9033
2020	1.1575	0.0878	0.0985	1.6000e-004	1.7100e-003	4.8900e-003	6.6000e-003	4.6000e-004	4.5800e-003	5.0400e-003	0.0000	14.0386	14.0386	3.4800e-003	0.0000	14.1256
Maximum	**1.1575**	**2.9401**	**2.5992**	**4.6000e-003**	**0.2406**	**0.1680**	**0.3496**	**0.1090**	**0.1579**	**0.2102**	**0.0000**	**406.9206**	**406.9206**	**0.0793**	**0.0000**	**408.9033**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2171	2.1381	1.3979	2.4300e-003	0.2406	0.1090	0.3496	0.1090	0.1013	0.2102	0.0000	219.8262	219.8262	0.0569	0.0000	221.2481
2019	0.3582	2.9401	2.5992	4.6000e-003	0.0817	0.1680	0.2497	0.0219	0.1579	0.1798	0.0000	406.9203	406.9203	0.0793	0.0000	408.9029
2020	1.1575	0.0878	0.0985	1.6000e-004	1.7100e-003	4.8900e-003	6.6000e-003	4.6000e-004	4.5800e-003	5.0400e-003	0.0000	14.0386	14.0386	3.4800e-003	0.0000	14.1256
Maximum	**1.1575**	**2.9401**	**2.5992**	**4.6000e-003**	**0.2406**	**0.1680**	**0.3496**	**0.1090**	**0.1579**	**0.2102**	**0.0000**	**406.9203**	**406.9203**	**0.0793**	**0.0000**	**408.9029**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**8-1-2018**	**10-31-2018**	1.7405	1.7405
2	**11-1-2018**	**1-31-2019**	0.9044	0.9044
3	**2-1-2019**	**4-30-2019**	0.8151	0.8151
4	**5-1-2019**	**7-31-2019**	0.8418	0.8418
5	**8-1-2019**	**10-31-2019**	0.8422	0.8422
6	**11-1-2019**	**1-31-2020**	1.3016	1.3016
7	**2-1-2020**	**4-30-2020**	0.4587	0.4587
		Highest	1.7405	1.7405

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0268	0.1064	4.4624	0.0124		0.6110	0.6110		0.6110	0.6110	80.8545	44.5336	125.3881	0.3800	7.9000e-004	135.1245
Energy	7.6200e-003	0.0651	0.0277	4.2000e-004		5.2700e-003	5.2700e-003		5.2700e-003	5.2700e-003	0.0000	217.0608	217.0608	7.8500e-003	2.7100e-003	218.0640
Mobile	0.0922	0.7774	1.0166	3.7000e-003	0.2434	4.2000e-003	0.2476	0.0654	3.9800e-003	0.0694	0.0000	342.0610	342.0610	0.0158	0.0000	342.4564
Waste						0.0000	0.0000		0.0000	0.0000	9.3376	0.0000	9.3376	0.5518	0.0000	23.1335
Water						0.0000	0.0000		0.0000	0.0000	2.0670	14.4383	16.5053	0.2130	5.1500e-003	23.3634
Total	**1.1266**	**0.9490**	**5.5068**	**0.0165**	**0.2434**	**0.6204**	**0.8639**	**0.0654**	**0.6202**	**0.6856**	**92.2591**	**618.0937**	**710.3528**	**1.1685**	**8.6500e-003**	**742.1417**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0268	0.1064	4.4624	0.0124		0.6110	0.6110		0.6110	0.6110	80.8545	44.5336	125.3881	0.3800	7.9000e-004	135.1245
Energy	7.6200e-003	0.0651	0.0277	4.2000e-004		5.2700e-003	5.2700e-003		5.2700e-003	5.2700e-003	0.0000	217.0608	217.0608	7.8500e-003	2.7100e-003	218.0640
Mobile	0.0922	0.7774	1.0166	3.7000e-003	0.2434	4.2000e-003	0.2476	0.0654	3.9800e-003	0.0694	0.0000	342.0610	342.0610	0.0158	0.0000	342.4564
Waste						0.0000	0.0000		0.0000	0.0000	9.3376	0.0000	9.3376	0.5518	0.0000	23.1335
Water						0.0000	0.0000		0.0000	0.0000	2.0670	14.4383	16.5053	0.2130	5.1500e-003	23.3634
Total	**1.1266**	**0.9490**	**5.5068**	**0.0165**	**0.2434**	**0.6204**	**0.8639**	**0.0654**	**0.6202**	**0.6856**	**92.2591**	**618.0937**	**710.3528**	**1.1685**	**8.6500e-003**	**742.1417**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2018	8/28/2018	5	20	
2	Site Preparation	Site Preparation	8/29/2018	9/11/2018	5	10	
3	Grading	Grading	9/12/2018	10/23/2018	5	30	
4	Building Construction	Building Construction	10/24/2018	12/17/2019	5	300	
5	Paving	Paving	12/18/2019	1/14/2020	5	20	
6	Architectural Coating	Architectural Coating	1/15/2020	2/11/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 247,526; Residential Outdoor: 82,509; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	14.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	72.00	11.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1241	35.1241	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**		**0.0194**	**0.0194**		**0.0181**	**0.0181**	**0.0000**	**35.1241**	**35.1241**	**9.6800e-003**	**0.0000**	**35.3660**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1240	35.1240	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**		**0.0194**	**0.0194**		**0.0181**	**0.0181**	**0.0000**	**35.1240**	**35.1240**	**9.6800e-003**	**0.0000**	**35.3660**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

3.3 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3800**	**17.3800**	**5.4100e-003**	**0.0000**	**17.5152**

3.3 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.8000e-004	3.7800e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6546	0.6546	3.0000e-005	0.0000	0.6552
Total	**5.3000e-004**	**3.8000e-004**	**3.7800e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6546**	**0.6546**	**3.0000e-005**	**0.0000**	**0.6552**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3799**	**17.3799**	**5.4100e-003**	**0.0000**	**17.5152**

3.3 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.8000e-004	3.7800e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6546	0.6546	3.0000e-005	0.0000	0.6552
Total	**5.3000e-004**	**3.8000e-004**	**3.7800e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6546**	**0.6546**	**3.0000e-005**	**0.0000**	**0.6552**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9728	84.9728	0.0265	0.0000	85.6341
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9728**	**84.9728**	**0.0265**	**0.0000**	**85.6341**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.2500e-003	0.0126	2.0000e-005	2.3900e-003	2.0000e-005	2.4100e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1819	2.1819	9.0000e-005	0.0000	2.1841
Total	**1.7600e-003**	**1.2500e-003**	**0.0126**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1819**	**2.1819**	**9.0000e-005**	**0.0000**	**2.1841**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9727	84.9727	0.0265	0.0000	85.6340
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9727**	**84.9727**	**0.0265**	**0.0000**	**85.6340**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.2500e-003	0.0126	2.0000e-005	2.3900e-003	2.0000e-005	2.4100e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1819	2.1819	9.0000e-005	0.0000	2.1841
Total	**1.7600e-003**	**1.2500e-003**	**0.0126**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1819**	**2.1819**	**9.0000e-005**	**0.0000**	**2.1841**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0657	0.5731	0.4307	6.6000e-004		0.0368	0.0368		0.0345	0.0345	0.0000	58.2530	58.2530	0.0143	0.0000	58.6098
Total	**0.0657**	**0.5731**	**0.4307**	**6.6000e-004**		**0.0368**	**0.0368**		**0.0345**	**0.0345**	**0.0000**	**58.2530**	**58.2530**	**0.0143**	**0.0000**	**58.6098**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5500e-003	0.0384	8.7200e-003	8.0000e-005	1.7800e-003	3.4000e-004	2.1200e-003	5.1000e-004	3.3000e-004	8.4000e-004	0.0000	7.3394	7.3394	3.9000e-004	0.0000	7.3492
Worker	0.0103	7.3600e-003	0.0740	1.4000e-004	0.0141	1.1000e-004	0.0142	3.7400e-003	1.0000e-004	3.8400e-003	0.0000	12.8298	12.8298	5.1000e-004	0.0000	12.8426
Total	**0.0119**	**0.0457**	**0.0827**	**2.2000e-004**	**0.0158**	**4.5000e-004**	**0.0163**	**4.2500e-003**	**4.3000e-004**	**4.6800e-003**	**0.0000**	**20.1692**	**20.1692**	**9.0000e-004**	**0.0000**	**20.1918**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0657	0.5731	0.4307	6.6000e-004		0.0368	0.0368		0.0345	0.0345	0.0000	58.2529	58.2529	0.0143	0.0000	58.6097
Total	**0.0657**	**0.5731**	**0.4307**	**6.6000e-004**		**0.0368**	**0.0368**		**0.0345**	**0.0345**	**0.0000**	**58.2529**	**58.2529**	**0.0143**	**0.0000**	**58.6097**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5500e-003	0.0384	8.7200e-003	8.0000e-005	1.7800e-003	3.4000e-004	2.1200e-003	5.1000e-004	3.3000e-004	8.4000e-004	0.0000	7.3394	7.3394	3.9000e-004	0.0000	7.3492
Worker	0.0103	7.3600e-003	0.0740	1.4000e-004	0.0141	1.1000e-004	0.0142	3.7400e-003	1.0000e-004	3.8400e-003	0.0000	12.8298	12.8298	5.1000e-004	0.0000	12.8426
Total	**0.0119**	**0.0457**	**0.0827**	**2.2000e-004**	**0.0158**	**4.5000e-004**	**0.0163**	**4.2500e-003**	**4.3000e-004**	**4.6800e-003**	**0.0000**	**20.1692**	**20.1692**	**9.0000e-004**	**0.0000**	**20.1918**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2963	2.6454	2.1541	3.3800e-003		0.1619	0.1619		0.1522	0.1522	0.0000	295.0558	295.0558	0.0719	0.0000	296.8527
Total	**0.2963**	**2.6454**	**2.1541**	**3.3800e-003**		**0.1619**	**0.1619**		**0.1522**	**0.1522**	**0.0000**	**295.0558**	**295.0558**	**0.0719**	**0.0000**	**296.8527**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.9600e-003	0.1856	0.0395	3.9000e-004	9.1200e-003	1.4800e-003	0.0106	2.6400e-003	1.4200e-003	4.0600e-003	0.0000	37.3020	37.3020	1.8900e-003	0.0000	37.3493
Worker	0.0472	0.0326	0.3296	7.1000e-004	0.0720	5.3000e-004	0.0725	0.0191	4.9000e-004	0.0196	0.0000	63.7958	63.7958	2.2800e-003	0.0000	63.8527
Total	**0.0542**	**0.2182**	**0.3691**	**1.1000e-003**	**0.0811**	**2.0100e-003**	**0.0831**	**0.0218**	**1.9100e-003**	**0.0237**	**0.0000**	**101.0978**	**101.0978**	**4.1700e-003**	**0.0000**	**101.2020**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2963	2.6454	2.1541	3.3800e-003		0.1619	0.1619		0.1522	0.1522	0.0000	295.0554	295.0554	0.0719	0.0000	296.8524
Total	**0.2963**	**2.6454**	**2.1541**	**3.3800e-003**		**0.1619**	**0.1619**		**0.1522**	**0.1522**	**0.0000**	**295.0554**	**295.0554**	**0.0719**	**0.0000**	**296.8524**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.9600e-003	0.1856	0.0395	3.9000e-004	9.1200e-003	1.4800e-003	0.0106	2.6400e-003	1.4200e-003	4.0600e-003	0.0000	37.3020	37.3020	1.8900e-003	0.0000	37.3493
Worker	0.0472	0.0326	0.3296	7.1000e-004	0.0720	5.3000e-004	0.0725	0.0191	4.9000e-004	0.0196	0.0000	63.7958	63.7958	2.2800e-003	0.0000	63.8527
Total	**0.0542**	**0.2182**	**0.3691**	**1.1000e-003**	**0.0811**	**2.0100e-003**	**0.0831**	**0.0218**	**1.9100e-003**	**0.0237**	**0.0000**	**101.0978**	**101.0978**	**4.1700e-003**	**0.0000**	**101.2020**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.2700e-003	0.0762	0.0733	1.1000e-004		4.1200e-003	4.1200e-003		3.7900e-003	3.7900e-003	0.0000	10.2376	10.2376	3.2400e-003	0.0000	10.3186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.2700e-003**	**0.0762**	**0.0733**	**1.1000e-004**		**4.1200e-003**	**4.1200e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**10.2376**	**10.2376**	**3.2400e-003**	**0.0000**	**10.3186**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.7000e-004	2.7400e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5295	0.5295	2.0000e-005	0.0000	0.5300
Total	**3.9000e-004**	**2.7000e-004**	**2.7400e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5295**	**0.5295**	**2.0000e-005**	**0.0000**	**0.5300**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.2700e-003	0.0762	0.0733	1.1000e-004		4.1200e-003	4.1200e-003		3.7900e-003	3.7900e-003	0.0000	10.2376	10.2376	3.2400e-003	0.0000	10.3186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.2700e-003**	**0.0762**	**0.0733**	**1.1000e-004**		**4.1200e-003**	**4.1200e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**10.2376**	**10.2376**	**3.2400e-003**	**0.0000**	**10.3186**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.7000e-004	2.7400e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5295	0.5295	2.0000e-005	0.0000	0.5300
Total	**3.9000e-004**	**2.7000e-004**	**2.7400e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5295**	**0.5295**	**2.0000e-005**	**0.0000**	**0.5300**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

3.6 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.4000e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5132	0.5132	2.0000e-005	0.0000	0.5136
Total	**3.5000e-004**	**2.4000e-004**	**2.4000e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5132**	**0.5132**	**2.0000e-005**	**0.0000**	**0.5136**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

3.6 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.4000e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5132	0.5132	2.0000e-005	0.0000	0.5136
Total	**3.5000e-004**	**2.4000e-004**	**2.4000e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5132**	**0.5132**	**2.0000e-005**	**0.0000**	**0.5136**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1473					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.1497**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	4.4000e-004	4.4700e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1200e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9580	0.9580	3.0000e-005	0.0000	0.9588
Total	**6.6000e-004**	**4.4000e-004**	**4.4700e-003**	**1.0000e-005**	**1.1200e-003**	**1.0000e-005**	**1.1200e-003**	**3.0000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9580**	**0.9580**	**3.0000e-005**	**0.0000**	**0.9588**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1473					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.1497**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	4.4000e-004	4.4700e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1200e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9580	0.9580	3.0000e-005	0.0000	0.9588
Total	**6.6000e-004**	**4.4000e-004**	**4.4700e-003**	**1.0000e-005**	**1.1200e-003**	**1.0000e-005**	**1.1200e-003**	**3.0000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9580**	**0.9580**	**3.0000e-005**	**0.0000**	**0.9588**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0922	0.7774	1.0166	3.7000e-003	0.2434	4.2000e-003	0.2476	0.0654	3.9800e-003	0.0694	0.0000	342.0610	342.0610	0.0158	0.0000	342.4564
Unmitigated	0.0922	0.7774	1.0166	3.7000e-003	0.2434	4.2000e-003	0.2476	0.0654	3.9800e-003	0.0694	0.0000	342.0610	342.0610	0.0158	0.0000	342.4564

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Retirement Community	240.00	203.00	195.00	643,477	643,477
Total	240.00	203.00	195.00	643,477	643,477

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Retirement Community	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Retirement Community	0.506900	0.034567	0.171206	0.149208	0.024362	0.005798	0.021031	0.077362	0.001819	0.001371	0.004402	0.001155	0.000818

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	141.6233	141.6233	6.4000e-003	1.3200e-003	142.1782
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	141.6233	141.6233	6.4000e-003	1.3200e-003	142.1782
NaturalGas Mitigated	7.6200e-003	0.0651	0.0277	4.2000e-004		5.2700e-003	5.2700e-003		5.2700e-003	5.2700e-003	0.0000	75.4375	75.4375	1.4500e-003	1.3800e-003	75.8858
NaturalGas Unmitigated	7.6200e-003	0.0651	0.0277	4.2000e-004		5.2700e-003	5.2700e-003		5.2700e-003	5.2700e-003	0.0000	75.4375	75.4375	1.4500e-003	1.3800e-003	75.8858

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Retirement Community	1.41365e+006	7.6200e-003	0.0651	0.0277	4.2000e-004		5.2700e-003	5.2700e-003		5.2700e-003	5.2700e-003	0.0000	75.4375	75.4375	1.4500e-003	1.3800e-003	75.8858
Total		**7.6200e-003**	**0.0651**	**0.0277**	**4.2000e-004**		**5.2700e-003**	**5.2700e-003**		**5.2700e-003**	**5.2700e-003**	**0.0000**	**75.4375**	**75.4375**	**1.4500e-003**	**1.3800e-003**	**75.8858**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Retirement Community	1.41365e+006	7.6200e-003	0.0651	0.0277	4.2000e-004		5.2700e-003	5.2700e-003		5.2700e-003	5.2700e-003	0.0000	75.4375	75.4375	1.4500e-003	1.3800e-003	75.8858
Total		**7.6200e-003**	**0.0651**	**0.0277**	**4.2000e-004**		**5.2700e-003**	**5.2700e-003**		**5.2700e-003**	**5.2700e-003**	**0.0000**	**75.4375**	**75.4375**	**1.4500e-003**	**1.3800e-003**	**75.8858**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Retirement Community	486826	141.6233	6.4000e-003	1.3200e-003	142.1782
Total		**141.6233**	**6.4000e-003**	**1.3200e-003**	**142.1782**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Retirement Community	486826	141.6233	6.4000e-003	1.3200e-003	142.1782
Total		**141.6233**	**6.4000e-003**	**1.3200e-003**	**142.1782**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0268	0.1064	4.4624	0.0124		0.6110	0.6110		0.6110	0.6110	80.8545	44.5336	125.3881	0.3800	7.9000e-004	135.1245
Unmitigated	1.0268	0.1064	4.4624	0.0124		0.6110	0.6110		0.6110	0.6110	80.8545	44.5336	125.3881	0.3800	7.9000e-004	135.1245

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1147					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4774					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4120	0.0978	3.7175	0.0123		0.6069	0.6069		0.6069	0.6069	80.8545	43.3207	124.1752	0.3788	7.9000e-004	133.8821
Landscaping	0.0227	8.6200e-003	0.7450	4.0000e-005		4.1000e-003	4.1000e-003		4.1000e-003	4.1000e-003	0.0000	1.2129	1.2129	1.1800e-003	0.0000	1.2425
Total	**1.0268**	**0.1064**	**4.4624**	**0.0124**		**0.6110**	**0.6110**		**0.6110**	**0.6110**	**80.8545**	**44.5336**	**125.3881**	**0.3800**	**7.9000e-004**	**135.1245**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1147					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4774					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4120	0.0978	3.7175	0.0123		0.6069	0.6069		0.6069	0.6069	80.8545	43.3207	124.1752	0.3788	7.9000e-004	133.8821
Landscaping	0.0227	8.6200e-003	0.7450	4.0000e-005		4.1000e-003	4.1000e-003		4.1000e-003	4.1000e-003	0.0000	1.2129	1.2129	1.1800e-003	0.0000	1.2425
Total	**1.0268**	**0.1064**	**4.4624**	**0.0124**		**0.6110**	**0.6110**		**0.6110**	**0.6110**	**80.8545**	**44.5336**	**125.3881**	**0.3800**	**7.9000e-004**	**135.1245**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	16.5053	0.2130	5.1500e-003	23.3634
Unmitigated	16.5053	0.2130	5.1500e-003	23.3634

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Retirement Community	6.5154 / 4.10754	16.5053	0.2130	5.1500e-003	23.3634
Total		**16.5053**	**0.2130**	**5.1500e-003**	**23.3634**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Retirement Community	6.5154 / 4.10754	16.5053	0.2130	5.1500e-003	23.3634
Total		**16.5053**	**0.2130**	**5.1500e-003**	**23.3634**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	9.3376	0.5518	0.0000	23.1335
Unmitigated	9.3376	0.5518	0.0000	23.1335

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Retirement Community	46	9.3376	0.5518	0.0000	23.1335
Total		**9.3376**	**0.5518**	**0.0000**	**23.1335**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Retirement Community	46	9.3376	0.5518	0.0000	23.1335
Total		**9.3376**	**0.5518**	**0.0000**	**23.1335**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

GPA 2015-14, ZA 710, CUP 2015-13

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hotel	140.00	Room	4.64	24,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - According to project description

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	203,280.00	24,500.00
tblLandUse	LotAcreage	4.67	4.64

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.1661	1.5395	1.0452	1.7200e-003	0.0774	0.0893	0.1667	0.0399	0.0835	0.1234	0.0000	153.7663	153.7663	0.0383	0.0000	154.7238
2019	0.3726	1.7993	1.4931	2.4300e-003	9.7500e-003	0.1073	0.1171	2.6400e-003	0.1009	0.1035	0.0000	213.5349	213.5349	0.0496	0.0000	214.7746
Maximum	**0.3726**	**1.7993**	**1.4931**	**2.4300e-003**	**0.0774**	**0.1073**	**0.1667**	**0.0399**	**0.1009**	**0.1234**	**0.0000**	**213.5349**	**213.5349**	**0.0496**	**0.0000**	**214.7746**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.1661	1.5395	1.0452	1.7200e-003	0.0774	0.0893	0.1667	0.0399	0.0835	0.1234	0.0000	153.7661	153.7661	0.0383	0.0000	154.7236
2019	0.3726	1.7993	1.4931	2.4300e-003	9.7500e-003	0.1073	0.1171	2.6400e-003	0.1009	0.1035	0.0000	213.5346	213.5346	0.0496	0.0000	214.7744
Maximum	**0.3726**	**1.7993**	**1.4931**	**2.4300e-003**	**0.0774**	**0.1073**	**0.1667**	**0.0399**	**0.1009**	**0.1234**	**0.0000**	**213.5346**	**213.5346**	**0.0496**	**0.0000**	**214.7744**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	8-1-2018	10-31-2018	1.1237	1.1237
2	11-1-2018	1-31-2019	0.8500	0.8500
3	2-1-2019	4-30-2019	0.7657	0.7657
4	5-1-2019	7-31-2019	0.7913	0.7913
5	8-1-2019	9-30-2019	0.3446	0.3446
		Highest	1.1237	1.1237

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1128	1.0000e-005	1.3000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-003	2.5000e-003	1.0000e-005	0.0000	2.6700e-003
Energy	3.3200e-003	0.0302	0.0254	1.8000e-004		2.3000e-003	2.3000e-003		2.3000e-003	2.3000e-003	0.0000	89.4725	89.4725	3.1900e-003	1.1300e-003	89.8896
Mobile	0.4351	3.3161	4.1295	0.0130	0.7907	0.0179	0.8086	0.2126	0.0170	0.2296	0.0000	1,202.2945	1,202.2945	0.0686	0.0000	1,204.0106
Waste						0.0000	0.0000		0.0000	0.0000	15.5593	0.0000	15.5593	0.9195	0.0000	38.5474
Water						0.0000	0.0000		0.0000	0.0000	1.1267	5.9920	7.1187	0.1160	2.7900e-003	10.8495
Total	**0.5513**	**3.3463**	**4.1562**	**0.0132**	**0.7907**	**0.0202**	**0.8109**	**0.2126**	**0.0193**	**0.2319**	**16.6859**	**1,297.7615**	**1,314.4475**	**1.1074**	**3.9200e-003**	**1,343.2997**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1128	1.0000e-005	1.3000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-003	2.5000e-003	1.0000e-005	0.0000	2.6700e-003
Energy	3.3200e-003	0.0302	0.0254	1.8000e-004		2.3000e-003	2.3000e-003		2.3000e-003	2.3000e-003	0.0000	89.4725	89.4725	3.1900e-003	1.1300e-003	89.8896
Mobile	0.4351	3.3161	4.1295	0.0130	0.7907	0.0179	0.8086	0.2126	0.0170	0.2296	0.0000	1,202.2945	1,202.2945	0.0686	0.0000	1,204.0106
Waste						0.0000	0.0000		0.0000	0.0000	15.5593	0.0000	15.5593	0.9195	0.0000	38.5474
Water						0.0000	0.0000		0.0000	0.0000	1.1267	5.9920	7.1187	0.1160	2.7900e-003	10.8495
Total	**0.5513**	**3.3463**	**4.1562**	**0.0132**	**0.7907**	**0.0202**	**0.8109**	**0.2126**	**0.0193**	**0.2319**	**16.6859**	**1,297.7615**	**1,314.4475**	**1.1074**	**3.9200e-003**	**1,343.2997**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

GPA 2015-14, ZA 710, CUP 2015-13 - Tulare County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2018	8/28/2018	5	20	
2	Site Preparation	Site Preparation	8/29/2018	9/4/2018	5	5	
3	Grading	Grading	9/5/2018	9/14/2018	5	8	
4	Building Construction	Building Construction	9/15/2018	8/2/2019	5	230	
5	Paving	Paving	8/3/2019	8/28/2019	5	18	
6	Architectural Coating	Architectural Coating	8/29/2019	9/23/2019	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 36,750; Non-Residential Outdoor: 12,250; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1241	35.1241	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**		**0.0194**	**0.0194**		**0.0181**	**0.0181**	**0.0000**	**35.1241**	**35.1241**	**9.6800e-003**	**0.0000**	**35.3660**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1240	35.1240	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**		**0.0194**	**0.0194**		**0.0181**	**0.0181**	**0.0000**	**35.1240**	**35.1240**	**9.6800e-003**	**0.0000**	**35.3660**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

3.3 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0114	0.1205	0.0562	1.0000e-004		6.4400e-003	6.4400e-003		5.9300e-003	5.9300e-003	0.0000	8.6900	8.6900	2.7100e-003	0.0000	8.7576
Total	**0.0114**	**0.1205**	**0.0562**	**1.0000e-004**	**0.0452**	**6.4400e-003**	**0.0516**	**0.0248**	**5.9300e-003**	**0.0308**	**0.0000**	**8.6900**	**8.6900**	**2.7100e-003**	**0.0000**	**8.7576**

3.3 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.9000e-004	1.8900e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3273	0.3273	1.0000e-005	0.0000	0.3276
Total	**2.6000e-004**	**1.9000e-004**	**1.8900e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3273**	**0.3273**	**1.0000e-005**	**0.0000**	**0.3276**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0114	0.1205	0.0562	1.0000e-004		6.4400e-003	6.4400e-003		5.9300e-003	5.9300e-003	0.0000	8.6900	8.6900	2.7100e-003	0.0000	8.7576
Total	**0.0114**	**0.1205**	**0.0562**	**1.0000e-004**	**0.0452**	**6.4400e-003**	**0.0516**	**0.0248**	**5.9300e-003**	**0.0308**	**0.0000**	**8.6900**	**8.6900**	**2.7100e-003**	**0.0000**	**8.7576**

3.3 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.9000e-004	1.8900e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3273	0.3273	1.0000e-005	0.0000	0.3276
Total	**2.6000e-004**	**1.9000e-004**	**1.8900e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3273**	**0.3273**	**1.0000e-005**	**0.0000**	**0.3276**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0262	0.0000	0.0262	0.0135	0.0000	0.0135	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0111	0.1227	0.0663	1.2000e-004		6.2100e-003	6.2100e-003		5.7100e-003	5.7100e-003	0.0000	10.8428	10.8428	3.3800e-003	0.0000	10.9271
Total	**0.0111**	**0.1227**	**0.0663**	**1.2000e-004**	**0.0262**	**6.2100e-003**	**0.0324**	**0.0135**	**5.7100e-003**	**0.0192**	**0.0000**	**10.8428**	**10.8428**	**3.3800e-003**	**0.0000**	**10.9271**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.5000e-004	2.5200e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4364	0.4364	2.0000e-005	0.0000	0.4368
Total	**3.5000e-004**	**2.5000e-004**	**2.5200e-003**	**0.0000**	**4.8000e-004**	**0.0000**	**4.8000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4364**	**0.4364**	**2.0000e-005**	**0.0000**	**0.4368**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0262	0.0000	0.0262	0.0135	0.0000	0.0135	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0111	0.1227	0.0663	1.2000e-004		6.2100e-003	6.2100e-003		5.7100e-003	5.7100e-003	0.0000	10.8427	10.8427	3.3800e-003	0.0000	10.9271
Total	**0.0111**	**0.1227**	**0.0663**	**1.2000e-004**	**0.0262**	**6.2100e-003**	**0.0324**	**0.0135**	**5.7100e-003**	**0.0192**	**0.0000**	**10.8427**	**10.8427**	**3.3800e-003**	**0.0000**	**10.9271**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.5000e-004	2.5200e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4364	0.4364	2.0000e-005	0.0000	0.4368
Total	**3.5000e-004**	**2.5000e-004**	**2.5200e-003**	**0.0000**	**4.8000e-004**	**0.0000**	**4.8000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4364**	**0.4364**	**2.0000e-005**	**0.0000**	**0.4368**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1018	0.8888	0.6681	1.0200e-003		0.0570	0.0570		0.0536	0.0536	0.0000	90.3516	90.3516	0.0221	0.0000	90.9050
Total	**0.1018**	**0.8888**	**0.6681**	**1.0200e-003**		**0.0570**	**0.0570**		**0.0536**	**0.0536**	**0.0000**	**90.3516**	**90.3516**	**0.0221**	**0.0000**	**90.9050**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.7000e-004	0.0216	4.9200e-003	4.0000e-005	1.0000e-003	1.9000e-004	1.2000e-003	2.9000e-004	1.9000e-004	4.8000e-004	0.0000	4.1395	4.1395	2.2000e-004	0.0000	4.1450
Worker	2.2300e-003	1.5800e-003	0.0159	3.0000e-005	3.0300e-003	2.0000e-005	3.0500e-003	8.0000e-004	2.0000e-005	8.3000e-004	0.0000	2.7638	2.7638	1.1000e-004	0.0000	2.7665
Total	**3.1000e-003**	**0.0232**	**0.0209**	**7.0000e-005**	**4.0300e-003**	**2.1000e-004**	**4.2500e-003**	**1.0900e-003**	**2.1000e-004**	**1.3100e-003**	**0.0000**	**6.9033**	**6.9033**	**3.3000e-004**	**0.0000**	**6.9116**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1018	0.8888	0.6681	1.0200e-003		0.0570	0.0570		0.0536	0.0536	0.0000	90.3514	90.3514	0.0221	0.0000	90.9048
Total	**0.1018**	**0.8888**	**0.6681**	**1.0200e-003**		**0.0570**	**0.0570**		**0.0536**	**0.0536**	**0.0000**	**90.3514**	**90.3514**	**0.0221**	**0.0000**	**90.9048**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.7000e-004	0.0216	4.9200e-003	4.0000e-005	1.0000e-003	1.9000e-004	1.2000e-003	2.9000e-004	1.9000e-004	4.8000e-004	0.0000	4.1395	4.1395	2.2000e-004	0.0000	4.1450
Worker	2.2300e-003	1.5800e-003	0.0159	3.0000e-005	3.0300e-003	2.0000e-005	3.0500e-003	8.0000e-004	2.0000e-005	8.3000e-004	0.0000	2.7638	2.7638	1.1000e-004	0.0000	2.7665
Total	**3.1000e-003**	**0.0232**	**0.0209**	**7.0000e-005**	**4.0300e-003**	**2.1000e-004**	**4.2500e-003**	**1.0900e-003**	**2.1000e-004**	**1.3100e-003**	**0.0000**	**6.9033**	**6.9033**	**3.3000e-004**	**0.0000**	**6.9116**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1818	1.6231	1.3216	2.0700e-003		0.0993	0.0993		0.0934	0.0934	0.0000	181.0302	181.0302	0.0441	0.0000	182.1328
Total	**0.1818**	**1.6231**	**1.3216**	**2.0700e-003**		**0.0993**	**0.0993**		**0.0934**	**0.0934**	**0.0000**	**181.0302**	**181.0302**	**0.0441**	**0.0000**	**182.1328**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5500e-003	0.0414	8.8000e-003	9.0000e-005	2.0400e-003	3.3000e-004	2.3700e-003	5.9000e-004	3.2000e-004	9.1000e-004	0.0000	8.3224	8.3224	4.2000e-004	0.0000	8.3329
Worker	4.0300e-003	2.7800e-003	0.0281	6.0000e-005	6.1300e-003	5.0000e-005	6.1800e-003	1.6300e-003	4.0000e-005	1.6700e-003	0.0000	5.4363	5.4363	1.9000e-004	0.0000	5.4412
Total	**5.5800e-003**	**0.0442**	**0.0369**	**1.5000e-004**	**8.1700e-003**	**3.8000e-004**	**8.5500e-003**	**2.2200e-003**	**3.6000e-004**	**2.5800e-003**	**0.0000**	**13.7587**	**13.7587**	**6.1000e-004**	**0.0000**	**13.7741**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1818	1.6231	1.3216	2.0700e-003		0.0993	0.0993		0.0934	0.0934	0.0000	181.0300	181.0300	0.0441	0.0000	182.1325
Total	**0.1818**	**1.6231**	**1.3216**	**2.0700e-003**		**0.0993**	**0.0993**		**0.0934**	**0.0934**	**0.0000**	**181.0300**	**181.0300**	**0.0441**	**0.0000**	**182.1325**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5500e-003	0.0414	8.8000e-003	9.0000e-005	2.0400e-003	3.3000e-004	2.3700e-003	5.9000e-004	3.2000e-004	9.1000e-004	0.0000	8.3224	8.3224	4.2000e-004	0.0000	8.3329
Worker	4.0300e-003	2.7800e-003	0.0281	6.0000e-005	6.1300e-003	5.0000e-005	6.1800e-003	1.6300e-003	4.0000e-005	1.6700e-003	0.0000	5.4363	5.4363	1.9000e-004	0.0000	5.4412
Total	**5.5800e-003**	**0.0442**	**0.0369**	**1.5000e-004**	**8.1700e-003**	**3.8000e-004**	**8.5500e-003**	**2.2200e-003**	**3.6000e-004**	**2.5800e-003**	**0.0000**	**13.7587**	**13.7587**	**6.1000e-004**	**0.0000**	**13.7741**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0114	0.1148	0.1108	1.7000e-004		6.4800e-003	6.4800e-003		5.9700e-003	5.9700e-003	0.0000	15.0501	15.0501	4.6300e-003	0.0000	15.1658
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0114**	**0.1148**	**0.1108**	**1.7000e-004**		**6.4800e-003**	**6.4800e-003**		**5.9700e-003**	**5.9700e-003**	**0.0000**	**15.0501**	**15.0501**	**4.6300e-003**	**0.0000**	**15.1658**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.4000e-004	6.5000e-004	6.5700e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2708	1.2708	5.0000e-005	0.0000	1.2720
Total	**9.4000e-004**	**6.5000e-004**	**6.5700e-003**	**1.0000e-005**	**1.4300e-003**	**1.0000e-005**	**1.4400e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2708**	**1.2708**	**5.0000e-005**	**0.0000**	**1.2720**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0114	0.1148	0.1108	1.7000e-004		6.4800e-003	6.4800e-003		5.9700e-003	5.9700e-003	0.0000	15.0501	15.0501	4.6300e-003	0.0000	15.1658
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0114**	**0.1148**	**0.1108**	**1.7000e-004**		**6.4800e-003**	**6.4800e-003**		**5.9700e-003**	**5.9700e-003**	**0.0000**	**15.0501**	**15.0501**	**4.6300e-003**	**0.0000**	**15.1658**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.4000e-004	6.5000e-004	6.5700e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2708	1.2708	5.0000e-005	0.0000	1.2720
Total	**9.4000e-004**	**6.5000e-004**	**6.5700e-003**	**1.0000e-005**	**1.4300e-003**	**1.0000e-005**	**1.4400e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2708**	**1.2708**	**5.0000e-005**	**0.0000**	**1.2720**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1703					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4000e-003	0.0165	0.0166	3.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	2.2979	2.2979	1.9000e-004	0.0000	2.3028
Total	**0.1727**	**0.0165**	**0.0166**	**3.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**	**0.0000**	**2.2979**	**2.2979**	**1.9000e-004**	**0.0000**	**2.3028**

3.7 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	6.0000e-005	6.6000e-004	0.0000	1.4000e-004	0.0000	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1271	0.1271	0.0000	0.0000	0.1272
Total	**9.0000e-005**	**6.0000e-005**	**6.6000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1271**	**0.1271**	**0.0000**	**0.0000**	**0.1272**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1703					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4000e-003	0.0165	0.0166	3.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	2.2979	2.2979	1.9000e-004	0.0000	2.3028
Total	**0.1727**	**0.0165**	**0.0166**	**3.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**	**0.0000**	**2.2979**	**2.2979**	**1.9000e-004**	**0.0000**	**2.3028**

3.7 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	6.0000e-005	6.6000e-004	0.0000	1.4000e-004	0.0000	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1271	0.1271	0.0000	0.0000	0.1272
Total	**9.0000e-005**	**6.0000e-005**	**6.6000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1271**	**0.1271**	**0.0000**	**0.0000**	**0.1272**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4351	3.3161	4.1295	0.0130	0.7907	0.0179	0.8086	0.2126	0.0170	0.2296	0.0000	1,202.2945	1,202.2945	0.0686	0.0000	1,204.0106
Unmitigated	0.4351	3.3161	4.1295	0.0130	0.7907	0.0179	0.8086	0.2126	0.0170	0.2296	0.0000	1,202.2945	1,202.2945	0.0686	0.0000	1,204.0106

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Hotel	1,143.80	1,146.60	833.00	2,089,544	2,089,544
Total	1,143.80	1,146.60	833.00	2,089,544	2,089,544

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Hotel	9.50	7.30	7.30	19.40	61.60	19.00	58	38	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Hotel	0.496227	0.035864	0.170091	0.158035	0.026569	0.006201	0.020975	0.076251	0.001816	0.001427	0.004483	0.001181	0.000880

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	56.5910	56.5910	2.5600e-003	5.3000e-004	56.8128
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	56.5910	56.5910	2.5600e-003	5.3000e-004	56.8128
NaturalGas Mitigated	3.3200e-003	0.0302	0.0254	1.8000e-004		2.3000e-003	2.3000e-003		2.3000e-003	2.3000e-003	0.0000	32.8814	32.8814	6.3000e-004	6.0000e-004	33.0768
NaturalGas Unmitigated	3.3200e-003	0.0302	0.0254	1.8000e-004		2.3000e-003	2.3000e-003		2.3000e-003	2.3000e-003	0.0000	32.8814	32.8814	6.3000e-004	6.0000e-004	33.0768

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Hotel	616175	3.3200e-003	0.0302	0.0254	1.8000e-004		2.3000e-003	2.3000e-003		2.3000e-003	2.3000e-003	0.0000	32.8814	32.8814	6.3000e-004	6.0000e-004	33.0768
Total		**3.3200e-003**	**0.0302**	**0.0254**	**1.8000e-004**		**2.3000e-003**	**2.3000e-003**		**2.3000e-003**	**2.3000e-003**	**0.0000**	**32.8814**	**32.8814**	**6.3000e-004**	**6.0000e-004**	**33.0768**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Hotel	616175	3.3200e-003	0.0302	0.0254	1.8000e-004		2.3000e-003	2.3000e-003		2.3000e-003	2.3000e-003	0.0000	32.8814	32.8814	6.3000e-004	6.0000e-004	33.0768
Total		**3.3200e-003**	**0.0302**	**0.0254**	**1.8000e-004**		**2.3000e-003**	**2.3000e-003**		**2.3000e-003**	**2.3000e-003**	**0.0000**	**32.8814**	**32.8814**	**6.3000e-004**	**6.0000e-004**	**33.0768**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Hotel	194530	56.5910	2.5600e-003	5.3000e-004	56.8128
Total		**56.5910**	**2.5600e-003**	**5.3000e-004**	**56.8128**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Hotel	194530	56.5910	2.5600e-003	5.3000e-004	56.8128
Total		**56.5910**	**2.5600e-003**	**5.3000e-004**	**56.8128**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1128	1.0000e-005	1.3000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-003	2.5000e-003	1.0000e-005	0.0000	2.6700e-003
Unmitigated	0.1128	1.0000e-005	1.3000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-003	2.5000e-003	1.0000e-005	0.0000	2.6700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0170					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0957					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2000e-004	1.0000e-005	1.3000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-003	2.5000e-003	1.0000e-005	0.0000	2.6700e-003
Total	**0.1128**	**1.0000e-005**	**1.3000e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.5000e-003**	**2.5000e-003**	**1.0000e-005**	**0.0000**	**2.6700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0170					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0957					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2000e-004	1.0000e-005	1.3000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-003	2.5000e-003	1.0000e-005	0.0000	2.6700e-003
Total	**0.1128**	**1.0000e-005**	**1.3000e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.5000e-003**	**2.5000e-003**	**1.0000e-005**	**0.0000**	**2.6700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.1187	0.1160	2.7900e-003	10.8495
Unmitigated	7.1187	0.1160	2.7900e-003	10.8495

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Hotel	3.55135 / 0.394594	7.1187	0.1160	2.7900e-003	10.8495
Total		**7.1187**	**0.1160**	**2.7900e-003**	**10.8495**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Hotel	3.55135 / 0.394594	7.1187	0.1160	2.7900e-003	10.8495
Total		**7.1187**	**0.1160**	**2.7900e-003**	**10.8495**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	15.5593	0.9195	0.0000	38.5474
Unmitigated	15.5593	0.9195	0.0000	38.5474

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Hotel	76.65	15.5593	0.9195	0.0000	38.5474
Total		**15.5593**	**0.9195**	**0.0000**	**38.5474**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Hotel	76.65	15.5593	0.9195	0.0000	38.5474
Total		**15.5593**	**0.9195**	**0.0000**	**38.5474**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Kensington Estaes TSM

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	134.00	Dwelling Unit	28.60	241,200.00	383

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - According to project description

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	43.51	28.60

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2422	2.5787	1.5250	2.6700e-003	0.3860	0.1248	0.5108	0.1829	0.1154	0.2983	0.0000	242.8800	242.8800	0.0696	0.0000	244.6196
2019	0.3501	3.0190	2.5206	4.5200e-003	0.0620	0.1707	0.2326	0.0168	0.1605	0.1772	0.0000	400.4026	400.4026	0.0788	0.0000	402.3733
2020	2.4921	2.0132	1.8470	3.3300e-003	0.0427	0.1083	0.1510	0.0115	0.1017	0.1132	0.0000	291.6651	291.6651	0.0607	0.0000	293.1821
Maximum	**2.4921**	**3.0190**	**2.5206**	**4.5200e-003**	**0.3860**	**0.1707**	**0.5108**	**0.1829**	**0.1605**	**0.2983**	**0.0000**	**400.4026**	**400.4026**	**0.0788**	**0.0000**	**402.3733**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2422	2.5787	1.5250	2.6700e-003	0.3860	0.1248	0.5108	0.1829	0.1154	0.2983	0.0000	242.8798	242.8798	0.0696	0.0000	244.6193
2019	0.3501	3.0190	2.5206	4.5200e-003	0.0620	0.1707	0.2326	0.0168	0.1605	0.1772	0.0000	400.4023	400.4023	0.0788	0.0000	402.3729
2020	2.4921	2.0132	1.8470	3.3300e-003	0.0427	0.1083	0.1510	0.0115	0.1017	0.1132	0.0000	291.6649	291.6649	0.0607	0.0000	293.1818
Maximum	**2.4921**	**3.0190**	**2.5206**	**4.5200e-003**	**0.3860**	**0.1707**	**0.5108**	**0.1829**	**0.1605**	**0.2983**	**0.0000**	**400.4023**	**400.4023**	**0.0788**	**0.0000**	**402.3729**

Kensington Estaes TSM - Tulare County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**8-1-2018**	**10-31-2018**	1.6719	1.6719
2	**11-1-2018**	**1-31-2019**	1.4402	1.4402
3	**2-1-2019**	**4-30-2019**	0.8212	0.8212
4	**5-1-2019**	**7-31-2019**	0.8480	0.8480
5	**8-1-2019**	**10-31-2019**	0.8484	0.8484
6	**11-1-2019**	**1-31-2020**	0.8230	0.8230
7	**2-1-2020**	**4-30-2020**	0.7542	0.7542
8	**5-1-2020**	**7-31-2020**	0.7703	0.7703
9	**8-1-2020**	**9-30-2020**	0.3895	0.3895
		Highest	1.6719	1.6719

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.7875	0.1480	6.3128	0.0176		0.8730	0.8730		0.8730	0.8730	115.6219	59.6751	175.2969	0.5432	1.0600e-003	189.1942
Energy	0.0189	0.1614	0.0687	1.0300e-003		0.0131	0.0131		0.0131	0.0131	0.0000	528.4705	528.4705	0.0190	6.6200e-003	530.9196
Mobile	0.5110	4.3109	5.6373	0.0205	1.3498	0.0233	1.3731	0.3628	0.0221	0.3849	0.0000	1,896.8374	1,896.8374	0.0877	0.0000	1,899.0298
Waste						0.0000	0.0000		0.0000	0.0000	27.9884	0.0000	27.9884	1.6541	0.0000	69.3401
Water						0.0000	0.0000		0.0000	0.0000	2.7698	19.3473	22.1171	0.2854	6.9000e-003	31.3069
Total	**2.3174**	**4.6204**	**12.0188**	**0.0392**	**1.3498**	**0.9094**	**2.2592**	**0.3628**	**0.9081**	**1.2710**	**146.3801**	**2,504.3302**	**2,650.7103**	**2.5894**	**0.0146**	**2,719.7906**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.7875	0.1480	6.3128	0.0176		0.8730	0.8730		0.8730	0.8730	115.6219	59.6751	175.2969	0.5432	1.0600e-003	189.1942
Energy	0.0189	0.1614	0.0687	1.0300e-003		0.0131	0.0131		0.0131	0.0131	0.0000	528.4705	528.4705	0.0190	6.6200e-003	530.9196
Mobile	0.5110	4.3109	5.6373	0.0205	1.3498	0.0233	1.3731	0.3628	0.0221	0.3849	0.0000	1,896.8374	1,896.8374	0.0877	0.0000	1,899.0298
Waste						0.0000	0.0000		0.0000	0.0000	27.9884	0.0000	27.9884	1.6541	0.0000	69.3401
Water						0.0000	0.0000		0.0000	0.0000	2.7698	19.3473	22.1171	0.2854	6.9000e-003	31.3069
Total	**2.3174**	**4.6204**	**12.0188**	**0.0392**	**1.3498**	**0.9094**	**2.2592**	**0.3628**	**0.9081**	**1.2710**	**146.3801**	**2,504.3302**	**2,650.7103**	**2.5894**	**0.0146**	**2,719.7906**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2018	9/11/2018	5	30	
2	Site Preparation	Site Preparation	9/12/2018	10/9/2018	5	20	
3	Grading	Grading	10/10/2018	12/11/2018	5	45	
4	Building Construction	Building Construction	12/12/2018	8/18/2020	5	440	
5	Paving	Paving	8/19/2020	10/6/2020	5	35	
6	Architectural Coating	Architectural Coating	10/7/2020	11/24/2020	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 488,430; Residential Outdoor: 162,810; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Kensington Estaes TSM - Tulare County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	48.00	14.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0558	0.5748	0.3346	5.8000e-004		0.0291	0.0291		0.0271	0.0271	0.0000	52.6861	52.6861	0.0145	0.0000	53.0490
Total	**0.0558**	**0.5748**	**0.3346**	**5.8000e-004**		**0.0291**	**0.0291**		**0.0271**	**0.0271**	**0.0000**	**52.6861**	**52.6861**	**0.0145**	**0.0000**	**53.0490**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3200e-003	9.4000e-004	9.4400e-003	2.0000e-005	1.7900e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.6365	1.6365	7.0000e-005	0.0000	1.6381
Total	**1.3200e-003**	**9.4000e-004**	**9.4400e-003**	**2.0000e-005**	**1.7900e-003**	**1.0000e-005**	**1.8100e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.6365**	**1.6365**	**7.0000e-005**	**0.0000**	**1.6381**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0558	0.5748	0.3346	5.8000e-004		0.0291	0.0291		0.0271	0.0271	0.0000	52.6861	52.6861	0.0145	0.0000	53.0489
Total	**0.0558**	**0.5748**	**0.3346**	**5.8000e-004**		**0.0291**	**0.0291**		**0.0271**	**0.0271**	**0.0000**	**52.6861**	**52.6861**	**0.0145**	**0.0000**	**53.0489**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3200e-003	9.4000e-004	9.4400e-003	2.0000e-005	1.7900e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.6365	1.6365	7.0000e-005	0.0000	1.6381
Total	**1.3200e-003**	**9.4000e-004**	**9.4400e-003**	**2.0000e-005**	**1.7900e-003**	**1.0000e-005**	**1.8100e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.6365**	**1.6365**	**7.0000e-005**	**0.0000**	**1.6381**

3.3 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0456	0.4820	0.2248	3.8000e-004		0.0258	0.0258		0.0237	0.0237	0.0000	34.7599	34.7599	0.0108	0.0000	35.0304
Total	**0.0456**	**0.4820**	**0.2248**	**3.8000e-004**	**0.1807**	**0.0258**	**0.2064**	**0.0993**	**0.0237**	**0.1230**	**0.0000**	**34.7599**	**34.7599**	**0.0108**	**0.0000**	**35.0304**

3.3 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	7.5000e-004	7.5500e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3092	1.3092	5.0000e-005	0.0000	1.3105
Total	**1.0600e-003**	**7.5000e-004**	**7.5500e-003**	**1.0000e-005**	**1.4300e-003**	**1.0000e-005**	**1.4400e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.3092**	**1.3092**	**5.0000e-005**	**0.0000**	**1.3105**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0456	0.4820	0.2248	3.8000e-004		0.0258	0.0258		0.0237	0.0237	0.0000	34.7599	34.7599	0.0108	0.0000	35.0304
Total	**0.0456**	**0.4820**	**0.2248**	**3.8000e-004**	**0.1807**	**0.0258**	**0.2064**	**0.0993**	**0.0237**	**0.1230**	**0.0000**	**34.7599**	**34.7599**	**0.0108**	**0.0000**	**35.0304**

3.3 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	7.5000e-004	7.5500e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3092	1.3092	5.0000e-005	0.0000	1.3105
Total	**1.0600e-003**	**7.5000e-004**	**7.5500e-003**	**1.0000e-005**	**1.4300e-003**	**1.0000e-005**	**1.4400e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.3092**	**1.3092**	**5.0000e-005**	**0.0000**	**1.3105**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1952	0.0000	0.1952	0.0809	0.0000	0.0809	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1145	1.3392	0.7895	1.4000e-003		0.0593	0.0593		0.0545	0.0545	0.0000	127.4591	127.4591	0.0397	0.0000	128.4511
Total	**0.1145**	**1.3392**	**0.7895**	**1.4000e-003**	**0.1952**	**0.0593**	**0.2544**	**0.0809**	**0.0545**	**0.1354**	**0.0000**	**127.4591**	**127.4591**	**0.0397**	**0.0000**	**128.4511**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6400e-003	1.8800e-003	0.0189	4.0000e-005	3.5800e-003	3.0000e-005	3.6100e-003	9.5000e-004	3.0000e-005	9.8000e-004	0.0000	3.2729	3.2729	1.3000e-004	0.0000	3.2762
Total	**2.6400e-003**	**1.8800e-003**	**0.0189**	**4.0000e-005**	**3.5800e-003**	**3.0000e-005**	**3.6100e-003**	**9.5000e-004**	**3.0000e-005**	**9.8000e-004**	**0.0000**	**3.2729**	**3.2729**	**1.3000e-004**	**0.0000**	**3.2762**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1952	0.0000	0.1952	0.0809	0.0000	0.0809	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1145	1.3392	0.7895	1.4000e-003		0.0593	0.0593		0.0545	0.0545	0.0000	127.4590	127.4590	0.0397	0.0000	128.4510
Total	**0.1145**	**1.3392**	**0.7895**	**1.4000e-003**	**0.1952**	**0.0593**	**0.2544**	**0.0809**	**0.0545**	**0.1354**	**0.0000**	**127.4590**	**127.4590**	**0.0397**	**0.0000**	**128.4510**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6400e-003	1.8800e-003	0.0189	4.0000e-005	3.5800e-003	3.0000e-005	3.6100e-003	9.5000e-004	3.0000e-005	9.8000e-004	0.0000	3.2729	3.2729	1.3000e-004	0.0000	3.2762
Total	**2.6400e-003**	**1.8800e-003**	**0.0189**	**4.0000e-005**	**3.5800e-003**	**3.0000e-005**	**3.6100e-003**	**9.5000e-004**	**3.0000e-005**	**9.8000e-004**	**0.0000**	**3.2729**	**3.2729**	**1.3000e-004**	**0.0000**	**3.2762**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0188	0.1637	0.1231	1.9000e-004		0.0105	0.0105		9.8700e-003	9.8700e-003	0.0000	16.6437	16.6437	4.0800e-003	0.0000	16.7457
Total	**0.0188**	**0.1637**	**0.1231**	**1.9000e-004**		**0.0105**	**0.0105**		**9.8700e-003**	**9.8700e-003**	**0.0000**	**16.6437**	**16.6437**	**4.0800e-003**	**0.0000**	**16.7457**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.6000e-004	0.0140	3.1700e-003	3.0000e-005	6.5000e-004	1.2000e-004	7.7000e-004	1.9000e-004	1.2000e-004	3.1000e-004	0.0000	2.6689	2.6689	1.4000e-004	0.0000	2.6725
Worker	1.9700e-003	1.4000e-003	0.0141	3.0000e-005	2.6800e-003	2.0000e-005	2.7000e-003	7.1000e-004	2.0000e-005	7.3000e-004	0.0000	2.4438	2.4438	1.0000e-004	0.0000	2.4462
Total	**2.5300e-003**	**0.0154**	**0.0173**	**6.0000e-005**	**3.3300e-003**	**1.4000e-004**	**3.4700e-003**	**9.0000e-004**	**1.4000e-004**	**1.0400e-003**	**0.0000**	**5.1126**	**5.1126**	**2.4000e-004**	**0.0000**	**5.1187**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0188	0.1637	0.1231	1.9000e-004		0.0105	0.0105		9.8700e-003	9.8700e-003	0.0000	16.6437	16.6437	4.0800e-003	0.0000	16.7456
Total	**0.0188**	**0.1637**	**0.1231**	**1.9000e-004**		**0.0105**	**0.0105**		**9.8700e-003**	**9.8700e-003**	**0.0000**	**16.6437**	**16.6437**	**4.0800e-003**	**0.0000**	**16.7456**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.6000e-004	0.0140	3.1700e-003	3.0000e-005	6.5000e-004	1.2000e-004	7.7000e-004	1.9000e-004	1.2000e-004	3.1000e-004	0.0000	2.6689	2.6689	1.4000e-004	0.0000	2.6725
Worker	1.9700e-003	1.4000e-003	0.0141	3.0000e-005	2.6800e-003	2.0000e-005	2.7000e-003	7.1000e-004	2.0000e-005	7.3000e-004	0.0000	2.4438	2.4438	1.0000e-004	0.0000	2.4462
Total	**2.5300e-003**	**0.0154**	**0.0173**	**6.0000e-005**	**3.3300e-003**	**1.4000e-004**	**3.4700e-003**	**9.0000e-004**	**1.4000e-004**	**1.0400e-003**	**0.0000**	**5.1126**	**5.1126**	**2.4000e-004**	**0.0000**	**5.1187**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3081	2.7508	2.2399	3.5100e-003		0.1683	0.1683		0.1583	0.1583	0.0000	306.8110	306.8110	0.0747	0.0000	308.6795
Total	**0.3081**	**2.7508**	**2.2399**	**3.5100e-003**		**0.1683**	**0.1683**		**0.1583**	**0.1583**	**0.0000**	**306.8110**	**306.8110**	**0.0747**	**0.0000**	**308.6795**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.2100e-003	0.2457	0.0522	5.2000e-004	0.0121	1.9600e-003	0.0140	3.4900e-003	1.8800e-003	5.3700e-003	0.0000	49.3667	49.3667	2.5000e-003	0.0000	49.4293
Worker	0.0328	0.0226	0.2285	4.9000e-004	0.0499	3.7000e-004	0.0503	0.0133	3.4000e-004	0.0136	0.0000	44.2250	44.2250	1.5800e-003	0.0000	44.2645
Total	**0.0420**	**0.2683**	**0.2808**	**1.0100e-003**	**0.0620**	**2.3300e-003**	**0.0643**	**0.0168**	**2.2200e-003**	**0.0190**	**0.0000**	**93.5917**	**93.5917**	**4.0800e-003**	**0.0000**	**93.6937**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3081	2.7508	2.2399	3.5100e-003		0.1683	0.1683		0.1583	0.1583	0.0000	306.8106	306.8106	0.0747	0.0000	308.6792
Total	**0.3081**	**2.7508**	**2.2399**	**3.5100e-003**		**0.1683**	**0.1683**		**0.1583**	**0.1583**	**0.0000**	**306.8106**	**306.8106**	**0.0747**	**0.0000**	**308.6792**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.2100e-003	0.2457	0.0522	5.2000e-004	0.0121	1.9600e-003	0.0140	3.4900e-003	1.8800e-003	5.3700e-003	0.0000	49.3667	49.3667	2.5000e-003	0.0000	49.4293
Worker	0.0328	0.0226	0.2285	4.9000e-004	0.0499	3.7000e-004	0.0503	0.0133	3.4000e-004	0.0136	0.0000	44.2250	44.2250	1.5800e-003	0.0000	44.2645
Total	**0.0420**	**0.2683**	**0.2808**	**1.0100e-003**	**0.0620**	**2.3300e-003**	**0.0643**	**0.0168**	**2.2200e-003**	**0.0190**	**0.0000**	**93.5917**	**93.5917**	**4.0800e-003**	**0.0000**	**93.6937**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1749	1.5829	1.3900	2.2200e-003		0.0922	0.0922		0.0867	0.0867	0.0000	191.0782	191.0782	0.0466	0.0000	192.2436
Total	**0.1749**	**1.5829**	**1.3900**	**2.2200e-003**		**0.0922**	**0.0922**		**0.0867**	**0.0867**	**0.0000**	**191.0782**	**191.0782**	**0.0466**	**0.0000**	**192.2436**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5900e-003	0.1410	0.0280	3.3000e-004	7.6300e-003	8.0000e-004	8.4300e-003	2.2100e-003	7.6000e-004	2.9700e-003	0.0000	30.9780	30.9780	1.4300e-003	0.0000	31.0139
Worker	0.0187	0.0124	0.1266	3.0000e-004	0.0315	2.2000e-004	0.0318	8.3900e-003	2.0000e-004	8.5900e-003	0.0000	27.0976	27.0976	8.5000e-004	0.0000	27.1189
Total	**0.0233**	**0.1534**	**0.1546**	**6.3000e-004**	**0.0392**	**1.0200e-003**	**0.0402**	**0.0106**	**9.6000e-004**	**0.0116**	**0.0000**	**58.0756**	**58.0756**	**2.2800e-003**	**0.0000**	**58.1327**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1749	1.5829	1.3900	2.2200e-003		0.0922	0.0922		0.0867	0.0867	0.0000	191.0780	191.0780	0.0466	0.0000	192.2434
Total	**0.1749**	**1.5829**	**1.3900**	**2.2200e-003**		**0.0922**	**0.0922**		**0.0867**	**0.0867**	**0.0000**	**191.0780**	**191.0780**	**0.0466**	**0.0000**	**192.2434**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5900e-003	0.1410	0.0280	3.3000e-004	7.6300e-003	8.0000e-004	8.4300e-003	2.2100e-003	7.6000e-004	2.9700e-003	0.0000	30.9780	30.9780	1.4300e-003	0.0000	31.0139
Worker	0.0187	0.0124	0.1266	3.0000e-004	0.0315	2.2000e-004	0.0318	8.3900e-003	2.0000e-004	8.5900e-003	0.0000	27.0976	27.0976	8.5000e-004	0.0000	27.1189
Total	**0.0233**	**0.1534**	**0.1546**	**6.3000e-004**	**0.0392**	**1.0200e-003**	**0.0402**	**0.0106**	**9.6000e-004**	**0.0116**	**0.0000**	**58.0756**	**58.0756**	**2.2800e-003**	**0.0000**	**58.1327**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0237	0.2462	0.2564	4.0000e-004		0.0132	0.0132		0.0121	0.0121	0.0000	35.0494	35.0494	0.0113	0.0000	35.3328
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0237**	**0.2462**	**0.2564**	**4.0000e-004**		**0.0132**	**0.0132**		**0.0121**	**0.0121**	**0.0000**	**35.0494**	**35.0494**	**0.0113**	**0.0000**	**35.3328**

3.6 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	8.2000e-004	8.3900e-003	2.0000e-005	2.0900e-003	1.0000e-005	2.1100e-003	5.6000e-004	1.0000e-005	5.7000e-004	0.0000	1.7962	1.7962	6.0000e-005	0.0000	1.7977
Total	**1.2400e-003**	**8.2000e-004**	**8.3900e-003**	**2.0000e-005**	**2.0900e-003**	**1.0000e-005**	**2.1100e-003**	**5.6000e-004**	**1.0000e-005**	**5.7000e-004**	**0.0000**	**1.7962**	**1.7962**	**6.0000e-005**	**0.0000**	**1.7977**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0237	0.2462	0.2564	4.0000e-004		0.0132	0.0132		0.0121	0.0121	0.0000	35.0493	35.0493	0.0113	0.0000	35.3327
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0237**	**0.2462**	**0.2564**	**4.0000e-004**		**0.0132**	**0.0132**		**0.0121**	**0.0121**	**0.0000**	**35.0493**	**35.0493**	**0.0113**	**0.0000**	**35.3327**

3.6 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	8.2000e-004	8.3900e-003	2.0000e-005	2.0900e-003	1.0000e-005	2.1100e-003	5.6000e-004	1.0000e-005	5.7000e-004	0.0000	1.7962	1.7962	6.0000e-005	0.0000	1.7977
Total	**1.2400e-003**	**8.2000e-004**	**8.3900e-003**	**2.0000e-005**	**2.0900e-003**	**1.0000e-005**	**2.1100e-003**	**5.6000e-004**	**1.0000e-005**	**5.7000e-004**	**0.0000**	**1.7962**	**1.7962**	**6.0000e-005**	**0.0000**	**1.7977**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.2639					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.2400e-003	0.0295	0.0321	5.0000e-005		1.9400e-003	1.9400e-003		1.9400e-003	1.9400e-003	0.0000	4.4682	4.4682	3.5000e-004	0.0000	4.4768
Total	**2.2681**	**0.0295**	**0.0321**	**5.0000e-005**		**1.9400e-003**	**1.9400e-003**		**1.9400e-003**	**1.9400e-003**	**0.0000**	**4.4682**	**4.4682**	**3.5000e-004**	**0.0000**	**4.4768**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	5.5000e-004	5.5900e-003	1.0000e-005	1.3900e-003	1.0000e-005	1.4000e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.1975	1.1975	4.0000e-005	0.0000	1.1984
Total	**8.3000e-004**	**5.5000e-004**	**5.5900e-003**	**1.0000e-005**	**1.3900e-003**	**1.0000e-005**	**1.4000e-003**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.1975**	**1.1975**	**4.0000e-005**	**0.0000**	**1.1984**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.2639					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.2400e-003	0.0295	0.0321	5.0000e-005		1.9400e-003	1.9400e-003		1.9400e-003	1.9400e-003	0.0000	4.4682	4.4682	3.5000e-004	0.0000	4.4768
Total	**2.2681**	**0.0295**	**0.0321**	**5.0000e-005**		**1.9400e-003**	**1.9400e-003**		**1.9400e-003**	**1.9400e-003**	**0.0000**	**4.4682**	**4.4682**	**3.5000e-004**	**0.0000**	**4.4768**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	5.5000e-004	5.5900e-003	1.0000e-005	1.3900e-003	1.0000e-005	1.4000e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.1975	1.1975	4.0000e-005	0.0000	1.1984
Total	**8.3000e-004**	**5.5000e-004**	**5.5900e-003**	**1.0000e-005**	**1.3900e-003**	**1.0000e-005**	**1.4000e-003**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.1975**	**1.1975**	**4.0000e-005**	**0.0000**	**1.1984**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5110	4.3109	5.6373	0.0205	1.3498	0.0233	1.3731	0.3628	0.0221	0.3849	0.0000	1,896.8374	1,896.8374	0.0877	0.0000	1,899.0298
Unmitigated	0.5110	4.3109	5.6373	0.0205	1.3498	0.0233	1.3731	0.3628	0.0221	0.3849	0.0000	1,896.8374	1,896.8374	0.0877	0.0000	1,899.0298

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,275.68	1,327.94	1155.08	3,568,284	3,568,284
Total	1,275.68	1,327.94	1,155.08	3,568,284	3,568,284

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.506900	0.034567	0.171206	0.149208	0.024362	0.005798	0.021031	0.077362	0.001819	0.001371	0.004402	0.001155	0.000818

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	341.5124	341.5124	0.0154	3.1900e-003	342.8505
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	341.5124	341.5124	0.0154	3.1900e-003	342.8505
NaturalGas Mitigated	0.0189	0.1614	0.0687	1.0300e-003		0.0131	0.0131		0.0131	0.0131	0.0000	186.9581	186.9581	3.5800e-003	3.4300e-003	188.0691
NaturalGas Unmitigated	0.0189	0.1614	0.0687	1.0300e-003		0.0131	0.0131		0.0131	0.0131	0.0000	186.9581	186.9581	3.5800e-003	3.4300e-003	188.0691

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.50346e+006	0.0189	0.1614	0.0687	1.0300e-003		0.0131	0.0131		0.0131	0.0131	0.0000	186.9581	186.9581	3.5800e-003	3.4300e-003	188.0691
Total		**0.0189**	**0.1614**	**0.0687**	**1.0300e-003**		**0.0131**	**0.0131**		**0.0131**	**0.0131**	**0.0000**	**186.9581**	**186.9581**	**3.5800e-003**	**3.4300e-003**	**188.0691**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.50346e+006	0.0189	0.1614	0.0687	1.0300e-003		0.0131	0.0131		0.0131	0.0131	0.0000	186.9581	186.9581	3.5800e-003	3.4300e-003	188.0691
Total		**0.0189**	**0.1614**	**0.0687**	**1.0300e-003**		**0.0131**	**0.0131**		**0.0131**	**0.0131**	**0.0000**	**186.9581**	**186.9581**	**3.5800e-003**	**3.4300e-003**	**188.0691**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.17394e+006	341.5124	0.0154	3.1900e-003	342.8505
Total		**341.5124**	**0.0154**	**3.1900e-003**	**342.8505**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.17394e+006	341.5124	0.0154	3.1900e-003	342.8505
Total		**341.5124**	**0.0154**	**3.1900e-003**	**342.8505**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.7875	0.1480	6.3128	0.0176		0.8730	0.8730		0.8730	0.8730	115.6219	59.6751	175.2969	0.5432	1.0600e-003	189.1942
Unmitigated	1.7875	0.1480	6.3128	0.0176		0.8730	0.8730		0.8730	0.8730	115.6219	59.6751	175.2969	0.5432	1.0600e-003	189.1942

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2264					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9420					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.5887	0.1365	5.3145	0.0176		0.8675	0.8675		0.8675	0.8675	115.6219	58.0498	173.6717	0.5416	1.0600e-003	187.5294
Landscaping	0.0304	0.0116	0.9983	5.0000e-005		5.4900e-003	5.4900e-003		5.4900e-003	5.4900e-003	0.0000	1.6253	1.6253	1.5800e-003	0.0000	1.6649
Total	**1.7875**	**0.1480**	**6.3128**	**0.0176**		**0.8730**	**0.8730**		**0.8730**	**0.8730**	**115.6219**	**59.6751**	**175.2969**	**0.5432**	**1.0600e-003**	**189.1942**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2264					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9420					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.5887	0.1365	5.3145	0.0176		0.8675	0.8675		0.8675	0.8675	115.6219	58.0498	173.6717	0.5416	1.0600e-003	187.5294
Landscaping	0.0304	0.0116	0.9983	5.0000e-005		5.4900e-003	5.4900e-003		5.4900e-003	5.4900e-003	0.0000	1.6253	1.6253	1.5800e-003	0.0000	1.6649
Total	**1.7875**	**0.1480**	**6.3128**	**0.0176**		**0.8730**	**0.8730**		**0.8730**	**0.8730**	**115.6219**	**59.6751**	**175.2969**	**0.5432**	**1.0600e-003**	**189.1942**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	22.1171	0.2854	6.9000e-003	31.3069
Unmitigated	22.1171	0.2854	6.9000e-003	31.3069

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	8.73064 / 5.5041	22.1171	0.2854	6.9000e-003	31.3069
Total		**22.1171**	**0.2854**	**6.9000e-003**	**31.3069**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	8.73064 / 5.5041	22.1171	0.2854	6.9000e-003	31.3069
Total		**22.1171**	**0.2854**	**6.9000e-003**	**31.3069**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	27.9884	1.6541	0.0000	69.3401
Unmitigated	27.9884	1.6541	0.0000	69.3401

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	137.88	27.9884	1.6541	0.0000	69.3401
Total		**27.9884**	**1.6541**	**0.0000**	**69.3401**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	137.88	27.9884	1.6541	0.0000	69.3401
Total		**27.9884**	**1.6541**	**0.0000**	**69.3401**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Oak Tree Estates TSM

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	40.00	Dwelling Unit	1.05	40,000.00	114
Single Family Housing	28.00	Dwelling Unit	9.09	50,400.00	80
Regional Shopping Center	96.60	1000sqft	8.87	96,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Total acreage = 18.82, Retail is remainder after residential, square footage is an estimation

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	2.22	8.87

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2185	2.1797	1.4053	2.5100e-003	0.2421	0.1094	0.3515	0.1095	0.1016	0.2111	0.0000	227.4767	227.4767	0.0573	0.0000	228.9089
2019	0.3645	3.1417	2.6331	5.0100e-003	0.0897	0.1696	0.2593	0.0243	0.1594	0.1837	0.0000	445.8416	445.8416	0.0813	0.0000	447.8743
2020	1.5303	0.0878	0.0985	1.6000e-004	1.7100e-003	4.8900e-003	6.6000e-003	4.6000e-004	4.5800e-003	5.0400e-003	0.0000	14.0386	14.0386	3.4800e-003	0.0000	14.1256
Maximum	**1.5303**	**3.1417**	**2.6331**	**5.0100e-003**	**0.2421**	**0.1696**	**0.3515**	**0.1095**	**0.1594**	**0.2111**	**0.0000**	**445.8416**	**445.8416**	**0.0813**	**0.0000**	**447.8743**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2185	2.1797	1.4053	2.5100e-003	0.2421	0.1094	0.3515	0.1095	0.1016	0.2111	0.0000	227.4764	227.4764	0.0573	0.0000	228.9087
2019	0.3645	3.1417	2.6331	5.0100e-003	0.0897	0.1696	0.2593	0.0243	0.1594	0.1837	0.0000	445.8412	445.8412	0.0813	0.0000	447.8739
2020	1.5303	0.0878	0.0985	1.6000e-004	1.7100e-003	4.8900e-003	6.6000e-003	4.6000e-004	4.5800e-003	5.0400e-003	0.0000	14.0386	14.0386	3.4800e-003	0.0000	14.1256
Maximum	**1.5303**	**3.1417**	**2.6331**	**5.0100e-003**	**0.2421**	**0.1696**	**0.3515**	**0.1095**	**0.1594**	**0.2111**	**0.0000**	**445.8412**	**445.8412**	**0.0813**	**0.0000**	**447.8739**

Oak Tree Estates TSM - Tulare County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**8-1-2018**	**10-31-2018**	1.7455	1.7455
2	**11-1-2018**	**1-31-2019**	0.9611	0.9611
3	**2-1-2019**	**4-30-2019**	0.8675	0.8675
4	**5-1-2019**	**7-31-2019**	0.8953	0.8953
5	**8-1-2019**	**10-31-2019**	0.8960	0.8960
6	**11-1-2019**	**1-31-2020**	1.5558	1.5558
7	**2-1-2020**	**4-30-2020**	0.6052	0.6052
		Highest	1.7455	1.7455

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1075	0.0619	2.3950	6.3100e-003		0.3110	0.3110		0.3110	0.3110	40.9932	30.2846	71.2778	0.1930	5.4000e-004	76.2640
Energy	0.0122	0.1069	0.0665	6.6000e-004		8.3900e-003	8.3900e-003		8.3900e-003	8.3900e-003	0.0000	472.9310	472.9310	0.0183	5.5000e-003	475.0274
Mobile	1.5935	12.6906	15.0233	0.0517	3.2018	0.0582	3.2600	0.8606	0.0550	0.9157	0.0000	4,781.2345	4,781.2345	0.2568	0.0000	4,787.6554
Waste						0.0000	0.0000		0.0000	0.0000	30.1706	0.0000	30.1706	1.7830	0.0000	74.7463
Water						0.0000	0.0000		0.0000	0.0000	3.6757	25.5469	29.2225	0.3787	9.1500e-003	41.4172
Total	**2.7132**	**12.8594**	**17.4847**	**0.0587**	**3.2018**	**0.3776**	**3.5794**	**0.8606**	**0.3744**	**1.2351**	**74.8394**	**5,309.9969**	**5,384.8363**	**2.6298**	**0.0152**	**5,455.1102**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1075	0.0619	2.3950	6.3100e-003		0.3110	0.3110		0.3110	0.3110	40.9932	30.2846	71.2778	0.1930	5.4000e-004	76.2640
Energy	0.0122	0.1069	0.0665	6.6000e-004		8.3900e-003	8.3900e-003		8.3900e-003	8.3900e-003	0.0000	472.9310	472.9310	0.0183	5.5000e-003	475.0274
Mobile	1.5935	12.6906	15.0233	0.0517	3.2018	0.0582	3.2600	0.8606	0.0550	0.9157	0.0000	4,781.2345	4,781.2345	0.2568	0.0000	4,787.6554
Waste						0.0000	0.0000		0.0000	0.0000	30.1706	0.0000	30.1706	1.7830	0.0000	74.7463
Water						0.0000	0.0000		0.0000	0.0000	3.6757	25.5469	29.2225	0.3787	9.1500e-003	41.4172
Total	**2.7132**	**12.8594**	**17.4847**	**0.0587**	**3.2018**	**0.3776**	**3.5794**	**0.8606**	**0.3744**	**1.2351**	**74.8394**	**5,309.9969**	**5,384.8363**	**2.6298**	**0.0152**	**5,455.1102**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2018	8/28/2018	5	20	
2	Site Preparation	Site Preparation	8/29/2018	9/11/2018	5	10	
3	Grading	Grading	9/12/2018	10/23/2018	5	30	
4	Building Construction	Building Construction	10/24/2018	12/17/2019	5	300	
5	Paving	Paving	12/18/2019	1/14/2020	5	20	
6	Architectural Coating	Architectural Coating	1/15/2020	2/11/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 183,060; Residential Outdoor: 61,020; Non-Residential Indoor: 144,900; Non-Residential Outdoor: 48,300; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Oak Tree Estates TSM - Tulare County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	70.00	23.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	14.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1241	35.1241	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**		**0.0194**	**0.0194**		**0.0181**	**0.0181**	**0.0000**	**35.1241**	**35.1241**	**9.6800e-003**	**0.0000**	**35.3660**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1240	35.1240	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**		**0.0194**	**0.0194**		**0.0181**	**0.0181**	**0.0000**	**35.1240**	**35.1240**	**9.6800e-003**	**0.0000**	**35.3660**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	6.2900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0910	1.0910	4.0000e-005	0.0000	1.0921
Total	**8.8000e-004**	**6.3000e-004**	**6.2900e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0910**	**1.0910**	**4.0000e-005**	**0.0000**	**1.0921**

3.3 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3800**	**17.3800**	**5.4100e-003**	**0.0000**	**17.5152**

3.3 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.8000e-004	3.7800e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6546	0.6546	3.0000e-005	0.0000	0.6552
Total	**5.3000e-004**	**3.8000e-004**	**3.7800e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6546**	**0.6546**	**3.0000e-005**	**0.0000**	**0.6552**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3799**	**17.3799**	**5.4100e-003**	**0.0000**	**17.5152**

3.3 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.8000e-004	3.7800e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6546	0.6546	3.0000e-005	0.0000	0.6552
Total	**5.3000e-004**	**3.8000e-004**	**3.7800e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6546**	**0.6546**	**3.0000e-005**	**0.0000**	**0.6552**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9728	84.9728	0.0265	0.0000	85.6341
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9728**	**84.9728**	**0.0265**	**0.0000**	**85.6341**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.2500e-003	0.0126	2.0000e-005	2.3900e-003	2.0000e-005	2.4100e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1819	2.1819	9.0000e-005	0.0000	2.1841
Total	**1.7600e-003**	**1.2500e-003**	**0.0126**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1819**	**2.1819**	**9.0000e-005**	**0.0000**	**2.1841**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9727	84.9727	0.0265	0.0000	85.6340
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9727**	**84.9727**	**0.0265**	**0.0000**	**85.6340**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.2500e-003	0.0126	2.0000e-005	2.3900e-003	2.0000e-005	2.4100e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1819	2.1819	9.0000e-005	0.0000	2.1841
Total	**1.7600e-003**	**1.2500e-003**	**0.0126**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1819**	**2.1819**	**9.0000e-005**	**0.0000**	**2.1841**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0657	0.5731	0.4307	6.6000e-004		0.0368	0.0368		0.0345	0.0345	0.0000	58.2530	58.2530	0.0143	0.0000	58.6098
Total	**0.0657**	**0.5731**	**0.4307**	**6.6000e-004**		**0.0368**	**0.0368**		**0.0345**	**0.0345**	**0.0000**	**58.2530**	**58.2530**	**0.0143**	**0.0000**	**58.6098**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2400e-003	0.0802	0.0182	1.6000e-004	3.7200e-003	7.2000e-004	4.4400e-003	1.0800e-003	6.9000e-004	1.7600e-003	0.0000	15.3460	15.3460	8.2000e-004	0.0000	15.3666
Worker	0.0101	7.1500e-003	0.0719	1.4000e-004	0.0137	1.1000e-004	0.0138	3.6300e-003	1.0000e-004	3.7300e-003	0.0000	12.4734	12.4734	5.0000e-004	0.0000	12.4858
Total	**0.0133**	**0.0874**	**0.0902**	**3.0000e-004**	**0.0174**	**8.3000e-004**	**0.0182**	**4.7100e-003**	**7.9000e-004**	**5.4900e-003**	**0.0000**	**27.8194**	**27.8194**	**1.3200e-003**	**0.0000**	**27.8524**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0657	0.5731	0.4307	6.6000e-004		0.0368	0.0368		0.0345	0.0345	0.0000	58.2529	58.2529	0.0143	0.0000	58.6097
Total	**0.0657**	**0.5731**	**0.4307**	**6.6000e-004**		**0.0368**	**0.0368**		**0.0345**	**0.0345**	**0.0000**	**58.2529**	**58.2529**	**0.0143**	**0.0000**	**58.6097**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2400e-003	0.0802	0.0182	1.6000e-004	3.7200e-003	7.2000e-004	4.4400e-003	1.0800e-003	6.9000e-004	1.7600e-003	0.0000	15.3460	15.3460	8.2000e-004	0.0000	15.3666
Worker	0.0101	7.1500e-003	0.0719	1.4000e-004	0.0137	1.1000e-004	0.0138	3.6300e-003	1.0000e-004	3.7300e-003	0.0000	12.4734	12.4734	5.0000e-004	0.0000	12.4858
Total	**0.0133**	**0.0874**	**0.0902**	**3.0000e-004**	**0.0174**	**8.3000e-004**	**0.0182**	**4.7100e-003**	**7.9000e-004**	**5.4900e-003**	**0.0000**	**27.8194**	**27.8194**	**1.3200e-003**	**0.0000**	**27.8524**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2963	2.6454	2.1541	3.3800e-003		0.1619	0.1619		0.1522	0.1522	0.0000	295.0558	295.0558	0.0719	0.0000	296.8527
Total	**0.2963**	**2.6454**	**2.1541**	**3.3800e-003**		**0.1619**	**0.1619**		**0.1522**	**0.1522**	**0.0000**	**295.0558**	**295.0558**	**0.0719**	**0.0000**	**296.8527**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0146	0.3882	0.0825	8.2000e-004	0.0191	3.1000e-003	0.0222	5.5100e-003	2.9700e-003	8.4800e-003	0.0000	77.9951	77.9951	3.9600e-003	0.0000	78.0940
Worker	0.0459	0.0317	0.3205	6.9000e-004	0.0700	5.2000e-004	0.0705	0.0186	4.8000e-004	0.0191	0.0000	62.0237	62.0237	2.2200e-003	0.0000	62.0791
Total	**0.0605**	**0.4198**	**0.4030**	**1.5100e-003**	**0.0891**	**3.6200e-003**	**0.0927**	**0.0241**	**3.4500e-003**	**0.0276**	**0.0000**	**140.0187**	**140.0187**	**6.1800e-003**	**0.0000**	**140.1730**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2963	2.6454	2.1541	3.3800e-003		0.1619	0.1619		0.1522	0.1522	0.0000	295.0554	295.0554	0.0719	0.0000	296.8524
Total	**0.2963**	**2.6454**	**2.1541**	**3.3800e-003**		**0.1619**	**0.1619**		**0.1522**	**0.1522**	**0.0000**	**295.0554**	**295.0554**	**0.0719**	**0.0000**	**296.8524**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0146	0.3882	0.0825	8.2000e-004	0.0191	3.1000e-003	0.0222	5.5100e-003	2.9700e-003	8.4800e-003	0.0000	77.9951	77.9951	3.9600e-003	0.0000	78.0940
Worker	0.0459	0.0317	0.3205	6.9000e-004	0.0700	5.2000e-004	0.0705	0.0186	4.8000e-004	0.0191	0.0000	62.0237	62.0237	2.2200e-003	0.0000	62.0791
Total	**0.0605**	**0.4198**	**0.4030**	**1.5100e-003**	**0.0891**	**3.6200e-003**	**0.0927**	**0.0241**	**3.4500e-003**	**0.0276**	**0.0000**	**140.0187**	**140.0187**	**6.1800e-003**	**0.0000**	**140.1730**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.2700e-003	0.0762	0.0733	1.1000e-004		4.1200e-003	4.1200e-003		3.7900e-003	3.7900e-003	0.0000	10.2376	10.2376	3.2400e-003	0.0000	10.3186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.2700e-003**	**0.0762**	**0.0733**	**1.1000e-004**		**4.1200e-003**	**4.1200e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**10.2376**	**10.2376**	**3.2400e-003**	**0.0000**	**10.3186**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.7000e-004	2.7400e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5295	0.5295	2.0000e-005	0.0000	0.5300
Total	**3.9000e-004**	**2.7000e-004**	**2.7400e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5295**	**0.5295**	**2.0000e-005**	**0.0000**	**0.5300**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.2700e-003	0.0762	0.0733	1.1000e-004		4.1200e-003	4.1200e-003		3.7900e-003	3.7900e-003	0.0000	10.2376	10.2376	3.2400e-003	0.0000	10.3186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.2700e-003**	**0.0762**	**0.0733**	**1.1000e-004**		**4.1200e-003**	**4.1200e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**10.2376**	**10.2376**	**3.2400e-003**	**0.0000**	**10.3186**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.7000e-004	2.7400e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5295	0.5295	2.0000e-005	0.0000	0.5300
Total	**3.9000e-004**	**2.7000e-004**	**2.7400e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5295**	**0.5295**	**2.0000e-005**	**0.0000**	**0.5300**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

3.6 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.4000e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5132	0.5132	2.0000e-005	0.0000	0.5136
Total	**3.5000e-004**	**2.4000e-004**	**2.4000e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5132**	**0.5132**	**2.0000e-005**	**0.0000**	**0.5136**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

3.6 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.4000e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5132	0.5132	2.0000e-005	0.0000	0.5136
Total	**3.5000e-004**	**2.4000e-004**	**2.4000e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5132**	**0.5132**	**2.0000e-005**	**0.0000**	**0.5136**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5201					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.5225**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	4.4000e-004	4.4700e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1200e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9580	0.9580	3.0000e-005	0.0000	0.9588
Total	**6.6000e-004**	**4.4000e-004**	**4.4700e-003**	**1.0000e-005**	**1.1200e-003**	**1.0000e-005**	**1.1200e-003**	**3.0000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9580**	**0.9580**	**3.0000e-005**	**0.0000**	**0.9588**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5201					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.5225**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	4.4000e-004	4.4700e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1200e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9580	0.9580	3.0000e-005	0.0000	0.9588
Total	**6.6000e-004**	**4.4000e-004**	**4.4700e-003**	**1.0000e-005**	**1.1200e-003**	**1.0000e-005**	**1.1200e-003**	**3.0000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9580**	**0.9580**	**3.0000e-005**	**0.0000**	**0.9588**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.5935	12.6906	15.0233	0.0517	3.2018	0.0582	3.2600	0.8606	0.0550	0.9157	0.0000	4,781.2345	4,781.2345	0.2568	0.0000	4,787.6554
Unmitigated	1.5935	12.6906	15.0233	0.0517	3.2018	0.0582	3.2600	0.8606	0.0550	0.9157	0.0000	4,781.2345	4,781.2345	0.2568	0.0000	4,787.6554

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	266.00	255.60	234.40	732,871	732,871
Regional Shopping Center	4,124.82	4,827.10	2438.18	6,985,514	6,985,514
Single Family Housing	266.56	277.48	241.36	745,612	745,612
Total	4,657.38	5,360.18	2,913.94	8,463,996	8,463,996

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	54	35	11
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.506900	0.034567	0.171206	0.149208	0.024362	0.005798	0.021031	0.077362	0.001819	0.001371	0.004402	0.001155	0.000818
Regional Shopping Center	0.506900	0.034567	0.171206	0.149208	0.024362	0.005798	0.021031	0.077362	0.001819	0.001371	0.004402	0.001155	0.000818
Single Family Housing	0.506900	0.034567	0.171206	0.149208	0.024362	0.005798	0.021031	0.077362	0.001819	0.001371	0.004402	0.001155	0.000818

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	352.7129	352.7129	0.0160	3.3000e-003	354.0949
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	352.7129	352.7129	0.0160	3.3000e-003	354.0949
NaturalGas Mitigated	0.0122	0.1069	0.0665	6.6000e-004		8.3900e-003	8.3900e-003		8.3900e-003	8.3900e-003	0.0000	120.2181	120.2181	2.3000e-003	2.2000e-003	120.9324
NaturalGas Unmitigated	0.0122	0.1069	0.0665	6.6000e-004		8.3900e-003	8.3900e-003		8.3900e-003	8.3900e-003	0.0000	120.2181	120.2181	2.3000e-003	2.2000e-003	120.9324

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	487114	2.6300e-003	0.0225	9.5500e-003	1.4000e-004		1.8100e-003	1.8100e-003		1.8100e-003	1.8100e-003	0.0000	25.9943	25.9943	5.0000e-004	4.8000e-004	26.1488
Regional Shopping Center	1.03362e+006	5.5700e-003	0.0507	0.0426	3.0000e-004		3.8500e-003	3.8500e-003		3.8500e-003	3.8500e-003	0.0000	55.1579	55.1579	1.0600e-003	1.0100e-003	55.4857
Single Family Housing	732067	3.9500e-003	0.0337	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003	0.0000	39.0659	39.0659	7.5000e-004	7.2000e-004	39.2980
Total		**0.0122**	**0.1069**	**0.0665**	**6.6000e-004**		**8.3900e-003**	**8.3900e-003**		**8.3900e-003**	**8.3900e-003**	**0.0000**	**120.2181**	**120.2181**	**2.3100e-003**	**2.2100e-003**	**120.9325**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	487114	2.6300e-003	0.0225	9.5500e-003	1.4000e-004		1.8100e-003	1.8100e-003		1.8100e-003	1.8100e-003	0.0000	25.9943	25.9943	5.0000e-004	4.8000e-004	26.1488
Regional Shopping Center	1.03362e+006	5.5700e-003	0.0507	0.0426	3.0000e-004		3.8500e-003	3.8500e-003		3.8500e-003	3.8500e-003	0.0000	55.1579	55.1579	1.0600e-003	1.0100e-003	55.4857
Single Family Housing	732067	3.9500e-003	0.0337	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003	0.0000	39.0659	39.0659	7.5000e-004	7.2000e-004	39.2980
Total		**0.0122**	**0.1069**	**0.0665**	**6.6000e-004**		**8.3900e-003**	**8.3900e-003**		**8.3900e-003**	**8.3900e-003**	**0.0000**	**120.2181**	**120.2181**	**2.3100e-003**	**2.2100e-003**	**120.9325**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	179850	52.3204	2.3700e-003	4.9000e-004	52.5254
Regional Shopping Center	787290	229.0317	0.0104	2.1400e-003	229.9291
Single Family Housing	245301	71.3608	3.2300e-003	6.7000e-004	71.6404
Total		**352.7129**	**0.0160**	**3.3000e-003**	**354.0949**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	179850	52.3204	2.3700e-003	4.9000e-004	52.5254
Regional Shopping Center	787290	229.0317	0.0104	2.1400e-003	229.9291
Single Family Housing	245301	71.3608	3.2300e-003	6.7000e-004	71.6404
Total		**352.7129**	**0.0160**	**3.3000e-003**	**354.0949**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.1075	0.0619	2.3950	6.3100e-003		0.3110	0.3110		0.3110	0.3110	40.9932	30.2846	71.2778	0.1930	5.4000e-004	76.2640
Unmitigated	1.1075	0.0619	2.3950	6.3100e-003		0.3110	0.3110		0.3110	0.3110	40.9932	30.2846	71.2778	0.1930	5.4000e-004	76.2640

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1520					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7303					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2096	0.0561	1.8875	6.2900e-003		0.3082	0.3082		0.3082	0.3082	40.9932	29.4581	70.4513	0.1922	5.4000e-004	75.4172
Landscaping	0.0155	5.8700e-003	0.5075	3.0000e-005		2.7900e-003	2.7900e-003		2.7900e-003	2.7900e-003	0.0000	0.8265	0.8265	8.1000e-004	0.0000	0.8467
Total	**1.1075**	**0.0619**	**2.3950**	**6.3200e-003**		**0.3110**	**0.3110**		**0.3110**	**0.3110**	**40.9932**	**30.2846**	**71.2778**	**0.1930**	**5.4000e-004**	**76.2640**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1520					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7303					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2096	0.0561	1.8875	6.2900e-003		0.3082	0.3082		0.3082	0.3082	40.9932	29.4581	70.4513	0.1922	5.4000e-004	75.4172
Landscaping	0.0155	5.8700e-003	0.5075	3.0000e-005		2.7900e-003	2.7900e-003		2.7900e-003	2.7900e-003	0.0000	0.8265	0.8265	8.1000e-004	0.0000	0.8467
Total	**1.1075**	**0.0619**	**2.3950**	**6.3200e-003**		**0.3110**	**0.3110**		**0.3110**	**0.3110**	**40.9932**	**30.2846**	**71.2778**	**0.1930**	**5.4000e-004**	**76.2640**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	29.2225	0.3787	9.1500e-003	41.4172
Unmitigated	29.2225	0.3787	9.1500e-003	41.4172

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	2.60616 / 1.64301	6.6021	0.0852	2.0600e-003	9.3454
Regional Shopping Center	7.15541 / 4.38557	17.9989	0.2339	5.6500e-003	25.5301
Single Family Housing	1.82431 / 1.15011	4.6215	0.0596	1.4400e-003	6.5418
Total		**29.2225**	**0.3787**	**9.1500e-003**	**41.4172**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	2.60616 / 1.64301	6.6021	0.0852	2.0600e-003	9.3454
Regional Shopping Center	7.15541 / 4.38557	17.9989	0.2339	5.6500e-003	25.5301
Single Family Housing	1.82431 / 1.15011	4.6215	0.0596	1.4400e-003	6.5418
Total		**29.2225**	**0.3787**	**9.1500e-003**	**41.4172**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	30.1706	1.7830	0.0000	74.7463
Unmitigated	30.1706	1.7830	0.0000	74.7463

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	18.4	3.7350	0.2207	0.0000	9.2534
Regional Shopping Center	101.43	20.5894	1.2168	0.0000	51.0093
Single Family Housing	28.8	5.8461	0.3455	0.0000	14.4836
Total		**30.1705**	**1.7830**	**0.0000**	**74.7463**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	18.4	3.7350	0.2207	0.0000	9.2534
Regional Shopping Center	101.43	20.5894	1.2168	0.0000	51.0093
Single Family Housing	28.8	5.8461	0.3455	0.0000	14.4836
Total		**30.1705**	**1.7830**	**0.0000**	**74.7463**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ATTACHMENT C: CARB 2015 AND 2020 ESTIMATED EMISSION INVENTORIES

2016 SIP Emission Projection Data
2015 Estimated Annual Average Emissions
SAN JOAQUIN VALLEY AIR BASIN

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.
See detailed information.
Start a new query.

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	18.5	3.5	24.8	27.0	2.3	5.0	4.8	4.7	2.1
WASTE DISPOSAL	495.3	25.7	0.5	0.3	0.1	0.9	0.3	0.1	10.3
CLEANING AND SURFACE COATINGS	26.0	23.6	-	-	-	0.3	0.3	0.3	0.0
PETROLEUM PRODUCTION AND MARKETING	112.0	18.3	1.1	0.4	0.5	0.2	0.1	0.1	0.0
INDUSTRIAL PROCESSES	18.8	17.7	1.3	3.7	3.3	19.0	8.6	3.3	1.6
*** TOTAL STATIONARY SOURCES**	**670.6**	**88.8**	**27.7**	**31.4**	**6.2**	**25.3**	**14.1**	**8.5**	**14.1**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	52.7	47.9	-	-	-	-	-	-	116.3
MISCELLANEOUS PROCESSES	761.7	102.9	53.3	8.1	0.3	467.5	233.8	41.3	193.4
*** TOTAL AREAWIDE SOURCES**	**814.4**	**150.8**	**53.3**	**8.1**	**0.3**	**467.5**	**233.8**	**41.3**	**309.7**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	42.5	38.6	276.3	141.6	0.6	8.3	8.2	4.2	4.1
OTHER MOBILE SOURCES	35.4	31.3	189.3	82.2	0.3	6.1	6.0	5.5	0.0
*** TOTAL MOBILE SOURCES**	**77.9**	**69.9**	**465.6**	**223.8**	**0.9**	**14.4**	**14.1**	**9.7**	**4.2**
GRAND TOTAL FOR SAN JOAQUIN VALLEY AIR BASIN	**1562.8**	**309.4**	**546.6**	**263.3**	**7.5**	**507.2**	**262.1**	**59.4**	**328.0**

Start a new query.

2016 SIP Emission Projection Data
2020 Estimated Annual Average Emissions
SAN JOAQUIN VALLEY AIR BASIN

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.
See detailed information.
Start a new query.

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	17.9	3.2	24.7	24.1	2.4	4.8	4.7	4.6	2.2
WASTE DISPOSAL	527.3	26.9	0.6	0.3	0.2	0.9	0.3	0.2	11.2
CLEANING AND SURFACE COATINGS	27.8	25.2	-	-	-	0.3	0.3	0.3	0.0
PETROLEUM PRODUCTION AND MARKETING	111.0	16.6	1.0	0.4	0.4	0.2	0.1	0.1	0.0
INDUSTRIAL PROCESSES	20.6	19.5	1.4	3.9	3.6	20.9	9.5	3.6	1.7
*** TOTAL STATIONARY SOURCES**	**704.7**	**91.3**	**27.7**	**28.6**	**6.5**	**27.2**	**14.9**	**8.7**	**15.2**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	55.0	49.9	-	-	-	-	-	-	113.1
MISCELLANEOUS PROCESSES	761.8	103.0	53.2	7.9	0.3	473.4	236.8	41.8	193.9
*** TOTAL AREAWIDE SOURCES**	**816.8**	**152.8**	**53.2**	**7.9**	**0.3**	**473.4**	**236.8**	**41.8**	**307.0**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	27.3	24.9	167.9	96.9	0.6	7.8	7.6	3.4	3.6
OTHER MOBILE SOURCES	30.6	27.2	196.2	69.8	0.3	5.6	5.5	5.0	0.0
*** TOTAL MOBILE SOURCES**	**57.9**	**52.0**	**364.1**	**166.8**	**1.0**	**13.4**	**13.1**	**8.5**	**3.6**
GRAND TOTAL FOR SAN JOAQUIN VALLEY AIR BASIN	**1579.4**	**296.2**	**445.0**	**203.3**	**7.8**	**514.0**	**264.8**	**59.0**	**325.9**

Start a new query.

2016 SIP Emission Projection Data
2015 Estimated Annual Average Emissions
TULARE COUNTY

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.
See detailed information.
Start a new query.

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	0.6	0.2	2.6	2.3	0.1	0.2	0.2	0.2	0.1
WASTE DISPOSAL	31.5	1.3	0.1	0.0	0.0	0.2	0.0	0.0	1.1
CLEANING AND SURFACE COATINGS	1.8	1.5	-	-	-	0.0	0.0	0.0	-
PETROLEUM PRODUCTION AND MARKETING	6.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	-
INDUSTRIAL PROCESSES	2.0	1.8	0.0	0.0	0.1	2.7	1.2	0.4	0.1
*** TOTAL STATIONARY SOURCES**	**42.8**	**5.8**	**2.7**	**2.3**	**0.3**	**3.1**	**1.4**	**0.6**	**1.3**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	5.8	5.2	-	-	-	-	-	-	4.0
MISCELLANEOUS PROCESSES	195.2	27.6	9.8	1.0	0.0	60.8	31.5	5.3	54.9
*** TOTAL AREAWIDE SOURCES**	**200.9**	**32.9**	**9.8**	**1.0**	**0.0**	**60.8**	**31.5**	**5.3**	**58.9**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	4.8	4.4	32.0	13.2	0.1	0.8	0.8	0.4	0.4
OTHER MOBILE SOURCES	4.5	4.0	24.1	11.5	0.0	0.7	0.7	0.7	0.0
*** TOTAL MOBILE SOURCES**	**9.3**	**8.3**	**56.2**	**24.7**	**0.1**	**1.6**	**1.5**	**1.1**	**0.4**
GRAND TOTAL FOR TULARE COUNTY	**253.1**	**47.0**	**68.7**	**28.1**	**0.4**	**65.5**	**34.5**	**7.0**	**60.6**

Start a new query.

2016 SIP Emission Projection Data
2020 Estimated Annual Average Emissions
TULARE COUNTY

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.
See detailed information.
Start a new query.

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	0.6	0.2	2.8	1.9	0.1	0.2	0.2	0.2	0.1
WASTE DISPOSAL	33.0	1.4	0.1	0.0	0.0	0.2	0.0	0.0	1.1
CLEANING AND SURFACE COATINGS	1.9	1.6	-	-	-	0.0	0.0	0.0	-
PETROLEUM PRODUCTION AND MARKETING	7.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	-
INDUSTRIAL PROCESSES	2.2	2.0	0.0	0.0	0.1	2.9	1.3	0.4	0.2
*** TOTAL STATIONARY SOURCES**	**44.7**	**6.0**	**2.9**	**2.0**	**0.3**	**3.4**	**1.5**	**0.6**	**1.4**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	6.0	5.4	-	-	-	-	-	-	4.0
MISCELLANEOUS PROCESSES	195.2	27.6	9.8	1.0	0.0	61.6	31.9	5.4	54.9
*** TOTAL AREAWIDE SOURCES**	**201.2**	**33.1**	**9.8**	**1.0**	**0.0**	**61.6**	**31.9**	**5.4**	**58.9**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	2.9	2.7	18.3	8.4	0.1	0.8	0.7	0.3	0.4
OTHER MOBILE SOURCES	3.7	3.3	24.2	9.4	0.0	0.6	0.6	0.5	0.0
*** TOTAL MOBILE SOURCES**	**6.6**	**5.9**	**42.5**	**17.8**	**0.1**	**1.4**	**1.3**	**0.9**	**0.4**
GRAND TOTAL FOR TULARE COUNTY	**252.5**	**45.0**	**55.2**	**20.8**	**0.4**	**66.3**	**34.8**	**6.9**	**60.6**

Start a new query.

ATTACHMENT D: HEALTH RISK ASSESSMENT MODELING FILES (ELECTRONIC)

ATTACHMENT E: AMBIENT AIR QUALITY ASSESSMENT MODELING FILES (ELECTRONIC)

APPENDIX C

BIOLOGICAL ANALYSIS REPORT

BIOLOGICAL ANALYSIS REPORT

CITY OF TULARE

CARTMILL CROSSINGS PROJECT TULARE, CALIFORNIA



OCTOBER 2018

BIOLOGICAL ANALYSIS REPORT

CARTMILL CROSSINGS PROJECT
TULARE COUNTY, CALIFORNIA

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Project #170151.01

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EXECUTIVE SUMMARY

The proposed Project is the construction of a multi-use commercial and residential development The Project is in central Tulare County on the northern boundary of the City of Tulare, California. Approximately 68.6 acres of commercial businesses on both sides of Akers Street will be developed in accordance with the permitted uses of the C-3 zone district. The northeastern portion of the Project site will consist of approximately 30 acres of low density single-family residential homes. West of the low-density residential development will be approximately 4.4 acres of medium density residential development. Southeast of the medium density area will be approximately 7.7 acres of high density multi-family development. Northeast of the multi-family development will be a 7-acre park.

This report provides information about the natural resources currently existing on and near the Project. Information on the potential for occurrence of sensitive natural communities and special-status species that are known to occur on the site and nearby areas are provided, based upon available historic records and data collected during on-site field surveys. This report may be used to support the environmental documentation and evaluation of the Project pursuant to the California Environmental Quality Act (CEQA), project permitting through regulatory agencies, and other related uses.

Reviews of agency-maintained databases were conducted for the Project to determine the potential presence of sensitive biological resources and special-status species. The databases indicated that two sensitive natural communities, 17 special-status plant species, and 27 special-status animal species occur within the vicinity of the Project. Reconnaissance-level field surveys were conducted to identify the presence of sensitive biological resource on-site. No sensitive natural plant communities occur on the Project site. No special-status plant species were observed during biological surveys. Four special-status animal species have been determined to have potential to occur on the Project site.

Reviews of the databases indicated that there is one defined waters or wetlands on or near the Project site. There are no designated migratory corridors or linkages, significant nursery sites, or designated Critical Habitat that occur on the Project site.

The Project has the potential to impact Swainson's hawk (*Buteo swainsoni*), burrowing owl (*Athene cunicularia*), American badger (*Taxidea taxus*), and San Joaquin kit fox (*Vulpes macrotis mutica*), as well as other nesting migratory birds and raptors that are protected by the Migratory Bird Species Act and the California Fish and Game Code. A survey just prior to the commencement of the Project could reveal special status species on the Project site. However, if the suggested mitigation measures are followed the Project would result in having a ***less than significant*** impact to biological resources.

SECTION 1 - INTRODUCTION

West Coast Construction (WCC) is proposing to construct a multi-use commercial and residential development in the northern portion of the city of Tulare, California. This development (Project) will be subject to an Environmental Analysis following the California Environmental Quality Act (CEQA) guidelines. The Biological Analysis Report provides biological information for the Project and provides an analysis of the potential biological impacts of the Project. The information provided will be used as a basis for the Biological Section of the CEQA document and may also be used as needed for project permitting through regulatory agencies.

This report presents a summary of the Project Description, methods used to gather relevant information, an evaluation of the biological impacts of the Project, presents recommended avoidance measures and mitigation measures, and discusses the anticipated effectiveness of those measures to reduce impacts to biological resources.

1.1 - Project Location

Cartmill Crossings is a 127-acre land development Project proposed to be constructed in an area immediately north and adjacent to the city of Tulare, California. Tulare is in the heart of California's Central Valley, eight miles south of the City of Visalia and sixty miles north of the City of Bakersfield (Figure 1-1). The Project site is at the northeast corner of State Route 99 (SR 99) and Cartmill Avenue interchange and bounded by SR 99 to the west and Cartmill Avenue to the south (Figure 1-2).

The Project is located within the *Tulare, California* US Geological Survey (USGS) 7.5-minute topographical quadrangle. The Project site is in the southwest ¼ of section 26 Township 19 South, Range 24 East, Mount Diablo Base and Meridian. SR 99 and Cartmill Road provide access to the Project site.

1.2 - Project Description

The proposed Project is the construction of a multi-use commercial and residential development. Approximately 68.6 acres of commercial businesses on both sides of Akers Street (currently called Road 100) will be developed in accordance with the permitted uses of the C-3 zone district. Examples of permitted uses include restaurants, fast food restaurants, retail stores, hotels, and fuel stations. The northeastern portion of the Project site will consist of approximately 30 acres of low density single-family residential homes with lots no smaller than 6,000 sq. ft. West of the low-density residential development will be approximately 4.4 acres of medium density residential development, which will likely consist of fourplex residences. Southeast of the medium density area will be approximately 7.7 acres of high density multi-family development, which will likely consist of an apartment complex. Northeast of the multi-family development will be a 7-acre park.

The park will be located on the eastern boarder of the property line and will be designed with a retention basin/pond to hold storm drain runoff of the site. It will also be designed to

allow for expansion by the City to accommodate planned future development to the east of the site. The park will be acquired and maintained by the City. The City may also acquire a well site for a new City-maintained water well on the site. If approved, the proposed Project would be designed to connect to the City of Tulare sewer and water systems with the addition of new sewer and water lines.

The Project will be developed in phases over a period of approximately 20 years. The largest area will be for regional commercial development. Phase 1 will include 15 acres of regional commercial uses in the southeastern most corner of the Project site, as well as a retention basin to the north and is scheduled to be constructed from 2019 to 2022. Phase 2, expected to be developed between 2022 and 2028, will include the single-family residential homes and a park that will be integrated into the basin site. The multi-family component is anticipated for development from 2028 to 2030 and will encompass Phase 3. Finally, the rest of the regional commercial development, Phase 4, is projected to be completed by 2040.

1.3 - Purpose, Goals, and Objectives

The purpose of this BAR is to provide site-specific information and an evaluation of Project impacts that would be used for the preparation of Project environmental documentation and evaluation pursuant to the California Environmental Quality Act (CEQA). The Project is subject to discretionary approvals by the City of Tulare City Community Development. Acting in its capacity as a lead agency under CEQA, the City of Tulare Community Development Department would need to determine the potential for the Project to result in significant impacts, consider mitigation measures and alternatives to avoid significant impacts, and consider the environmental effects of the Project in its decision-making process. This BAR provides the substantial evidence upon which the required evaluation of feasibility, environmental analysis, and findings of fact in relation to biological resources can be made.

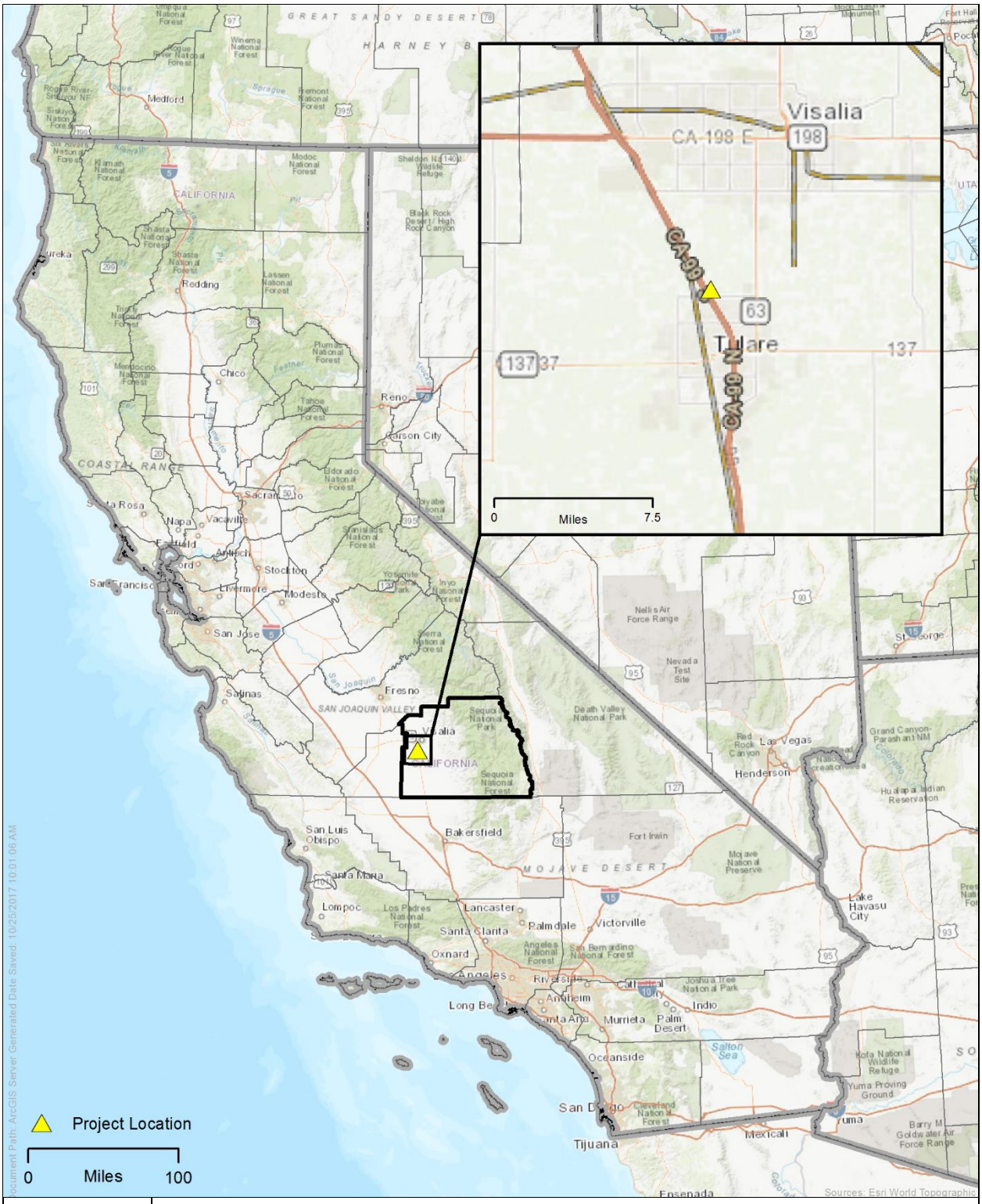


Figure 1-1
Regional Map, Cartmill Crossings Project,
Tulare County, California



Figure 1-2
Vicinity Map, Cartmill Crossings Project, Tulare County, California

SECTION 2 - ENVIRONMENTAL SETTING

This section identifies the regional environmental setting of the Project and describes baseline conditions. The setting is described in the context of the following subject areas:

- Topography
- Climate
- Land Use
- Hydrology, and
- General Biological Conditions

2.1 - Topography

The Project site and surrounding land are relatively flat, at approximately 295-feet above sea level, and exhibits little topographic variation (Figure 2-1). The Project site is within the southern Central Valley, also referred to as the San Joaquin Valley, approximately 18 miles west of the foothills of the Sierra Nevada Mountain Range and approximately 52 miles east of the Temblor Range. SR 99, which serves as a major arterial roadway between northern and southern California, is located adjacent to and west of the Project site. No major natural waterways, streams or rivers are located on or near the Project site. The Kaweah River, located approximately nine miles north near the City of Visalia, is the closest natural waterway to the Project site.

2.2 - Climate

The San Joaquin Valley has a Mediterranean-type climate, characterized by hot, dry summers and cool, relatively moist winters. Average high temperatures range from approximately 97 degrees Fahrenheit (°F) in the summer to approximately 56°F in the winter (WRCC 2018). Summer daytime high temperatures frequently exceed 100°F. Average overnight lows range from 59° in the summer to 36°F in the winter. The mean annual temperature is 65°F. Average annual rainfall for the area is approximately 10.15 inches, most of which falls from October to March.

2.3 - Land Use

The Project site is on land that has historically been and appears to currently be used for agriculture. The Project site once housed a short airplane landing strip from the late 1940s until 1987. It has been recently disked or is currently cultivated with almond orchards. An irrigation water canal exists on the eastern boundary and a water pump and piping exist on the Northeast boundary. Active agricultural cultivation is adjacent to the Project site to the north and east. A paved frontage road to State Highway 99 is located to the west, and Cartmill Road and the City of Tulare are located to the south.

2.4 - Hydrology

The Project site is entirely within an Area of Minimal Flood Hazard as defined by the Federal Emergency Management Agency (FEMA; 2018). An irrigation canal ditch is located to the east of the Project site and runs parallel south along the Project site then flows west under Highway 99 (Figure 2-2).

2.5 - General Biological Conditions

The Project site provides little native habitat. Most of the site has been recently disked or is currently in active agriculture use (Figure 2-3). Areas that are not disked or in current agricultural use contained a mix of native and non-native grasses and forbs, sunflower (*Helianthus* sp.), wild oat (*Avena fatua*), California poppy (*Eschscholzia californica*), Russian thistle (*Salsola tragus*), and various species of brome (*Bromus* spp.). Nine large Valley oak trees (*Quercus lobata*) are located on the Project site, all of which have a diameter at breast height (dbh) of greater than two (2) inches. These trees provide suitable nesting habitat for raptors and other species. Several species of raptors and other migratory birds were observed utilizing the Project site, including Swainson's hawk (*Buteo swainsoni*) and red-tailed hawk (*B. jamaicensis*). No reptile, mammal, fish or amphibian species were observed during the reconnaissance survey. Common plant and animal species observed on the Project site are presented in Table 2-1.

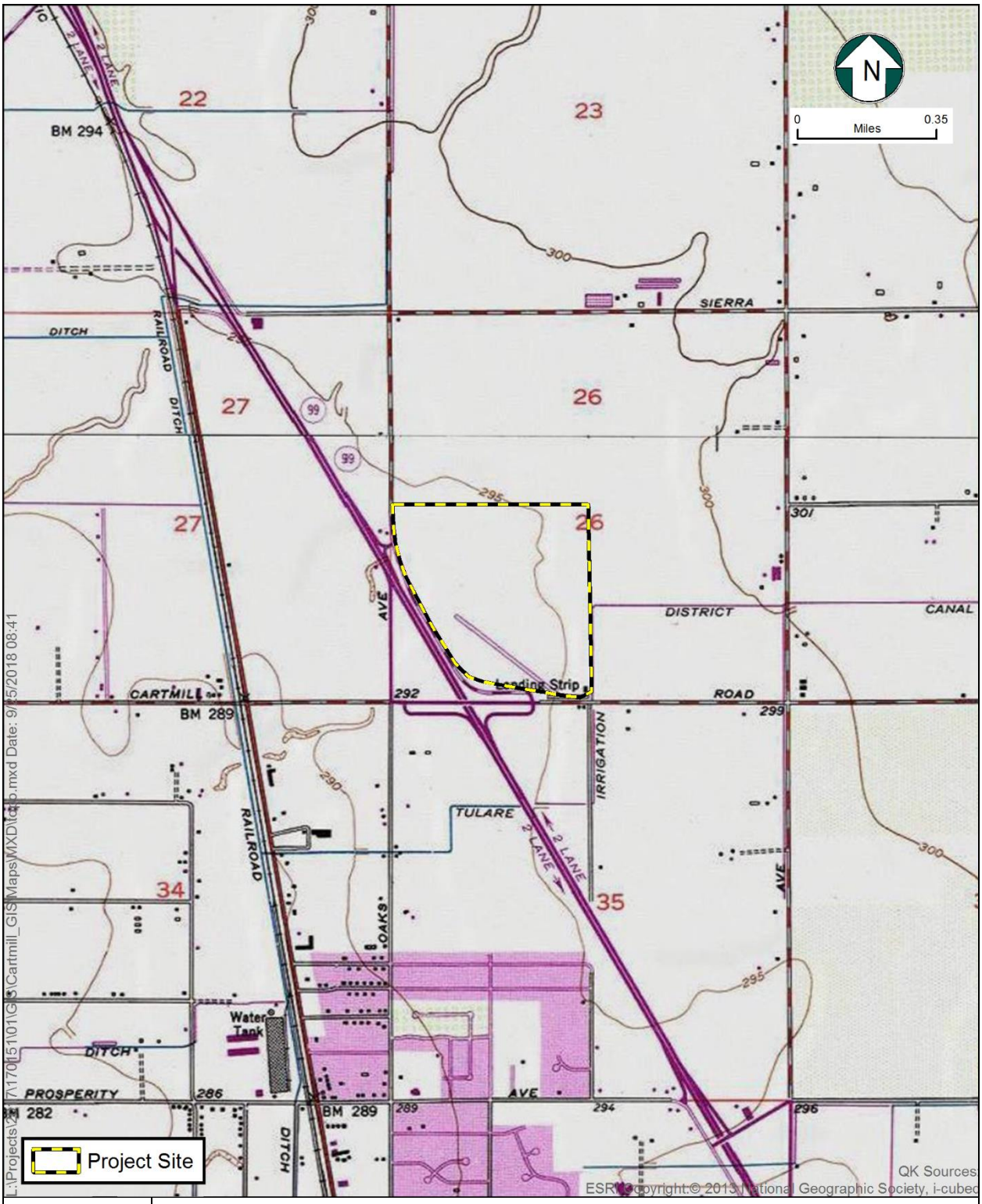


Figure 2-1
Topographic Map, Cartmill Crossings Project,
Tulare County, California

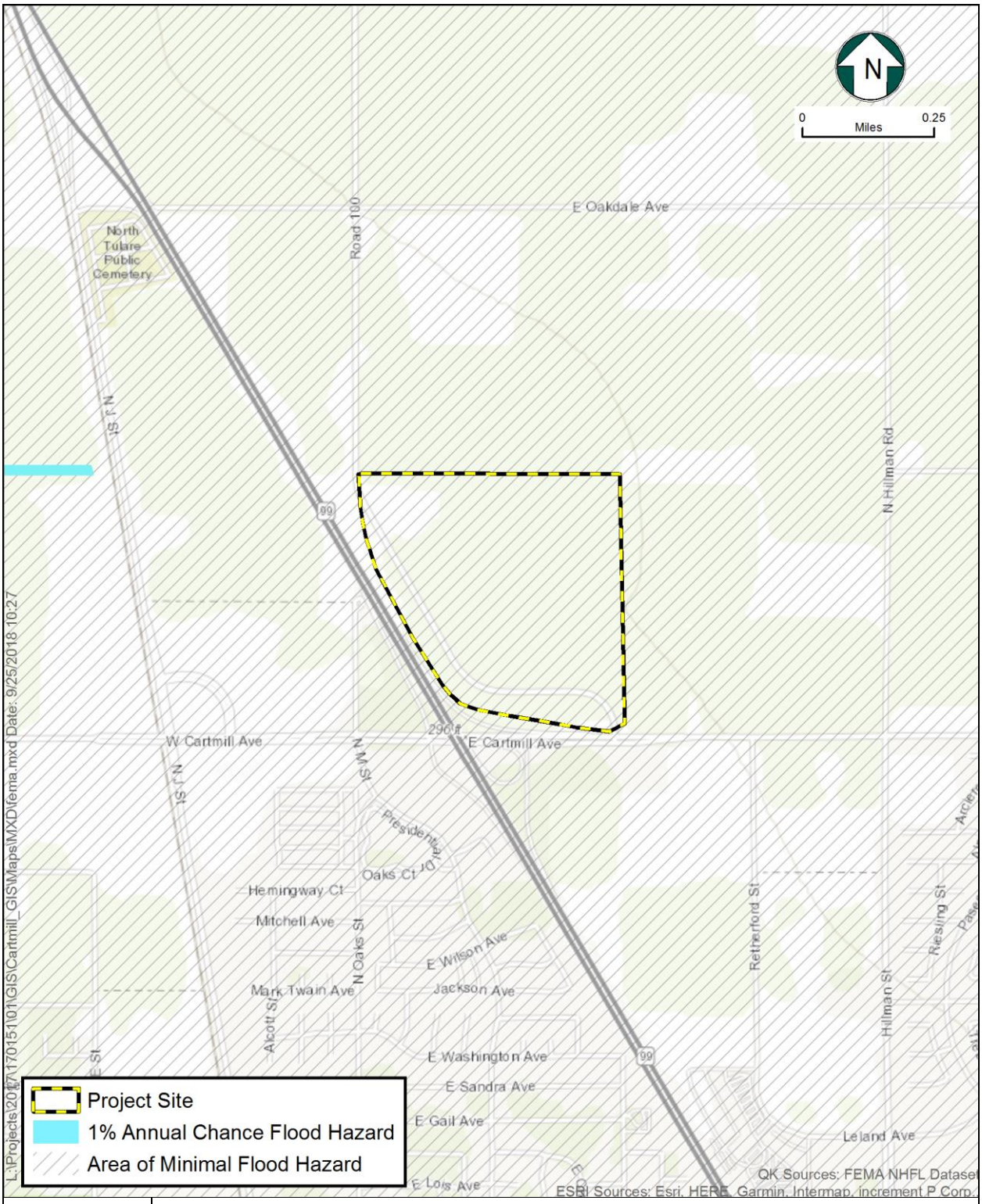


Figure 2-2
FEMA Map, Cartmill Crossings Project,
Tulare County, California



Figure 2-3
Habitat Type Map, Cartmill Crossing Project, Tulare County, California

Table 2-1
Plant and Animal Species Observed on the Cartmill Crossings Project, Tulare County, California

Scientific Name	Common Name
Plants	
Avena fatua	wild oat
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft chess
Chenopodium album	lamb's quarters
Conyza canadensis	horseweed
Croton setigerus	turkey mullein
Eschscholzia californica	California poppy
Festuca sp.	festuca
Gossypium sp.	cotton
Helianthus sp.	sunflower
Horedum sp.	foxtail barley
Juglans sp.	walnut
Lactuca serriola	prickly lettuce
Leptochloa fusca ssp. *uninervia*	Mexican sprangletop
Lotus purshianus var. *purshianus*	Spanish lotus
Malva neglecta	common mallow
Pistacia vera	pistachios
Prunus dulcis	almond
Quercus lobata	valley oak
Rumex crispus	curly dock
Salsola kali	Russian thistle
Schismus arabicus	Arabian grass
Sisymbrium irio	London rocket
Solanum elaeagnifolium	silver-leaved nightshade
Sorghum halepense	Johnson grass
Triticum sp.	wheat
Zea mays	corn
Wildlife	
Buteo jamaicensis	red-tailed hawk
Buteo swainsoni	Swainson's hawk
Charadrius vociferus	killdeer
Falco sparverius	American kestrel
Tyrannus verticalis	western kingbird
Zenaida macroura	mourning dove
Didelphis virginiana	opossum
Circus hudsonius	northern harrier

SECTION 3 - REGULATORY SETTING

3.1 - Applicable Federal Regulations

3.1.1 - FEDERAL ENDANGERED SPECIES ACT OF 1973 (USC, TITLE 16, SECTIONS 1531-1543)

The federal Endangered Species Act (FESA) and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. The U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) share responsibilities for administering the FESA. The FESA defines species as threatened or endangered and provides regulatory protection for listed species. The FESA provides a program for the conservation and recovery of threatened and endangered species as well as the protection of designated critical habitat that the USFWS and NMFS determines is required for the survival and recovery of listed species.

Section 4(a)(3) and (b)(2) of the FESA requires the designation of critical habitat to the maximum extent possible and prudent based on the best available scientific data and after considering the economic impacts of any designations. Critical habitat is defined in section 3(5)(A) of the FESA: 1) areas within the geographic range of a species that are occupied by individuals of that species and contain the primary constituent elements (physical and biological features) essential to the conservation of the species, thus warranting special management consideration or protection; and 2) areas outside of the geographic range of a species at the time of listing but that are considered essential to the conservation of the species.

Section 9 lists actions that are prohibited under the FESA. Although “take” of a listed species is generally prohibited, “take” can be permitted when it is incidental to an otherwise legal activity. The FESA defines “take” as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” The definition of “harm” is defined as an act which actually kills or injures wildlife and includes significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns related to breeding, feeding, or shelter. “Harass” is defined as actions that create the likelihood of injury to listed species by disrupting normal behavioral patterns related to breeding, feeding, and shelter significantly.

Section 7 of the FESA requires federal agencies, in consultation with and assistance from the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction of adverse modification of critical habitat for these species. Regulations governing interagency cooperation under Section 7 are found in California Code of Regulations (CCR) Title 50, Part 402. If an activity could result in "take" of a listed species as an incident of an otherwise lawful activity, then a biological opinion can be issued by the USFWS and/or NMFS with an incidental take statement that exempts the activity from FESA's take prohibitions.

Section 10 provides a means whereby a nonfederal action with the potential to result in take of a listed species can be allowed under an incidental take permit included within a Habitat Conservation Plan (HCP). Application procedures are found at CFR Title 50, Sections 13 and 17 for species under the jurisdiction of USFWS and CFR, Title 50, Sections 217, 220, and 222 for species under the jurisdiction of NMFS. Section 10 would apply to the Project if take of a species (as defined in Section 9) were determined to occur.

3.1.2 - MIGRATORY BIRD TREATY ACT (USC, TITLE 16, SECTIONS 703-711)

The MBTA, first enacted in 1918, is a series of treaties entered into among the United States, Great Britain (on behalf of Canada), Mexico, Japan, and the former Soviet Union that provide for international migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds. The act provides that it shall be unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird" (U.S. Code Title 16, Section 703). The MBTA currently includes several hundred species.

3.1.3 - BALD AND GOLDEN EAGLE PROTECTION ACT OF 1940 (USC, TITLE 16, SECTION 668)

The Bald and Golden Eagle Protection Act (BGEPA) of 1940 protects bald eagles (*Haliaeetus leucoephalus*) and golden eagle (*Aquila chrysaetos*) by prohibiting the taking, possession, and commerce of these species and established civil penalties for violation of this act. Take of bald and golden eagles includes to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." To disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially inferring with normal breeding, feeding, or sheltering behavior. (Federal Register [FR], volume 72, page 31132; 50 CFR 22.3).

3.1.4 - FEDERAL CLEAN WATER ACT (USC, TITLE 33, SECTIONS 1521-1376)

The federal Clean Water Act (CWA) provides guidance for the maintenance and restoration of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires that a Project applicant that is pursuing a federal license or permit allowing a discharge to waters of the U.S. obtain State Certification of Water Quality, thereby ensuring that the discharge will comply with provisions of the CWA. The State Water Resources Control Board and each of the nine Regional Water Quality Control Boards (RWQCB) administer the certification program in California. Section 402 establishes a permitting system for the discharge of any pollutant (except dredged or fill material) into waters of the U.S. as part of the National Pollutant Discharge Elimination System. Section 404 establishes a permit program administered by the U.S. Army Corps of Engineers (USACE) that regulates the discharge of the dredged or fill material into waters of the U.S., including wetlands. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines, which were developed by the U.S. Environmental Protection Agency (EPA) in conjunction with USACE (40 CFR 230). The guidelines allow the discharge of dredged or fill material into the

aquatic system only if there is no practicable alternative that would have less adverse impacts.

3.2 - Applicable State Regulations

3.2.1 - California Environmental Quality Act (California Public Resources Code, Section 21000-21178, and Title 14 CCR, Section 753, and Chapter 3, Sections 15000-15387)

The California Environmental Quality Act (CEQA) is California's broadest environmental law. CEQA helps guide the issuance of permits and approval of projects. Courts have interpreted CEQA to afford the fullest protection of the environment within the reasonable scope of the statutes. CEQA applies to all discretionary projects proposed to be conducted or approved by a State, County, or City agency, including private projects requiring discretionary government approval.

The purpose of CEQA is to disclose to the public the significant environmental effects of a proposed discretionary project; prevent or minimize damage to the environment through development of project alternatives, mitigation measures, and mitigation monitoring; disclose to the public the agency decision making process to approve discretionary projects; enhance public participation in the environmental review process; and improve interagency coordination.

State CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or State list of protected species nonetheless may be considered rare or endangered for purposed of CEQA if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in FESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals.

3.2.2 - California Endangered Species Act (California Fish and Game Code Section 2050 ET SEQ)

The California Endangered Species Act (CESA) establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The CESA mandates that State agencies should not approve Projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. For Projects that would result in take of a species listed under the CESA, a project proponent would need to obtain a take permit under Section 2081(b). Alternatively, the CDFW has the option of issuing a Consistency Determination (Section 2080.1) for Projects that would affect a species listed under both the CESA and the FESA, as long as compliance with the FESA would satisfy the "fully mitigate" standard of CESA, and other applicable conditions.

3.2.3 - VARIOUS SECTION OF THE CALIFORNIA STATE AND FISH AND GAME CODE

Section 460 and Sections 4000-4003

Chapter 5 of the California Fish and Game Code (FGC) describes regulations concerning the take of furbearing mammals, including defining methods of take, seasons of take, bag and possession limits, and areas of the State where take is allowed. Section 4000-4003 defines furbearing mammals, and the issuance of permits by the Department. Sections 460 and 4000 identifies fisher, marten, river otter, desert kit fox and red fox as furbearing mammals, and Section 460 prohibits take of these species at any time. This section of the California Fish and Game Code (FGC) has historically been interpreted to apply to restrictions on furbearer trapping permits but has recently been expanded by CDFW to apply to any forms of take and treated as if these species were listed under CESA.

Sections 3511, 4700, 5050, and 5515

Protection of fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the FGC. These statues prohibit take or possession of fully protected species. CDFW is unable to authorize incidental take of fully protected species, except as allowed for in an approved Natural Communities Conservation Plan (NCCP), or through direct legislative action.

Sections 1900 through 1913 – Native Plant Protection Act

California's Native Plant Protection Act (NPPA) requires all State agencies to use their authority to carry out programs to conserve endangered and rare native plants. Provision of the NPPA prohibit that taking of listed plants from the wild and require notification of CDFW at least ten days in advance of any change in land use. This allows CDFW to salvage listed plant species that otherwise would be destroyed. A Project proponent is required to conduct botanical inventories and consult with CDFW during Project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

3.3 - Applicable Regional and Local Regulations

3.3.1 - CITY OF TULARE GENERAL PLAN

Pursuant to California Code Title 14, Section 65300, the City of Tulare General Plan (City of Tulare 2014) addresses biological resources in its Conservation and Open Space Element. The plan also includes local, regional, State, and federal programs and regulations as well as a comprehensive set of guiding and implementing policies. The City of Tulare General Plan sets forth the following goals and policies relevant to biological resources:

Conservation and Open Space Element

Goal COS-2: To preserve and protect sensitive significant habitats, enhance biodiversity, and promote healthy ecosystems throughout the Urban Development Boundary (UDB).

Policy COS-P2.1: **Protection of Rare and Endangered Species**. The City shall support preservation, restoration, and enhancement of designated habitats of State or federally-listed rare, threatened, endangered and/or other sensitive and special status species.

Policy COS-P2.2: **Protection of Natural Areas**. The City shall support preservation, maintenance, restoration, and enhancement of natural systems, waterways, and open space.

Policy COS-P2.3: **Development in Environmentally-Sensitive Areas**. The City shall require careful planning of new development in environmentally sensitive habitat areas and to avoid or otherwise mitigate potential significant impacts whenever feasible. The focus of efforts shall be on project design to avoid impacts whenever feasible. Environmentally-sensitive habitat shall include, at a minimum, the following:

- Any habitat for a federally- or State-listed rare, threatened or endangered animal or plant
- Identifiable wildlife movement corridors, including, but not limited to, non-fragmented stream environment zones, and avian and mammalian migratory routes.

Policy COS-P2.4: **Site Planning**. The City shall encourage site planning that incorporates and protects creek and wetland edges.

Policy COS-P2.5: **Open Space Buffers**. The City shall require buffer areas between development projects and significant watercourses, riparian vegetation, wetlands, and other sensitive habitats and natural communities.

Policy COS-P2.6: **Planting of Native Vegetation**. The City shall encourage the planting of native trees, shrubs, and grasslands in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native vegetation and wildlife, and ensure that a maximum number and variety of well-adapted plants are maintained.

Policy COS-P2.7: **Valley Oaks**. The City shall preserve mature Valley Oaks and their habitats located within the UDB to the extent possible.

Policy COS-P2.8: **Wetlands Dedication**. The City shall require all preserved wetlands be dedicated to the City or a non-profit organization approved by the City and preserved through perpetual covenants enforceable by the City or other appropriate agencies.

Policy COS-P2.9: **Wetlands Management**. The City shall support the management of wetland and riparian plant communities for passive recreation, groundwater recharge, and wildlife habitats. Such communities shall be restored or expanded, where possible and as appropriate. Any project that proposes to restore or enhance riparian habitat shall require a Streambed Alteration Agreement in compliance with California Fish and Game Code sections 1600-1616. Any project that proposes to restore, enhance, or otherwise affect a jurisdictional wetland shall require consultation with the US Army Corps of Engineers and compliance with the Clean Water Act.

Policy COS-P2.10: **Stream Buffer**. The City shall require a conservation easement or setback of a minimum of 100 feet from the edge of the Elk Bayou riparian zone to avoid the stream channel and the surrounding riparian vegetation. The riparian zone should encompass the edge of the bayou bank (minimally) to the edge of the riparian vegetation bordering the stream (maximally).

Municipal Code Chapter 8.52 Heritage Trees Protection

Chapter 8.52 of the Municipal Code regulates the preservation and protection of heritage trees. Heritage trees are defined as any valley oak with a trunk diameter of two (2) inches or greater dbh, or any living tree designated by resolution of the Tulare City Council as a historic tree because of an association of an event or a person of historical significance to the community. Other trees may qualify as heritage trees based on their size, condition, or aesthetic qualities. Approved heritage trees are protected from destruction, removal, or pruning without a permit on both public and private properties; however, emergency events and public utilities are exempt.

SECTION 4 - METHODS

This section discusses the methods used to obtain relevant data on the occurrence, or potential occurrence, of natural resources on the Project. This included an agency-maintained database search, literature review, and on-site reconnaissance survey.

4.1 - Literature Review and Database Analysis

A review of agency databases was conducted in June 2018 to obtain information on the occurrences of natural communities and special-status species documented within the nine USGS 7.5-minute quadrangles that encompass the Project. The California Natural Diversity Database (CNDDB; CDFW 2018), California Native Plant Society Online Inventory of Rare and Endangered Plants of California (CNPS 2018), and USFWS Information for Planning and Consultation (IPaC) system and critical habitat mapper were reviewed to obtain occurrences of sensitive natural communities, federally-listed species, state-listed species, other species of special concern, and USFWS Critical Habitat Units that have been mapped within the nine quads surrounding the Project site or have the potential to occur within the search area (USFWS 2018a, 2018b). To satisfy other standard search criteria, CNDDB records within a 10-mile radius of the Project site were queried separately from the broader database search.

The CNDDB provides element-specific spatial information on individual documented occurrences of special-status species and sensitive natural vegetation communities. The CNPS database provides similar information as the CNDDB, but at a much lower spatial resolution. It should be noted that the recorded occurrences in these databases have largely been obtained opportunistically, and these databases do not constitute a comprehensive survey of the state. The USFWS query generates a list of federally protected species known to potentially occur within individual USGS quadrangles. Wildlife species designated as "Fully Protected" by California Fish and Game Code Sections 5050 (Fully Protected reptiles and amphibians), 3511 (Fully Protected birds), and 4700 (Fully Protected mammals) were included on the final list.

Reviews of the National Wetlands Inventory (NWI; USFWS 2018c) and National Hydrogeography Dataset (USGS 2018) were completed to identify whether wetlands had previously been documented on or adjacent to the Project site. The NWI, which is operated by the USFWS, is a collection of wetland and riparian maps that depicts graphic representations of the type, size, and location of wetland, deep water, and riparian habitats in the United States. In addition to the NWI, regional hydrologic information was obtained from the USGS to evaluate the potential occurrence of blueline streams within the Project Site.

Soils data were obtained from the Natural Resource Conservation District's web soil survey (USDA 2018), weather and precipitation data were obtained from the Western Regional Climate Center (WRCC 2018), and land use information was obtained from available aerial imagery. Information about flood-prone areas were obtained from the Federal Emergency Management Agency, Department of Homeland Security (FEMA 2018) and information on protected lands were obtained from Greeninfo Network (Greeninfo Network 2018).

The results of the database inquiries were subsequently reviewed to extract pertinent information on site conditions and evaluate the potential for sensitive biological resources to occur within or near the Project site. For the purposes of this document, species evaluated include those listed as threatened or endangered by the federal government (including critical habitat), those listed as threatened, endangered, rare (plants), fully protected, Species of Special concern, or watch list by the CDFW, and plants with California Rare Plant Ranks (CRPR) of 1A, 1B, 2A, and 2B on the list maintained by the CNPS.

4.2 - Reconnaissance-Level Survey

Reconnaissance-level biological surveys were conducted on June 13, 2018, by QK biologists Lisa Sandoval and Karissa Denney, and on September 7, 2018, by Karissa Denney and Kate Eldredge. Weather conditions during the site surveys were warm and sunny, and generally conducive to the detection of diurnally active animal species. The survey focused on determining the locations and extent of vegetation communities and the potential for occurrences of sensitive plant and animal species within the Project. All species observed are presented in Table 2-1. Surveys consisted of walking meandering pedestrian transects throughout the Project site. Current land uses within the Project were documented along with the presence of all plants, animals, and animal sign (scat, burrows, feather, tracks, etc.). All suitable habitats that could potentially support special-status plants and animals within the Project were documented and photographs were taken (Appendix B).

SECTION 5 - RESULTS AND DISCUSSION

The results of the database searches and evaluation of special-status species occurrence within the Project, as well as specific information gathered during the reconnaissance survey, are presented in this section. These findings are used to support the evaluations of the condition and sensitivity of the natural resources currently existing on and adjacent to the Project site. The evaluation of the potential impacts of the Project to sensitive natural resources are provided in Section 6.

5.1 - Sensitive Natural Communities

Sensitive natural communities are designated by various resource agencies including the CDFW, USFWS, BLM, Forest Service, or are designated by local agencies through policies, ordinances, and regulations. Sensitive natural communities generally have important functions or values for plants and wildlife or are recognized as declining in extent or distribution and warrant some level of protection.

5.1.1 - RESULTS OF LITERATURE REVIEW AND DATABASE SEARCHES

The database listed the occurrence of two sensitive natural community occurring in the region of the Project: Great Valley Valley Oak Riparian Forest and Valley Sacaton Grassland (Figure 5-1). Great Valley Valley Oak Riparian Forest is a mixed broad-leaved evergreen-cold deciduous habitat found along streams and rivers and dominated by Valley oaks and other oak trees, along with several understory associates such as poison oak (*Toxicodendron diversiloban*). These sites experience overbank flooding without severe physical battering or erosion. Valley Sacaton Grassland is wetland/meadow habitat dominated by alkali sacaton, a tuft formed grass, but may be dominated by other wetland grass species.

5.1.2 - PRESENCE OF SENSITIVE NATURAL COMMUNITIES

Neither Great Valley Valley Oak Riparian Forest or Valley Sacaton Grassland sensitive community types are present on the Project site or in adjacent areas. The northern half of the Project is currently cultivated with almond trees and a few scattered valley oaks. The southern half of the Project is disked with only ruderal vegetation present and a few scattered valley oak trees were observed. The nearest CNDDB recorded occurrence for the Valley Sacaton Grassland is approximately 10 miles northeast of the Project site. There is no riparian habitat to support Great Valley Valley Oak Riparian Forest within 10 miles of the Project site.

5.2 - Special-Status Plants

Special status plants are not limited to those that have been listed by State or federal agencies but include any plants that, based on all available data, are shown to be rare, threatened, or endangered in California. A species, subspecies, or variety of plant is "endangered" when the prospects of its survival and reproduction are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition,

or disease. A plant is "threatened" when it is likely to become endangered in the foreseeable future in the absence of protection measures. A plant is "rare" when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens.

5.2.1 - RESULTS OF LITERATURE REVIEW AND DATABASE SEARCHES

Seventeen (17) special-status plant species were identified in the CNDDB, CNPS, and USFWS databases (nine quad search) as occurring in the Project Region. Eleven special-status plant species are known to occur within the CNDDB 10 mile search of the Project (Table 5-1; Figure 5-1).

Table 5-1
Special-Status Plant Species Occurring in the Region of the Cartmill Crossings Project, Tulare County, California (Source: CNDDB 2018, CNPS 2018, and USFWS 2018)

Scientific Name	Common Name	Status
Atriplex cordulata var*. cordulata*	heartscale	1B.2
Atriplex cordulata var*. erecticaulis*	Earlimart orache	1B.2
Atriplex depressa	brittlescale	1B.2
Atriplex minuscula	lesser saltscale	1B.1
Atriplex subtilis	subtle orache	1B.2
Caulanthus californicus	California Jewelflower	FE, CE, 1B.1
Delphinium hansenii ssp*. eqanianum*	Ewan's Jewelflower	4.2
Delphinium inopinum	unexpected larkspur	4.3
Delphinium recurvatum	recurved larkspur	1B.2
Eriogonum twisselmannii	Twisselmann's buckwheat	1B.2
Eryngium spinosepalum	spiny-sepaled button-celery	1B.2
Hordeum intercedens	vernal barley	3.2
Imperata brevifolia	California satintail	2B.1
Oreonana purpurascens	purple mountain-parsley	1B.2
Pseudobahia peirsonii	San Joaquin adobe sunburst	FT, CE, 1B.1
Puccinellia simplex	California alkali grass	1B.2
Sagittaria sanfordii	Sanford's arrowhead	1B.2

Sources:

- California Department of Fish and Wildlife. 2018. California Natural Diversity Data Base, California Department of Fish and Wildlife Sacramento, CA. Quads: (*Taylor Weir, Tipton, Goshen. Visalia, Paige, Exeter, Tulare, Cairns Corner, Woodville*).
- California Native Plant Society (CNPS). 2018. Inventory of Rare and Endangered Plants (online edition, v6-05b 4-11-05). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Quads: (*Taylor Weir, Tipton, Goshen, Rocky Hill, Visalia, Paige, Exeter, Tulare, Alpaugh, Cairns Corner, Woodville, Pixley, Sausalito School*).
- Unites States Fish and Wildlife Service. 2018. Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Tulare U.S.G.S 7 ½ Minute Quad. USFWS. Sacramento, CA. Quads: (*Taylor Weir, Tipton, Goshen, Rocky Hill, Visalia, Paige, Exeter, Tulare, Alpaugh, Cairns Corner, Woodville, Pixley, Sausalito School*).

Abbreviations:

1A California Native Plant Society List 1A Species- Plants Presumed Extinct in California
1B.1 California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Seriously Endangered in California

1B.2 California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Fairly Endangered in California.
1B.3 California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Not Very Endangered in California
2A California Native Plant Society List 2A Species-Plants categorized as Presumed Extirpated in California, But More Common Elsewhere
2B.1 California Native Plant Society List 2B Species-Plants Categorized as Endangered in California; Seriously Endangered
2B.2 Native Plant Society List 2B Species-Plants Categorized as Endangered in California; Fairly Endangered in California
2B.3 Native Plant Society List 2B Species-Plants Categorized as Endangered in California; Not Very Endangered in California
3.1 Native Plant Society List 3 Species-Plants Categorized as Needs More Information; Seriously Endangered in California
3.2 Native Plant Society List 3 Species-Plants Categorized as Needs More Information; Fairly Endangered in California.
3.3 Native Plant Society List 3 Species-Plants Categorized as Needs More Information; Not Very Endangered in California
4.1 Plants of limited distribution (watch list), Seriously endangered in California; (over 80% of occurrences threatened / high degree and immediacy of threat)
4.2 Plants of limited distribution - Watch list, Fairly endangered in California (20-80% occurrences threatened)
4.3 Plants of limited distribution - Watch list, Not very endangered in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known)
FE Federal Endangered Species
FT Federal Threatened Species

5.2.2 - PRESENCE OF SPECIAL-STATUS PLANTS

No special-status species were observed during the reconnaissance biological survey. The Project site had various common plant species present (Section 2, Table 2-1). The potential for special-status plant species to occur on the Project site is unlikely due to the frequent disking of the uncultivated portions and the intensive maintenance of the active agricultural portions of the Project site.

5.3 - Special-Status Wildlife

This section provides the results of wildlife species listed as occurring within the Project region from database queries in addition to species or sign observed during on-site surveys, and include species listed as threatened or endangered by the CDFW and/or USFWS, species designated as Species of Special Concern, and Fully Protected species.

5.3.1 - RESULTS OF LITERATURE REVIEW AND DATABASE SEARCHES

Twenty-seven (27) special-status wildlife species were identified in the CNDDB and USFWS database queries within the database search area (Table 5-2). These include one crustacean, five invertebrates, one fish, three amphibians, four reptiles, eight birds, and five mammals. Thirteen (13) special-status wildlife species were documented as occurring within the 10 miles radius of the Project site (Figures 5-2, 5-3, 5-4). Four special-status wildlife species have the potential to occur on or near the Project site because the site provides suitable habitat and is within the geographic and elevational range of the species (Appendix A). The identified species include two birds and two mammals.

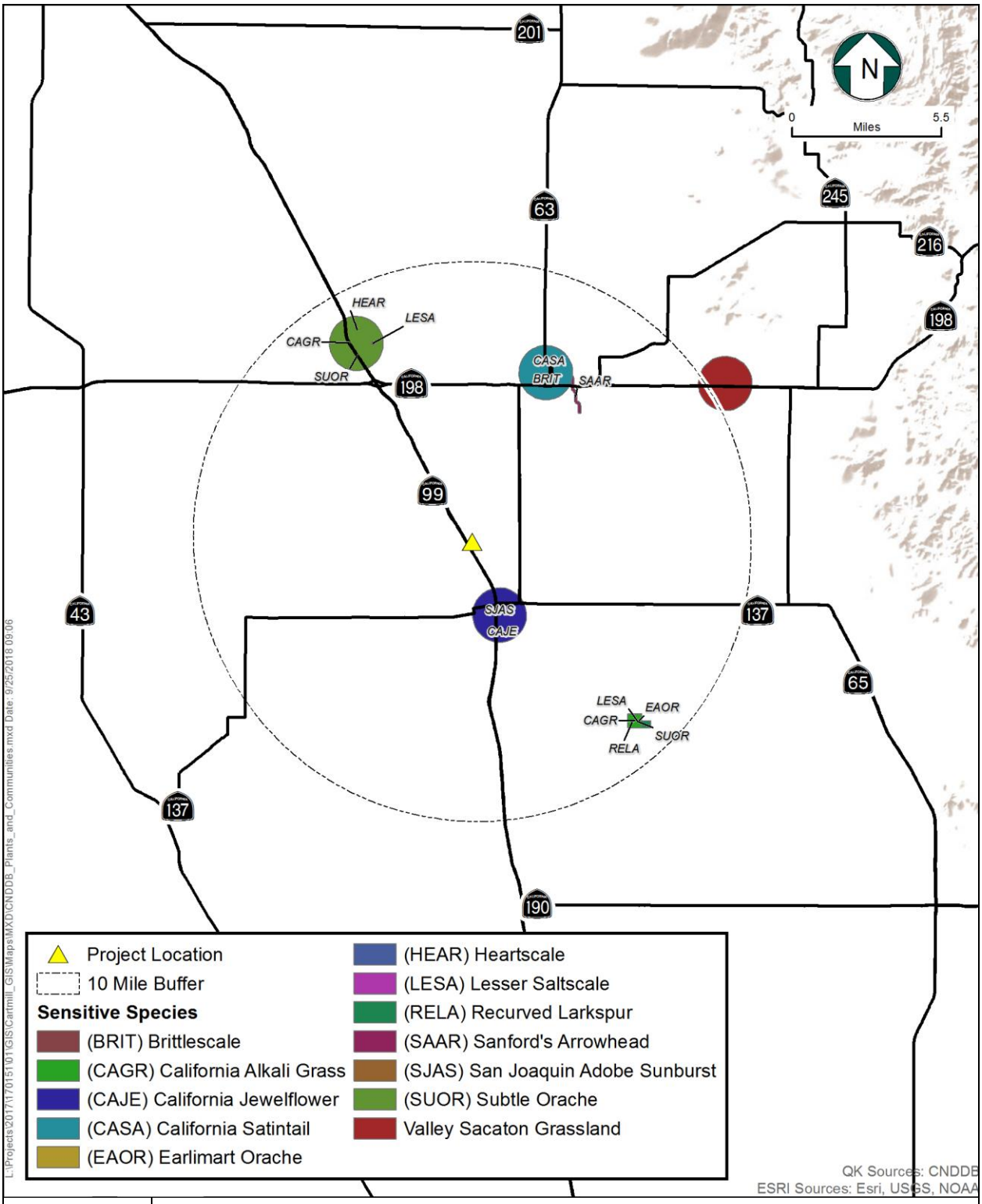


Figure 5-1
Occurrences of Sensitive Natural Communities and Special-Status Plant Species within 10 Miles of the Cartmill Crossings Project, Tulare County, California

Table 5-2
Special-Status Wildlife Species Occurring in the Region of the Cartmill Crossings Project, Tulare County, California

Scientific Name	Common Name	Status
Invertebrates		
Andrena macswaini	andrenid bee	SA
Bombus crotchii	Crotch bumble bee	SA
Branchinecta lynchi	vernal pool fairy shrimp	FT
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT
Lytta hoppingi	Hopping's blister beetle	SA
Lytta morrisoni	Morrison's blister beetle	SA
Talanites moodyae	Moody's gnaphosid spider	SA
Fish		
Hypomesus transpacificus	delta smelt	FT, CE
Amphibians		
Ambystoma californiense	California tiger salamander	FT, CT, CDFW-WL
Rana draytonii	California red-legged frog	FT, CSC
Spea hammondii	western spadefoot	CSC
Reptiles		
Anniella pulchra	northern California legless lizard	CSC
Emys marmorata	western pond turtle	CSC
Gambelia sila	blunt-nosed leopard lizard	FP, FE, CE
Thamnophis gigas	giant garter snake	FT, CT
Birds		
Agelaius tricolor	tricolored blackbird	CT
Athene cunicularia	burrowing owl	CSC
Buteo swainsoni	Swainson's hawk	CT
Charadrius montanus	mountain plover	CSC
Coccuzus americanus occidentalis	western yellow-billed cuckoo	FT, CE
Mammals		
Antrozous pallidus	pallid bat	CSC
Dipodomys nitratoides nitratoides	Tipton kangaroo rat	FE, CE
Eumops perotis californicus	western mastiff bat	CSC
Taxidea taxus	American badger	CSC
Vulpes macrotis mutica	San Joaquin kit fox	FE, CT

Sources:

- California Department of Fish and Wildlife. 2018. California Natural Diversity Data Base, California Department of Fish and Wildlife Sacramento, CA. Quads: (*Taylor Weir, Tipton, Goshen. Visalia, Paige, Exeter, Tulare, Cairns Corner, Woodville*).
- Unites States Fish and Wildlife Service. 2018. Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Tulare U.S.G.S 7 ½ Minute Quad. USFWS. Sacramento, CA. Quads: (*Taylor Weir,*

Tipton, Goshen, Rocky Hill, Visalia, Paige, Exeter, Tulare, Alpaugh, Cairns Corner, Woodville, Pixley, Sausalito School).

Abbreviations:

BLM-S	Bureau of Land Management Sensitive Species
FE	Federal Endangered Species
FT	Federal Threatened Species
CE	California Endangered Species
CT	California Threatened Species
CSC	California Species of Special Concern
CDFW-WL	CDFW Watch List Species
ST	State Threatened
FP	California Fully Protected
USFWS	U.S. Fish and Wildlife Service
USFWS-S	USFWS Sensitive
S-Candidate	State Candidate
CDFW-S	CDFW Sensitive
SA	An animal included on the CDFW Special Animals list with not specific state or federal status

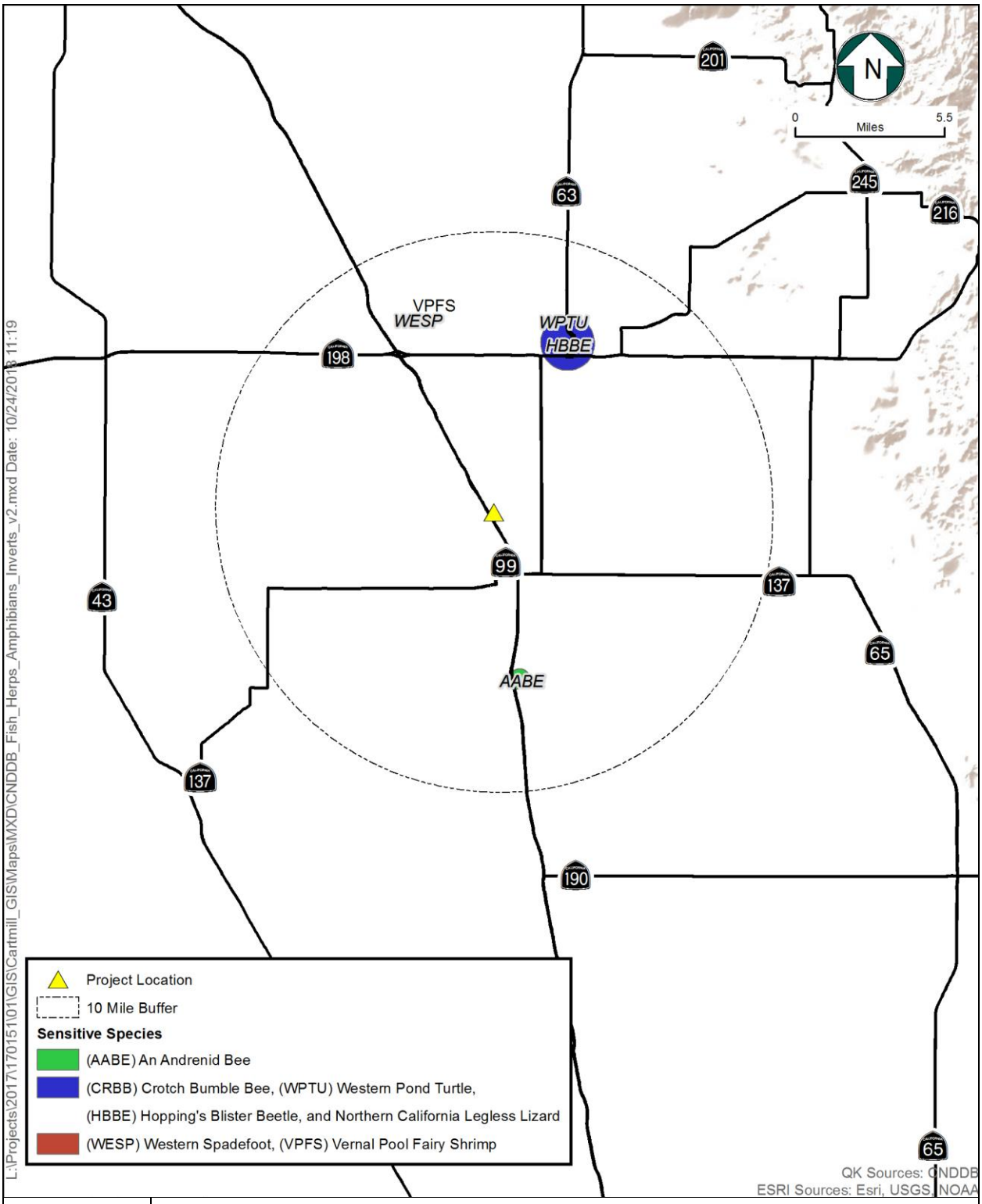


Figure 5-2
Occurrences of Special-Status Invertebrates, Amphibians, and Reptiles within 10-Miles of the Cartmill Crossings Project, Tulare County, California

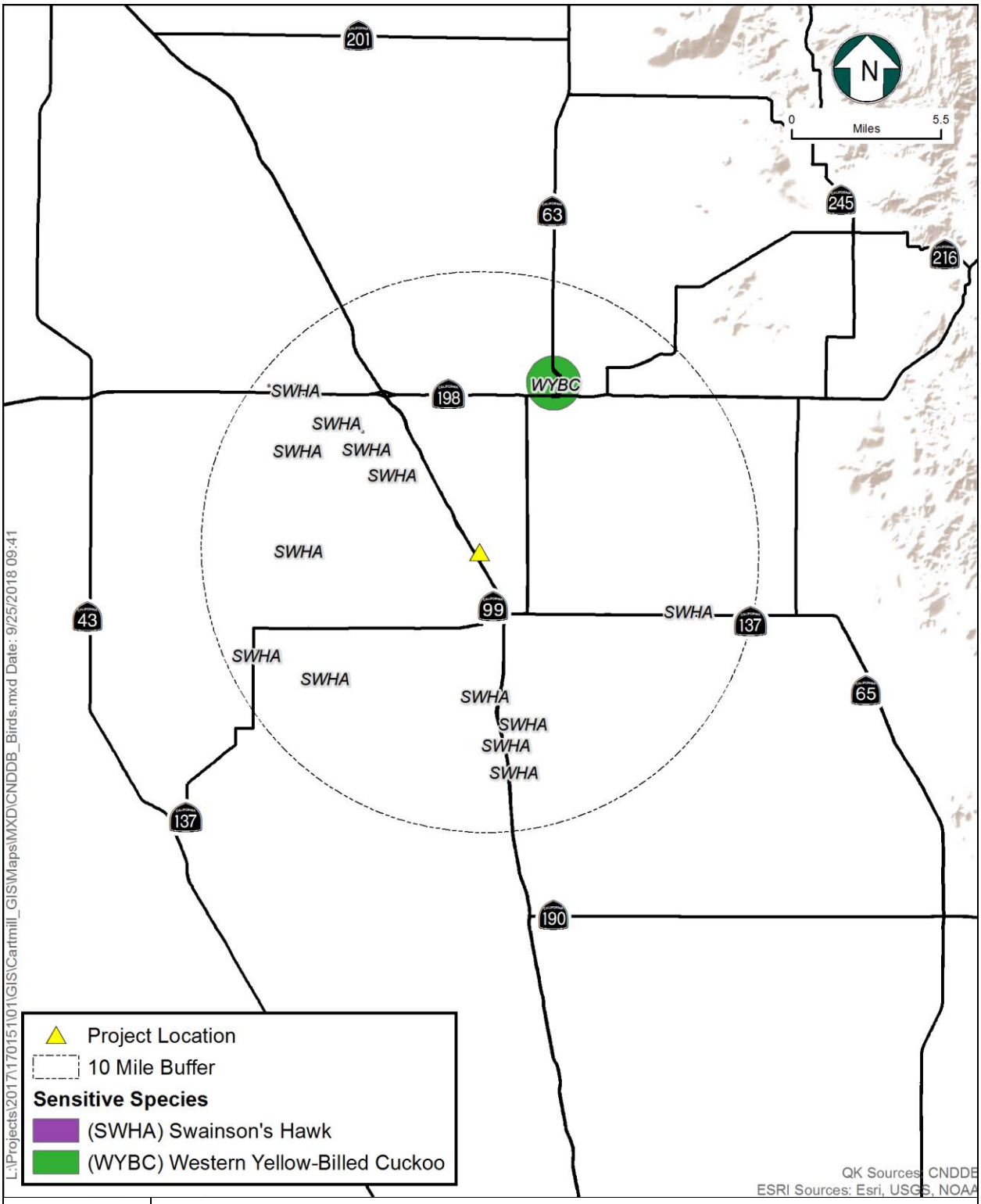


Figure 5-3
Occurrences of Special-Status Birds within 10 Miles of the Cartmill Crossings Project, Tulare County, California

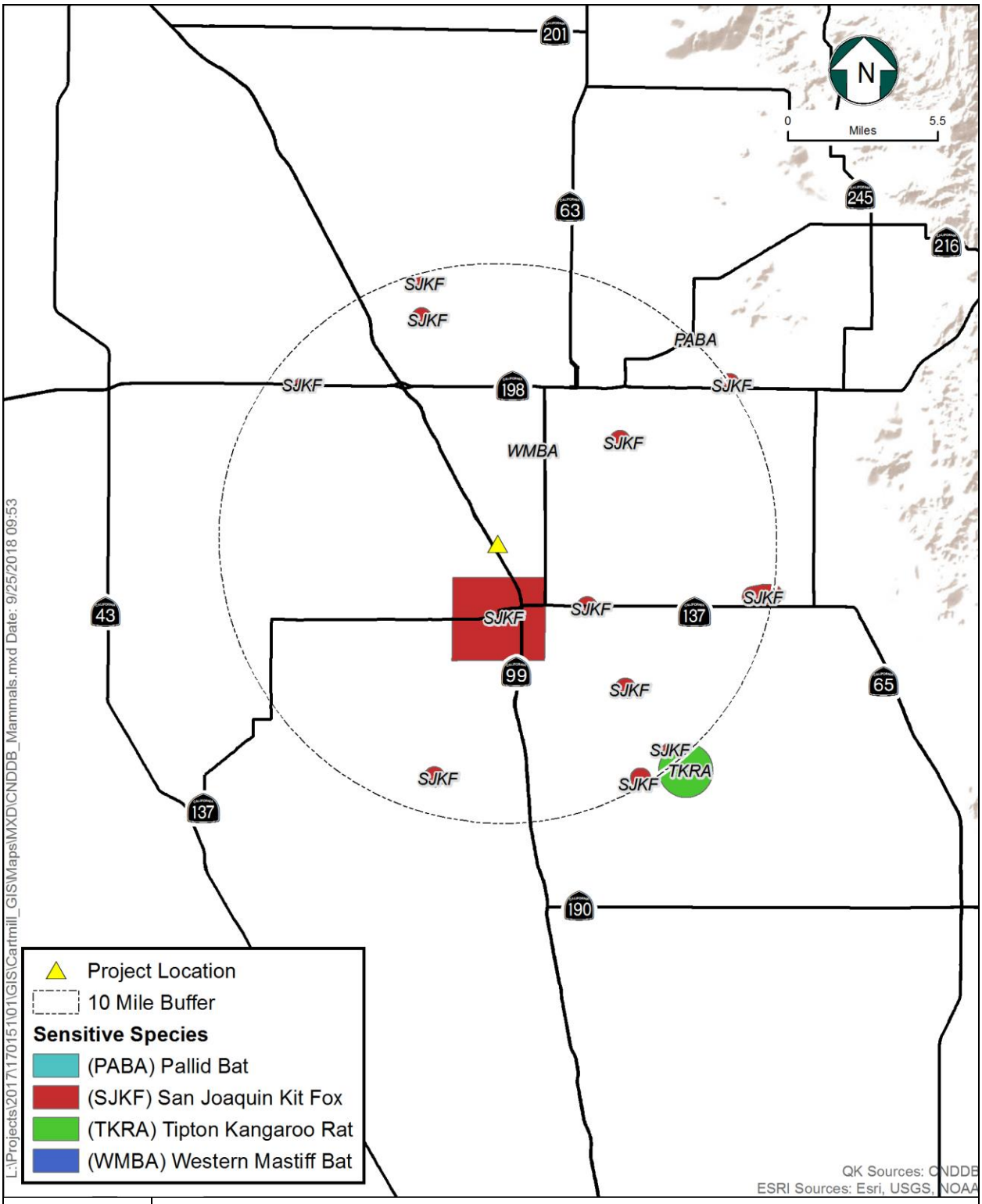


Figure 5-4
Occurrences of Special-Status Mammals within 10-Miles of the Cartmill Crossing Project, Tulare County, California

5.3.2 - PRESENCE OF SPECIAL-STATUS WILDLIFE

Of the thirteen species identified in the database search, four have the potential to occur on the site. These species included the burrowing owl (*Athene cunicularia*), Swainson's hawk, American badger (*Taxidea taxus*), and San Joaquin kit fox (*Vulpes macrotis mutica*). The evaluation of the potential for occurrence of these and other wildlife species are presented in Appendix B.

Burrowing Owl

No burrowing owls or their sign (i.e. whitewash or burrows) were observed on or near the Project site during the time of the survey. Marginal foraging habitat is present but no burrows were observed. If the field is not frequently disked, prior to construction of the Project, then it may be possible for burrows to become established which may be suitable for burrowing owls. Suitable habitat for the species is present on nearby fields located to the south of the Project site.

Swainson's Hawk

Three stick nests were observed in the reconnaissance survey area in large Valley oak trees though none were currently occupied (Figure 5-5). One of these nests may have been active during the 2018 breeding season as one individual was observed flying over the southern portion of the Project site the near a stick nest in a large Valley oak tree; however, the site visits occurred towards the end of the Swainson's hawk breeding season and active nests may have already fledged.

American Badger

No American badger or it's sign (i.e. tracks, scat, or dens) were observed on or near the Project site during the time of the survey. American badgers do not den in frequently plowed fields, and den establishment in the orchards is unlikely due to the intensive maintenance they are subjected to. If the disked field were to become fallowed and untouched for a substantial period of time, dens could become established. The American badger is known as a transient forager and could potentially be on the site at any time. Potential suitable habitat for the species is present on the nearby fields located to the south of the Project site.

San Joaquin Kit Fox

No San Joaquin kit fox (SJKF) or it's sign (i.e. tracks, scat, or dens) were observed on or near the Project site during the time of the survey. Marginal habitat is present on the Project site due to the well maintain disking of the field; however, it is possible for a den to become established during long periods between disking, and to be maintained if disking is shallow. The SJKF is known as a transient forager and could potentially be on the site at any time. Potential suitable habitat for the species is present on the nearby fields located to the south of the Project site.

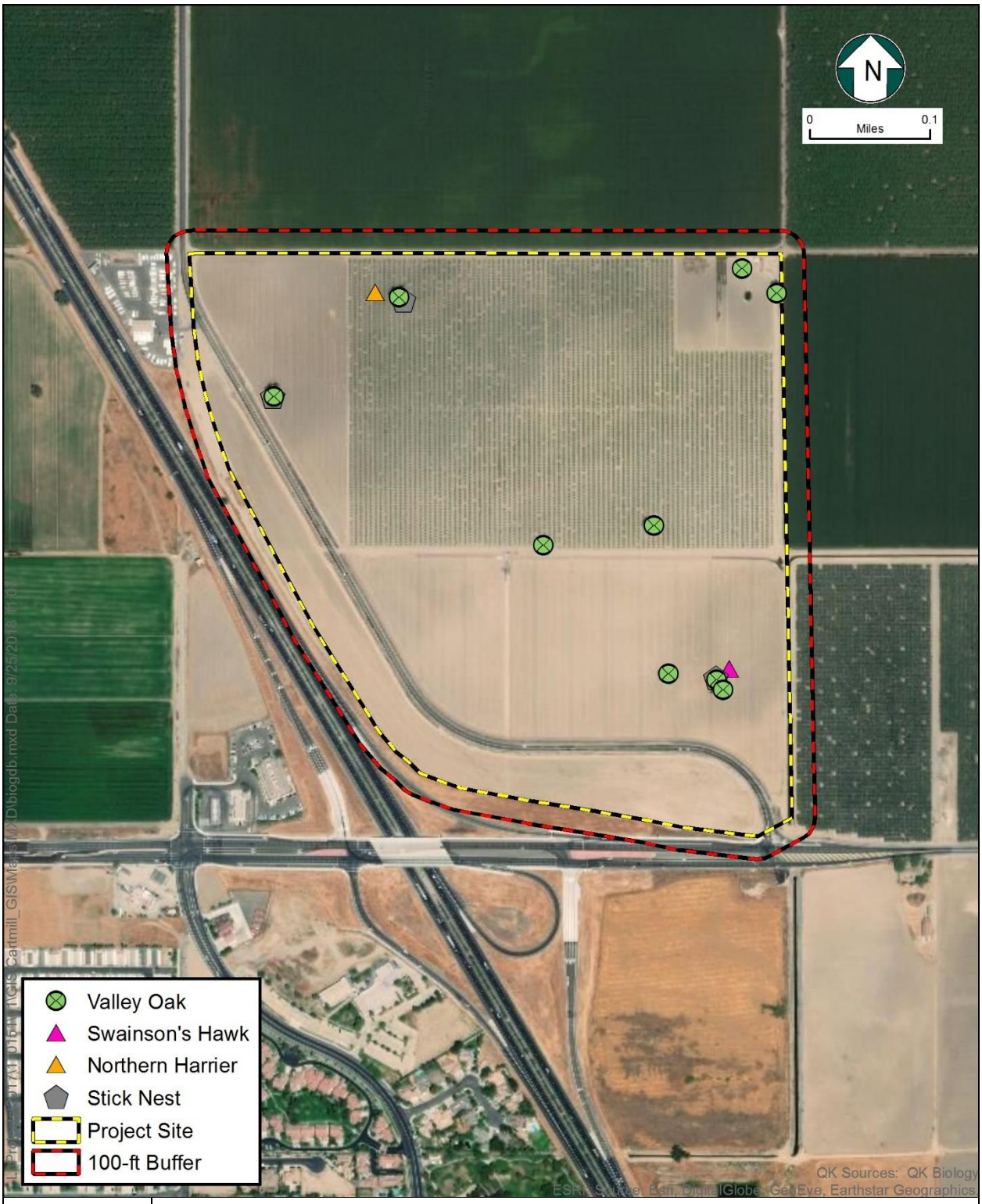


Figure 5-5
Biological Resources Map
Cartmill Crossings Project, Tulare County, California

5.4 - Critical Habitat, Movement Corridors, and Linkages

Habitat may be designated as Critical Habitat by the USFWS, which are blocks of habitat that may or may not be currently occupied by species, but which are of the highest priority for the survival, conservation, and recovery of threatened or endangered species. Wildlife movement corridors, also referred to as dispersal corridors or landscape linkages, are generally defined as linear features along which animals can travel from one habitat or resource area to another.

5.4.1 - Results of Literature Review and Database Searches

Critical habitat for five species near the Project site, including vernal pool tadpole shrimp, vernal pool fairy shrimp, San Joaquin Orcutt grass, Hoover's spurge, and California tiger salamander.

5.4.2 - Presence of Critical Habitat, Movement Corridors, and Linkages

No critical habitat is mapped on the Project site or within 10 miles. According to the data base search, no wildlife movement corridors or linkages were identified on or near the Project site. There are no features on-site that would be identified as a movement corridor or linkage between areas of suitable habitat.

5.5 - Waters and Wetlands

This section describes the results of the database queries and focused delineations of waters and wetlands on the Project site.

5.5.1 - Results of Literature Review and Database Searches

The literature review and database searches defined several water features near the Project, primarily canals and basins associated with agricultural uses. (Figure 5-7).

5.5.2 - Presence of Waters and Wetlands

No water or wetland features were observed on the Project site. The nearest water source is immediately adjacent to the Project on the eastern edge of the site. The water feature is a canal ditch.

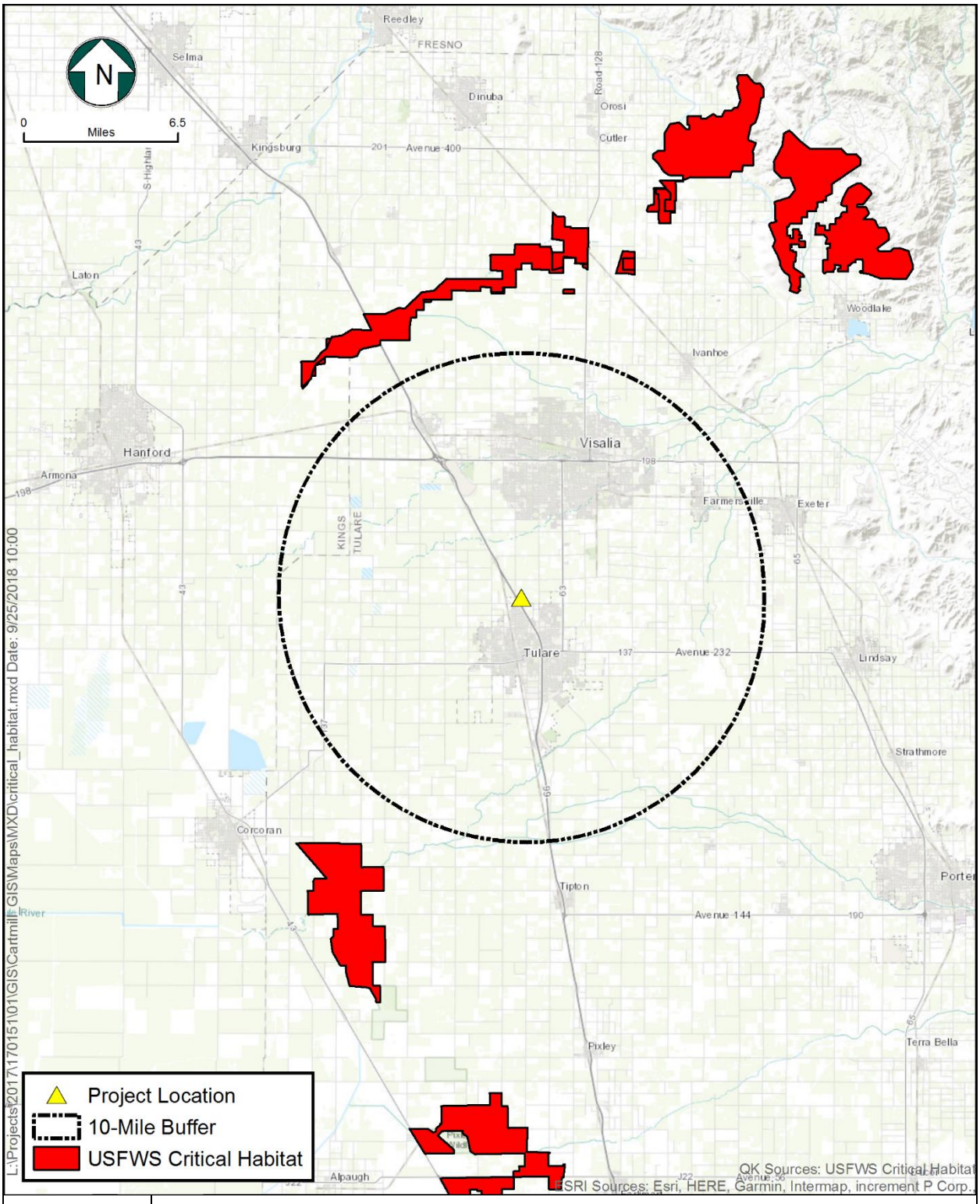


Figure 5-6
Critical Habitat and Movement Corridors and Linkages
Cartmill Crossing Project, Tulare County, California

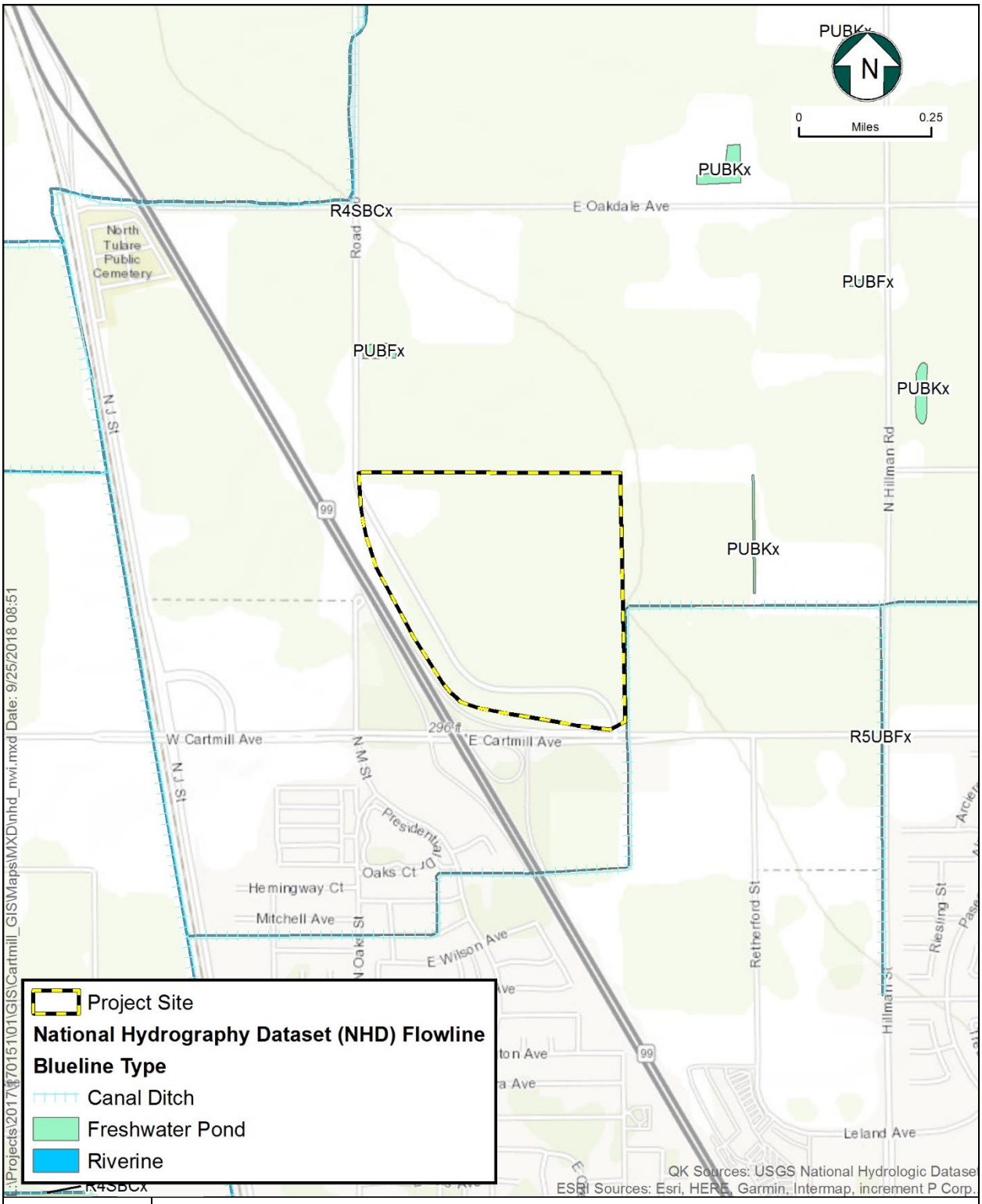


Figure 5-7
National Wetlands Inventory Map
Cartmill Crossings Project, Tulare County, California

SECTION 6 - EVALUATION OF IMPACTS AND RECOMMENDED AVOIDANCE AND MINIMIZATION MEASURES

This section evaluates Project-related impacts to sensitive biological resources. Direct and indirect impacts are identified. Temporary impacts are defined as impacts with a maximum duration of one calendar year. The CDFW defines that one-year term to include the duration of the impact plus the length of time required to fully restore the impacted area to pre-project conditions. When significant impacts are identified or when they would be anticipated to occur, recommended measures to avoid or reduce those impacts to less than significant levels are provided.

The analysis of impacts that is provided is based upon the requirements of CEQA, and the associated thresholds of significance. The fundamental definition of significant impact under CEQA is "a substantial adverse change in physical conditions." This criterion underlies the evaluation of environmental impacts for most of the impact issues identified in the CEQA Environmental Checklist Form (Guidelines Appendix G). The significance threshold for evaluation of impacts under CEQA will not necessarily equate to a regulatory limit or standard. Instead, under CEQA, most thresholds are set at meaningful levels, independent of regulatory thresholds. Some thresholds are driven by regulatory standards (HCP compliance, Air Quality plan compliance, etc.).

For each of the existing biological conditions described in this report, potential impacts are addressed in accordance with the biological issues listed in Appendix G of the CEQA Guidelines, which are:

(A) Would the project 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 California Department of Fish and Game or U.S. Fish and Wildlife Service?

(B) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, any regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

(C) Would the project have a substantial adverse effect on federally protected wetlands as defined by section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

(D) Would the project 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?

(E) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

(F) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan or Recovery Plan?

Each issue is assessed according to thresholds of significance established under CEQA Guidelines §15065(a), as modified. These are:

- Would the project result in substantial degradation of the environment?
- Would the project result in substantial habitat reduction for a fish or wildlife species?
- Would the project result in reduction of a fish or wildlife population below self-sustaining levels?
- Would the project result in elimination of a plant or animal community?
- Would the project result in substantial reduction of the number of, or restriction of the range of, a rare or threatened species, or result in direct or indirect "take" of an endangered species as defined in State or federal Endangered Species Acts?

6.1 - Project Impacts to Special-Status Species (CEQA Evaluation Factor A):

6.1.1 - PROJECT IMPACTS TO SPECIAL-STATUS PLANT SPECIES

It was determined that no special-status species have the potential to occur on the Project site due to the lack of suitable habitat. The Project site is subject to frequent and intensive disturbance for agricultural uses and no habitats which could support special-status plant species are present. As such, no impacts to special-status plant species would occur as a result of implementation of the Project.

6.1.2 - PROJECT IMPACTS TO SPECIAL-STATUS WILDLIFE SPECIES

Four special-status species were determined to have the potential to occur on-site: burrowing owl, American badger, San Joaquin kit fox, and Swainson's hawk. In addition, implementation of the Project may result in impacts to nesting birds protected by the Migratory Bird Treaty Act and the California Fish and Game Code.

Burrowing owl, American badger, and San Joaquin kit fox each utilize burrows for breeding and shelter; however, not burrows were found on-site. The high level of disturbance on-site for agricultural activities precludes the establishment of burrows suitable for these species. Therefore, it is unlikely that these species would reside on-site. However, if any portion of the site were to become fallowed and no longer subject to such intensive disturbance for a period of time prior to construction of the Project, these species could be encouraged to establish burrows on-site. American badgers can dig new burrows each night, and San Joaquin kit fox have been documented using man-made structures, such as culverts and pipes, for shelter. Burrowing owls don't dig their own burrows, but may use burrows constructed by other animals, and they have been known to use pipes and culverts for shelter.

The site does provide some foraging habitat, particularly in the portions of the site that are not currently planted with almond trees. Based on a review of aerial imagery, there appears to be potentially suitable habitat in the vicinity of the site, and these three species may occur on-site transiently to forage.

Swainson's hawks were observed on-site, including near one of the three stick nests documented on-site (Figure 5-5). It's possible that Swainson's hawks have nested on the site; however, the site visits were conducted during a time of year when Swainson's hawk nesting is ending for the year. Swainson's hawks prefer to nest in isolated trees or small groups of trees close to grasslands and dry-land grain fields for foraging. There is a moderate to high probability that Swainson's hawks have nested in one or more of the three stick nests documented on-site, and the portions of the site that are not planted as orchards provide suitable habitat. Furthermore, Figure 5-3 depicts several recorded occurrences of Swainson's hawks within 10 miles of the Project site.

The Project site also has the potential to support several ground and tree nesting bird species, including the red-tailed hawk, killdeer (*Charadrius vociferus*), American kestrel (*Falco sparverius*), mourning dove (*Zenaida macroura*) and western kingbird (*Tyrannus verticalis*) that were observed during the site visit, plus many others.

RECOMMENDED MEASURES TO PROTECT SPECIAL-STATUS ANIMAL SPECIES

The following measures are design to avoid and minimize impacts to special-status animal species:

BIO-1: Preactivity Clearance Survey for San Joaquin Kit Fox, American Badger, and Burrowing Owl. Within 14 days of the start of any Project activity (including staging and construction survey), a qualified biologist with specific species knowledge and experience should conduct a pedestrian survey of the entire Project site to look for evidence of special-status mammal species. The survey will ensure 100% coverage of the disturbance footprint plus a 250-foot buffer where access is feasible. If the survey buffer is not accessible, the area should be scanned visually. This survey effort should timed to occur prior to each phase of construction. Upon completion of each phased survey effort, a report of the survey findings should be submitted to the City to confirm compliance with this measure.

BIO-2: Standard Avoidance and Minimization Measures. *The U.S. Fish and Wildlife Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011), a copy of which is included in Appendix C, should be implemented during construction of the Project to avoid and minimize impacts both San Joaquin kit fox and American badger. These measures include:

- Project-related vehicles should observe a daytime speed limit of 20-mph throughout the site in all Project areas, except on county roads and State and Federal highways; this is particularly important at night when kit foxes are most active. Night-time construction should be minimized to the extent possible. However, if it does occur, then the speed limit should be reduced to 10-mph. Off-road traffic outside of designated Project areas should be prohibited.

- To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a Project, all excavated, steep-walled holes or trenches more than 2-feet deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks should be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW should be contacted as noted under measure 13 referenced below.

- Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the USFWS has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.

- All food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least once a week from a construction or Project site.

- No firearms should be allowed on the Project site.

- No pets, such as dogs or cats, should be permitted on the Project site to prevent harassment, mortality of kit foxes, or destruction of dens.

- Use of rodenticides and herbicides in Project areas should be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional Project-related restrictions deemed necessary by the USFWS. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox.

- A representative should be appointed by the Project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number should be provided to the USFWS.

- An employee education program should be conducted for any Project that has anticipated impacts to kit fox or other endangered species. The program should consist of a brief presentation by persons knowledgeable in kit fox biology and

legislative protection to explain endangered species concerns to contractors, their employees, and military and/or agency personnel involved in the Project. The program should include the following: A description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the Project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of measures being taken to reduce impacts to the species during Project construction and implementation. A fact sheet conveying this information should be prepared for distribution to the previously referenced people and anyone else who may enter the Project site.

- Upon completion of the Project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. should be re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the Project, but after Project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas should be determined on a site-specific basis in consultation with the USFWS, CDFW, and revegetation experts.

- In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape, or the USFWS should be contacted for guidance.

- Any contractor, employee, or military or agency personnel who are responsible for inadvertently killing or injuring a San Joaquin kit fox should immediately report the incident to their representative. This representative should contact the CDFW immediately in the case of a dead, injured or entrapped kit fox. The CDFW contact for immediate assistance is State Dispatch at (916)445-0045. They will contact the local warden or wildlife biologist. The USFWS should be contacted at the numbers below.

- The Sacramento Fish and Wildlife Office and CDFW should be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during Project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The USFWS contact is the Chief of the Division of Endangered Species, at the addresses and telephone numbers below.

- New sightings of kit fox should be reported to the CNDDB. A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to the USFWS.

BIO-3: Den Avoidance. In the event that a potential den that may be suitable for American badger, San Joaquin kit fox, or burrowing owl is detected during pre-activity clearance surveys, the biologist should monitor the den using cameras and tracking medium for up to five (days) to determine if the den is occupied by a special-status species. If after five (5) days no activity is detected, the den should be collapsed by fully excavating the den to the

end of each tunnel to ensure that no animals are in it, and then the den can be backfilled. Construction personnel may collapse the den only under the direct supervision of the biologist. If a special-status species is detected using the den, the den must be avoided until the animal leaves on its own. A minimum 100-foot buffer should be constructed using orange construction fencing around the den during the non-breeding season. During the breeding season, the buffer should be extended to 250 feet. Consultation with the USFWS and/or CDFW will be required prior to collapsing dens known to be occupied by San Joaquin kit foxes.

BIO-4: Swainson's Hawk Avoidance and Minimization. To confirm nesting and foraging use of the Project site, protocol surveys should be conducted in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (CDFW 2000), a copy of which is included in Appendix D. If an active Swainson's hawk nest is present on-site, no work may occur within 0.5 mile of the nest without consultation with the CDFW (an Incidental Take Permit will likely be required). Non-orchard portions of the Project that provide foraging habitat should be mitigated at a ratio of at least 2:1 (habitat created/preserved to habitat lost). Note that the CDFW may require a higher mitigation ratio through the Incidental Take Permit process.

BIO-5: Nest Avoidance. All trees, including orchard trees, should be removed outside of the bird nesting season (February 1 through September 15). If Project activities are planned to start during the nesting season, a pre-activity nesting bird survey should be conducted within seven (7) days of the start of these activities. These surveys should be phased with construction of the Project site. A report of survey findings should be provided to the City to confirm compliance with this measure. If active nests are detected during the survey, or at any time during construction of the Project, an avoidance buffer will be established by a qualified biologist based on the species and the activities that are underway. For raptor species (except Swainson's hawk), the avoidance will typical be not less than 250 feet. For non-raptor species, the buffer may range from 50 to 100 feet. Note that some bird species are known to nest on human structures, including construction equipment. Construction personnel should be educated about this possibility as part of the employee education program included under measure BIO-2.

EFFECTIVENESS OF MEASURES

With implementation of the above measures, impacts to special-status species due to implementation of the Project as proposed would be considered less than significant.

6.2 - Project Impacts to Riparian Habitat and Other Sensitive Natural Communities (CEQA Evaluation Factor B):

6.2.1 - PROJECT IMPACTS TO SENSITIVE NATURAL COMMUNITIES

There are no sensitive natural communities or riparian habitats present on the Project site and there would be no impacts to sensitive natural communities.

RECOMMENDED MEASURES TO PROTECT SENSITIVE NATURAL COMMUNITIES

No recommendations.

EFFECTIVENESS OF MEASURES

Not applicable.

6.3 - Project Impacts to Federal and State Wetlands and Waters (CEQA Evaluation Factor C):

6.3.1 - Project Impacts to Federal Wetlands and Other Waters

There are no federal or state waters or wetlands located on or near the Project. The Project will result in ***no impacts*** to any waters or wetlands.

RECOMMENDED MEASURES TO PROTECT SENSITIVE NATURAL COMMUNITIES

No recommendations.

EFFECTIVENESS OF MEASURES

Not applicable.

6.3.2 - Project Impacts to State Regulated Waters

There are no state regulated waters located on or near the Project. The Project will result in ***no impacts*** to any state regulated waters.

RECOMMENDED MEASURES TO PROTECT STATE REGULATED WATERS

No recommendations.

EFFECTIVENESS OF MEASURES

Not applicable.

6.4 - Project Impacts to Fish or Wildlife Movement Corridors, Linkages, Nursery Sites, and Critical Habitat (CEQA Evaluation Factor D):

6.4.1 - Project Impacts to Fish or Wildlife Movement Corridors, Linkages, and Nursery Sites

There are no wildlife movement corridors, linkages, or nursery sites on the Project site or in the nearby vicinity. Therefore, there will be no impacts to wildlife movement corridors, linkages, or nursery sites.

RECOMMENDED MEASURES TO PROTECT MOVEMENT CORRIDORS, LINKAGES, AND NURSERY SITES

No recommendations.

EFFECTIVENESS OF MEASURES

Not applicable.

6.4.2 - PROJECT IMPACTS TO DESIGNATED CRITICAL HABITAT

There are no designated critical habitat(s) on the Project site or in the nearby vicinity. Therefore, there will be no impacts to any critical habitat.

RECOMMENDED MEASURES TO PROTECT DESIGNATED CRITICAL HABITAT

No recommendations.

EFFECTIVENESS OF MEASURES

Not applicable.

6.5 - Project Conflicts with Local Policies and Ordinances (CEQA Evaluation Factor E)

6.5.1 - PROJECT CONFLICTS WITH LOCAL POLICIES AND ORDINANCES

Each of the nine Valley oaks on the Project site are greater than two (2) inches dbh and are, therefore, considered heritage trees per the City's Municipal Code Chapter 8.52.

RECOMMENDED MEASURES TO ENSURE CONFORMANCE WITH LOCAL POLICIES AND ORDINANCES

BIO-6: Valley Oak Removal Permit and Replacement Plantings. Prior to any impacts to the Valley oak trees on-site, a permit must be obtained from the City of Tulare. Each tree removed should be replaced with same species at a minimum 2:1 ratio. Note that the City may require a higher ratio of replacement plantings. The replacement plantings should be incorporated into the landscape design of the Project, such as at the proposed park. All replacement plantings should be 15-gallon containers or larger and should be monitored for a minimum of 5 years to ensure successful establishment. If any replacement planting dies during the 5 years, it should be promptly replaced and that tree should be monitored for 5 years. A Valley Oak Replacement and Monitoring Plan should be developed and should include at a minimum maps of the locations of the replacement plantings and irrigation plans, methods for planting and maintenance (including irrigation), success criteria, and monitoring and reporting schedule. The plan and all subsequent reports should be submitted to the City for compliance with this measure.

EFFECTIVENESS OF MEASURES

Implementation of BIO-6 will reduce the impact to Valley oaks to a less than significant level.

6.6 - Project Conflicts with Habitat Conservation Plans, Natural Community Conservation Plans, or Recovery Plans (CEQA Evaluation Factor F)

6.6.1 - Project Conflicts with habitat Conservation Plans, Natural Community Conservation Plans, or Recovery Plans

There are no implemented Habitat Conservation Plans or Natural Community Conservation Plans in the vicinity of the Project site.

RECOMMENDED MEASURES TO ENSURE CONFORMANCE WITH LOCAL POLICIES AND ORDINANCES

No recommendations.

EFFECTIVENESS OF MEASURES

Not applicable.

SECTION 7 - CONCLUSIONS

The Project site is highly disturbed due to agricultural uses and habitats on-site are generally considered marginal. Despite this, there is potential for special-status animals to be present and impacted by the proposed Project. There are also several Valley oak trees on-site, which are protected under the City of Tulare's municipal code. With implementation of the avoidance, minimization, and mitigation measures proposed above, impacts to special status biological resources as a result of implementation of the proposed Project would be less than significant.

SECTION 8 - REFERENCES

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APPENDIX A

SPECIAL-STATUS RESOURCES DATABASE SEARCH RESULTS FOR THE CARTMILL CROSSINGS PROJECT

Scientific Name	Listing Status	General Habitat Description	Suitable Habitat Present on site YES/NO	Potentially Affected by Project? YES/NO	Viability Threat? YES/NO	Comments
Sensitive Natural Communities						
Great Valley Oak Riparian Forest	G1, S1.1	This community occurs in relatively fine-textured alluvium, near active river channels. These sites experience overbank flooding (with abundant alluvial deposition and groundwater recharge) without severe physical battering or erosion.	NO	NO	NO	
Valley Sacaton Grassland	G1, S1.1	This community is dominated by alkali sacaton, a tuft formed grass. It is found in areas with fine textured, poorly drained and usually alkaline soils with high water tables, or that are flooded during winter months.	NO	NO	NO	
Plants						
Atriplex cordulata var. *cordulata* (heartscale)	1B.2	This annual herb occurs in Chenopod scrubland, and grassland habitats, but it also is known to occur in wet areas. It is most common on alkaline soils. It flowers between May and October, and ranges in elevation from 1 to 1,000 feet.	NO	NO	NO	
Atriplex cordulata var. *erecticaulis* (Earlimart orache)	1B.2	This annual herb occurs in Central Valley and foothill grassland habitats. It is most common on saline or alkaline soils. It flowers between August and November, and ranges in elevation from approximately 130 to 350 feet.	NO	NO	NO	
Atriplex depressa (brittlescale)	1B.2	This annual herb occurs in Chenopod scrubland, grassland, and alkali sink habitats, but it also is known to occur in wet areas. It flowers between April and October, and it ranges in elevation from 1 to 1050 feet.	NO	NO	NO	
Atriplex minuscula (lesser saltscale)	1B.1	This annual herb occurs in Chenopod scrub, playas, valley and foothill grassland habitats. It is most common on alkaline and sandy soils. It flowers between May and October and ranges in elevation from approximately 50 to 650 feet.	NO	NO	NO	
Atriplex subtilis (subtle orache)	1B.2	This annual herb occurs in valley and foothill grassland habitats. It is most common on alkaline soils. It flowers between June and October and ranges in elevation from approximately 130 to 350 feet.	NO	NO	NO	
Caulanthus californicus (California jewelflower)	FE, CE, 1B.1	This annual herb occurs in chenopod scrub, pinyon and juniper woodland, and/or valley and foothill grassland on sandy soils. It flowers between February and May and its elevation ranges from 200 to 3,280 feet.	NO	NO	NO	
Delphinium hansenii ssp. *ewanianum* (Ewan's larkspur)	4.2	This perennial herb is commonly found in valley grassland and foothill woodland. It flowers from March to May, and it ranges in elevation from approximately 200 to 2,000 feet.	NO	NO	NO	
Delphinium inopinum (unexpected larkspur)	4.3	This perennial herb is commonly found in yellow pine forest. It flowers from June to August, and it ranges in elevation from approximately 7,200 to 9,200 feet.	NO	NO	NO	
Delphinium recurvatum (recurved larkspur)	1B.2	This perennial plant is commonly found in chenopod scrub, valley and foothill grassland and cismontane woodland. It is most common on sandy or clay alkaline soils. It flowers from March to May, and it ranges in elevation from 10 to 2,600 feet.	NO	NO	NO	
Eriogonum twisselmannii (Twisselmann's buckwheat)	1B.2	This perennial plant occurs in upper montane coniferous forests in granitic soil. It flowers from July to September and its elevation range is between approximately7,700 and 9,200 feet.	NO	NO	NO	

Scientific Name	Listing Status	General Habitat Description	Suitable Habitat Present on site YES/NO	Potentially Affected by Project? YES/NO	Viability Threat? YES/NO	Comments
Eryngium spinosepalum (spiny-sepaled button-celery)	1B.2	This species is associated with vernal pools and depressions within grasslands. It flowers from April to May, and it ranges in elevation from 330 to 840 feet.	NO	NO	NO	
Hordeum intercedens (vernal barley)	3.2	This annual grass is commonly found in valley grassland, freshwater wetlands, and wetland-riparian communities. Typically found near vernal pools. It flowers between March and June, and ranges in elevation up to 1,640 feet.	NO	NO	NO	
Imperata brevifolia (California satintail)	2B.1	This perennial plant occurs in chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps, and riparian scrub in mesic or alkali soils. It flowers between September and May, and it ranges in elevation from 0 to 3,986 feet.	NO	NO	NO	
Oreonana purpurascens (purple- mountain parsley)	1B.2	This perennial plant is found in broadleaved upland forest, subalpine coniferous forest, and upper montane coniferous forest, usually in metamorphic soil. It flowers between May and June, and it ranges in elevation from approximately 7,900 and 9,400 feet.	NO	NO	NO	
Pseudobahia peirsonii (San Joaquin adobe sunburst)	FT, CE, 1B.1	This annual herb occurs in cismontane woodland, valley and foothill grasslands, and usually adobe clay. It flowers between March and April, and it ranges in elevation from approximately 300 to 2,625 feet.	NO	NO	NO	
Puccinellia simplex (California alkali grass)	1B.2	This species is found in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools. It ranges in elevation from 5 to 3,050 feet and flowers from March through May.	NO	NO	NO	
Sagittaria sanfordii (Sanford's arrowhead)	1B.2	This perennial deciduous shrub occurs in chaparral and cismontane woodlands. It flowers in April, and it ranges in elevation from 1,969 to 3,805 feet.	NO	NO	NO	
Invertebrates						
Andrena macswaini (An andrenid bee)	SA	This bee species occurs in deep sandy soil. It is an oligolectic bee of morning-opening, yellow-flowered species of *Camissonia*. It is the only species in the subgenus *Diandrena* with aggregated nests associated with depressions.	NO	NO	NO	
Bombus crotchii (Crotch bumble bee)	SA	This bee occurs in relatively warm and dry sites, including the inner Coast Range of California and the margins of the Mojave Desert. It can be found in open grassland and scrub habitats. Nesting occurs underground. This species is classified as a short-tongued species, whose food plants include *Asclepias, Chaenactis, Lupinus, Medicago, Phacelia,* and *Salvia*.	NO	NO	NO	
Branchinecta lynchi (vernal pool fairy shrimp)	FT	This fairy shrimp species occurs in a variety of vernal pool habitats from small, clear sandstone rock pools to large, turbid, alkaline, grassland valley floor pools.	NO	NO	NO	
Desmocerus californicus dimorphus (valley elderberry longhorn beetle)	FT	This beetle species is associated with and entirely dependent on elderberry bushes (*Sambucus* spp.). Its range extends throughout the San Joaquin Valley, except in Kern, Kings, and Tulare Counties.	NO	NO	NO	
Lytta hoppingi (Hopping's blister beetle)	SA	This beetle species occurs in the foothills of the southern end of the Central Valley.	NO	NO	NO	
Talanites moodyae (Moody's gnaphosid spider)	SA	This arachnid species occurs in leaf litter, in moist coastal habitats and grasslands, generally in serpentine soils. It is a nocturnal hunter.	NO	NO	NO	
Fish						

Scientific Name	Listing Status	General Habitat Description	Suitable Habitat Present on site YES/NO	Potentially Affected by Project? YES/NO	Viability Threat? YES/NO	Comments
Hypomesus transpacificus (Delta smelt)	FT, CE	This species occurs in the Sacramento and San Joaquin estuaries of the San Francisco Bay. Occurs primarily in main water bodies and sloughs of the Delta and Suisun Bay. Not directly associated with small stream systems.	NO	NO	NO	
Amphibians						
Ambystoma californiense (California tiger salamander)	FT, CT, CDFW-WL	This species occurs in natural ephemeral pools or ponds that mimic them, and that remain inundated for 12 weeks or more. It requires nearby upland habitat containing small mammal burrows or crevices that provide refugia.	NO	NO	NO	
Rana draytonii (California red-legged frog)	FT, CSC	This species occurs in small streams, ponds and marshes, preferably with dense shrubby vegetation such as cattails and willows near deep water pools.	NO	NO	NO	
Spea hammondii (western spadefoot)	CSC	This species occurs primarily in grassland habitats but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	NO	NO	NO	
Reptiles						
Anniella pulchra (Northern California legless lizard)	CSC	This species occurs in moist warm loose soils with vegetative cover. Is found in beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces. This species requires moisture in the soil.	NO	NO	NO	
Emys marmorata (western pond turtle)	CSC	This species occurs in ponds and small lakes with abundant vegetation; also found in marshes, slow moving streams, reservoirs, and brackish water. This species requires basking sites.	NO	NO	NO	
Gambelia sila (blunt-nosed leopard lizard)	FE, CE, FP	This species occurs in sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief. It seeks cover in mammal burrows, under shrubs, or structures such as fence posts.	NO	NO	NO	
Thamnophis gigas (giant garter snake)	FT, CT	This species primarily occurs in permanent or semi-permanent marshes and sloughs, drainage canals, and irrigation ditches, particularly around rice fields. It prefers to reside in sloughs that are flooded in summer and dry in winter. It can occasionally be found in slow-moving creeks. It prefers locations with vegetation close to the water for basking.	NO	NO	NO	
Birds						
Agelaius tricolor (tricolored blackbird)	CT	This species occurs near fresh water, and prefer emergent wetland vegetation with tall, dense cattails or tules, but is also found in thickets of willow, blackberry, wild rose, and tall herbs. It has been found to nest and forage in grassland and agricultural fields (pastures, dairies, rice fields). A highly social nester, it occurs in large colonies.	NO	NO	NO	
Athene cunicularia (burrowing owl)	CSC	This species occurs in open annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	NO	YES	NO	This species was not observed during the biological survey and there are no recorded occurrences within 10 miles of the Project; however, suitable foraging habitat is present on-site and there appears to be other suitable habitat in the region. This species may occur transiently for foraging.

Scientific Name	Listing Status	General Habitat Description	Suitable Habitat Present on site YES/NO	Potentially Affected by Project? YES/NO	Viability Threat? YES/NO	Comments
Buteo swainsoni (Swainson's hawk)	CT	This species occurs in riparian forests and other forested areas. It roosts in a variety of trees and forage widely over forests, grasslands, and shrublands. It is easily disturbed by human activities.	YES	YES	YES	No active Swainson's hawk nests were confirmed during the biological survey; however, three stick nests were observed on the project site. Two Swainson's hawks were observed flying over the Project site. The nearest CNDDB recorded nesting Swainson's hawk occurrence is approximately 4.3 miles northwest of the Project site. Full protocol level surveys will be recommended for nesting Swainson's hawk one-year prior to construction activities.
Charadrius montanus (mountain plover)	CSC	This species nests in the high Great Plains in short grassy or bare dirt fields. It winters in the Central Valley and coastal valleys, in open short grasslands and plowed agricultural fields, where it forages for seed and grain.	NO	NO	NO	
Coccyzus americanus occidentalis (western yellow-billed cuckoo)	FT, CE	This species occurs in riparian forests, along broad lower flood bottoms of larger river systems. It occurs in willows and mixed cottonwood canopy with understory of blackberry, nettles or wild grape. It also occasionally nests in orchards and other riparian-associated woodlands.	NO	NO	NO	
Mammals						
Antrozous pallidus (pallid bat)	CSC	This species occurs in deserts, grasslands, shrublands, woodlands and forests. It is most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. It is very sensitive to disturbance of roosting sites.	NO	NO	NO	
Dipodomys nitratoides nitratoides (Tipton kangaroo rat)	FE, CE	This species occurs in saltbush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin valley. It needs soft friable soils which escape seasonal flooding to dig burrows in elevated soil mounds at the base of shrubs.	NO	NO	NO	
Eumops perotis californicus (western mastiff bat)	CSC	This species occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral. It roosts in crevices on cliff faces, high buildings, trees, and tunnels.	NO	NO	NO	
Taxidea taxus (American badger)	CSC	This species occurs in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. It needs sufficient food and open, uncultivated ground. It preys on burrowing rodents and digs burrows.	NO	YES	NO	This species was not observed during the biological survey and there are no recorded occurrences within 10 miles of the Project; however, the Project site contains suitable foraging habitat for this species.
Vulpes macrotis mutica (San Joaquin kit fox)	FE, CT	This species occurs in annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	NO	YES	NO	The Project site contains suitable foraging habitat for this species, but no San Joaquin kit fox or San Joaquin kit fox sign (e.g. dens, scat, prey remains etc.) was observed on the Project site during the biological survey. The nearest CNDDB recorded occurrence is approximately 1.2 miles south of the Project site.

Sources:

California Department of Fish and Wildlife. 2017. California Natural Diversity Data Base
California Native Plant Society (CNPS). 2017. Inventory of Rare and Endangered Plants, Rare Plant Scientific Advisory Committee.
United States Fish and Wildlife Service (USFWS). 2017. Critical Habitat Portal, Critical Habitat Map, United States Fish and Wildlife Service, Sacramento, CA.

United States Fish and Wildlife Service (USFWS). 2017. Federal Endangered and Threatened Species List, Sacramento Fish and Wildlife Office.

Abbreviations:
FD Federal Delisted Species
FE Federal Endangered Species
FT Federal Threatened Species
FP Fully Protected (CDFW code)
CE California Endangered Species
CT California Threatened Species
CSC California Species of Special Concern
CDFW-WL California Department of Fish and Game Watch List
SA Species included on the CDFW Special Animals List with no specific State or federal status.
1B California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere
1B.1 California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Seriously Threatened in California
1B.2 California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Fairly Threatened in California
CDFW S Rank Rating System
1: Extremely endangered
2: Endangered
3: Restricted Range
4: Apparently Secure
5: Demonstrably Secure

CDFW Global Rank System
G1 : Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals OR less than 2,000 acres.
G2 : 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres.
G3 : 21-100 EOs OR 3,000-10,000 individuals OR 10,000-50,000 acres.
G4 : Apparently secure.
G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.

Potential Occurrence Definitions:
Present: Species or sign of their presence observed on site at time of the field survey.
Likely: Species not observed on site but may reasonably be expected to occur there on a regular basis. Or, species not observed on the site, exceptional habitat exists, and additional surveys needed to verify presence.
Possible: Species not observed on site, but could occur there from time to time. Or, species not observed on the site, suitable habitat exists, and additional surveys needed to verify presence.
Unlikely: Species not observed on site, and would not be expected to occur there except, perhaps, as a transient. Or, species not observed on the site, marginally suitable habitat exists, and additional surveys needed to verify presence.
Absent: Species or sign of their presence not observed on site, and precluded from occurring there because habitat requirements are not met.

APPENDIX B

REPRESENTATIVE PHOTOGRAPHS OF THE CARTMILL CROSSINGS PROJECT SITE



Photograph 1: Project site overview from the northwest corner of the site, facing south.
GPS Coordinates: 36.247374, -119.348818.
Photograph taken by Karissa Denney on September 7, 2018.



Photograph 2: Project site overview from the northwest corner of the site, facing east.
GPS Coordinates: 36.247374, -119.348818.
Photograph taken by Karissa Denney on September 7, 2018.

Representative Photographs, Cartmill Crossings Project, Tulare County, California



Photograph 3: Project site overview from the northeast corner of the site, facing west.
GPS Coordinates: 36.247133, -119.340354.
Photograph taken by Karissa Denney on September 7, 2018.



Photograph 4: Project site overview from the northeast corner of the site, facing south.
GPS Coordinates: 36.247133, -119.340354.
Photograph taken by Karissa Denney on September 7, 2018.

Representative Photographs, Cartmill Crossings Project, Tulare County, California



Photograph 5: Project site overview from the southeast corner of the site, facing north.
GPS Coordinates: 36.240801, -119.339962.
Photograph taken by Karissa Denney on September 7, 2018.



Photograph 6: Project site overview from the southeast corner of the site, facing west.
GPS Coordinates: 36.240801, -119.339962.
Photograph taken by Karissa Denney on September 7, 2018.

Representative Photographs, Cartmill Crossings Project, Tulare County, California



Photograph 7: Project site overview from the southwest corner of the site, facing north.
GPS Coordinates: 36.241336, -119.344147.
Photograph taken by Karissa Denney on September 7, 2018.



Photograph 8: Project site overview from the southwest corner of the site, facing southwest.
GPS Coordinates: 36.241336, -119.344147.
Photograph taken by Karissa Denney on September 7, 2018.

Representative Photographs, Cartmill Crossings Project, Tulare County, California



Photograph 9: Project site overview from the center of the site, facing south.
GPS Coordinates: 36.243682, -119.342707.
Photograph taken by Karissa Denney on September 7, 2018.



Photograph 10: Project site overview from the center of the site, facing west.
GPS Coordinates: 36.243682, -119.342707.
Photograph taken by Karissa Denney on September 7, 2018.

Representative Photographs, Cartmill Crossings Project, Tulare County, California



Photograph 11: Project site overview from the west side of the site, facing north.
GPS Coordinates: 36.243809, -119346465.
Photograph taken by Karissa Denney on September 7, 2018.



Photograph 12: Project site overview from the west side of the site, facing south.
GPS Coordinates: 36.243809, -119346465.
Photograph taken by Karissa Denney on September 7, 2018.

Representative Photographs, Cartmill Crossings Project, Tulare County, California



Photograph 13: Project site overview from the east side of the site, facing north.
GPS Coordinates: 36.243746, -119.340119.
Photograph taken by Karissa Denney on September 7, 2018.



Photograph 14: Project site overview from the east side of the site, facing south.
GPS Coordinates: 36.243746, -119.340119.
Photograph taken by Karissa Denney on September 7, 2018.

Representative Photographs, Cartmill Crossings Project, Tulare County, California



Photograph 15: Valley Oak on the southeast side of the site, facing south.
GPS Coordinates: 36.242141, -119.340889.
Photograph taken by Karissa Denney on September 7, 2018.



Photograph 16: Valley Oak on the northeast corner of the site, facing north.
GPS Coordinates: 36.247150, -119.340532.
Photograph taken by Karissa Denney on September 7, 2018.

Representative Photographs, Cartmill Crossings Project, Tulare County, California



Photograph 17: An unoccupied stick nest in a Valley Oak located in the orchard, facing north.
GPS Coordinates: 36.246753, -119.345716.
Photograph taken by Karissa Denney on September 7, 2018.



Photograph 18: An unoccupied stick nest in a Valley Oak located in the northwest of the site, facing north.
GPS Coordinates: 36245494, -119.347449.
Photograph taken by Karissa Denney on September 7, 2018.

Representative Photographs, Cartmill Crossings Project, Tulare County, California

APPENDIX C

THE U.S. FISH AND WILDLIFE STANDARDIZED RECOMMENDATIONS FOR PROTECTION OF THE ENDANGERED SAN JOAQUIN KIT FOX PRIOR TO OR DURING GROUND DISTURBANCE (USFWS 2011)

U.S. FISH AND WILDLIFE SERVICE STANDARDIZED RECOMMENDATIONS FOR PROTECTION OF THE ENDANGERED SAN JOAQUIN KIT FOX PRIOR TO OR DURING GROUND DISTURBANCE

Prepared by the Sacramento Fish and Wildlife Office
January 2011

INTRODUCTION

The following document includes many of the San Joaquin kit fox (*Vulpes macrotis mutica*) protection measures typically recommended by the U. S. Fish and Wildlife Service (Service), prior to and during ground disturbance activities. **However, incorporating relevant sections of these guidelines into the proposed project is not the only action required under the Endangered Species Act of 1973, as amended (Act) and does not preclude the need for section 7 consultation or a section 10 incidental take permit for the proposed project.** Project applicants should contact the Service in Sacramento to determine the full range of requirements that apply to your project; the address and telephone number are given at the end of this document. Implementation of the measures presented in this document may be necessary to avoid violating the provisions of the Act, including the prohibition against "take" (defined as killing, harming, or harassing a listed species, including actions that damage or destroy its habitat). These protection measures may also be required under the terms of a biological opinion pursuant to section 7 of the Act resulting in incidental take authorization (authorization), or an incidental take permit (permit) pursuant to section 10 of the Act. The specific measures implemented to protect kit fox for any given project shall be determined by the Service based upon the applicant's consultation with the Service.

The purpose of this document is to make information on kit fox protection strategies readily available and to help standardize the methods and definitions currently employed to achieve kit fox protection. The measures outlined in this document are subject to modification or revision at the discretion of the Service.

IS A PERMIT NECESSARY?

Certain acts need a permit from the Service which includes destruction of any known (occupied or unoccupied) or natal/pupping kit fox dens. Determination of the presence or absence of kit foxes and /or their dens should be made during the environmental review process. All surveys and monitoring described in this document must be conducted by a qualified biologist and these activities do not require a permit. A qualified biologist (biologist) means any person who has completed at least four years of university training in wildlife biology or a related science and/or has demonstrated field experience in the identification and life history of the San Joaquin kit fox. In addition, the biologist(s) must be able to identify coyote, red fox,

gray fox, and kit fox tracks, and to have seen a kit fox in the wild, at a zoo, or as a museum mount. Resumes of biologists should be submitted to the Service for review and approval prior to an6y survey or monitoring work occurring.

SMALL PROJECTS

Small projects are considered to be those projects with small foot prints, of approximately one acre or less, such as an individual in-fill oil well, communication tower, or bridge repairs. These projects must stand alone and not be part of, or in any way connected to larger projects (i.e., bridge repair or improvement to serve a future urban development). The Service recommends that on these small projects, the biologist survey the proposed project boundary and a 200-foot area outside of the project footprint to identify habitat features and utilize this information as guidance to situate the project to minimize or avoid impacts. If habitat features cannot be completely avoided, then surveys should be conducted and the Service should be contacted for technical assistance to determine the extent of possible take.

Preconstruction/preactivity surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities or any project activity likely to impact the San Joaquin kit fox. Kit foxes change dens four or five times during the summer months, and change natal dens one or two times per month (Morrell 1972). Surveys should identify kit fox habitat features on the project site and evaluate use by kit fox and, if possible, assess the potential impacts to the kit fox by the proposed activity. The status of all dens should be determined and mapped (see Survey Protocol). Written results of preconstruction/preactivity surveys must be received by the Service within five days after survey completion and prior to the start of ground disturbance and/or construction activities.

If a natal/pupping den is discovered within the project area or within 200-feet of the project boundary, the Service shall be immediately notified and under no circumstances should the den be disturbed or destroyed without prior authorization. If the preconstruction/preactivity survey reveals an active natal pupping or new information, the project applicant should contact the Service immediately to obtain the necessary take authorization/permit.

If the take authorization/permit has already been issued, then the biologist may proceed with den destruction within the project boundary, except natal/pupping den which may not be destroyed while occupied. A take authorization/permit is required to destroy these dens even after they are vacated. Protective exclusion zones can be placed around all known and potential dens which occur outside the project footprint (conversely, the project boundary can be demarcated, see den destruction section).

OTHER PROJECTS

It is likely that all other projects occurring within kit fox habitat will require a take authorization/permit from the Service. This determination would be made by the Service during the early evaluation process (see Survey Protocol). These other projects would include, but are not limited to: Linear projects; projects with large footprints such as urban development; and projects which in themselves may be small but have far reaching impacts (i.e., water storage or conveyance facilities that promote urban growth or agriculture, etc.).

The take authorization/permit issued by the Service may incorporate some or all of the protection measures presented in this document. The take authorization/permit may include measures specific to the needs of the project and those requirements supersede any requirements found in this document.

EXCLUSION ZONES

In order to avoid impacts, construction activities must avoid their dens. The configuration of exclusion zones around the kit fox dens should have a radius measured outward from the entrance or cluster of entrances due to the length of dens underground. The following distances are **minimums**, and if they cannot be followed the Service must be contacted. Adult and pup kit foxes are known to sometimes rest and play near the den entrance in the afternoon, but most above-ground activities begin near sunset and continue sporadically throughout the night. Den definitions are attached as Exhibit A.

Potential den**	50 feet
Atypical den**	50 feet
Known den*	100 feet
Natal/pupping den (occupied and unoccupied)	Service must be contacted

*Known den: To ensure protection, the exclusion zone should be demarcated by fencing that encircles each den at the appropriate distance and does not prevent access to the den by kit foxes. Acceptable fencing includes untreated wood particle-board, silt fencing, orange construction fencing or other fencing as approved by the Service as long as it has openings for kit fox ingress/egress and keeps humans and equipment out. Exclusion zone fencing should be maintained until all construction related or operational disturbances have been terminated. At that time, all fencing shall be removed to avoid attracting subsequent attention to the dens.

**Potential and Atypical dens: Placement of 4-5 flagged stakes 50 feet from the den entrance(s) will suffice to identify the den location; fencing will not be required, but the exclusion zone must be observed.

Only essential vehicle operation on existing roads and foot traffic should be permitted. Otherwise, all construction, vehicle operation, material storage, or any other type of surface-disturbing activity should be prohibited or greatly restricted within the exclusion zones.

DESTRUCTION OF DENS

Limited destruction of kit fox dens may be allowed, if avoidance is not a reasonable alternative, provided the following procedures are observed. The value to kit foxes of potential, known, and natal/pupping dens differ and therefore, each den type needs a different level of protection. **Destruction of any known or natal/pupping kit fox den requires take authorization/permit from the Service**.

Destruction of the den should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den should be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter or use the den during the construction period. If at any point during excavation, a kit fox is discovered inside the den, the excavation activity shall cease immediately and monitoring of the den as described above should be resumed. Destruction of the den may be completed when in the judgment of the biologist, the animal has escaped, without further disturbance, from the partially destroyed den.

Natal/pupping dens: Natal or pupping dens which are occupied will not be destroyed until the pups and adults have vacated and then only after consultation with the Service. Therefore, project activities at some den sites may have to be postponed.

Known Dens: Known dens occurring within the footprint of the activity must be monitored for three days with tracking medium or an infra-red beam camera to determine the current use. If no kit fox activity is observed during this period, the den should be destroyed immediately to preclude subsequent use.

If kit fox activity is observed at the den during this period, the den should be monitored for at least five consecutive days from the time of the observation to allow any resident animal to move to another den during its normal activity. Use of the den can be discouraged during this period by partially plugging its entrances(s) with soil in such a manner that any resident animal can escape easily. Only when the den is determined to be unoccupied may the den be excavated under the direction of the biologist. If the animal is still present after five or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of a biologist, it is temporarily vacant, for example during the animal's normal foraging activities.

The Service encourages hand excavation, but realizes that soil conditions may necessitate the use of excavating equipment. However, extreme caution must be exercised.

Potential Dens: If a take authorization/permit has been obtained from the Service, den destruction may proceed without monitoring, unless other restrictions were issued with the take authorization/permit. If no take authorization/permit has been issued, then potential dens should be monitored as if they were known dens. If any den was considered to be a potential den, but is later determined during monitoring or destruction to be currently, or previously used by kit fox (e.g., if kit fox sign is found inside), then all construction activities shall cease and the Service shall be notified immediately.

CONSTRUCTION AND ON-GOING OPERATIONAL REQUIREMENTS

Habitat subject to permanent and temporary construction disturbances and other types of ongoing project-related disturbance activities should be minimized by adhering to the following activities. Project designs should limit or cluster permanent project features to the smallest area possible while still permitting achievement of project goals. To minimize temporary disturbances, all project-related vehicle traffic should be restricted to established roads, construction areas, and other designated areas. These areas should also be included in preconstruction surveys and, to the extent possible, should be established in locations disturbed by previous activities to prevent further impacts.

1. Project-related vehicles should observe a daytime speed limit of 20-mph throughout the site in all project areas, except on county roads and State and Federal highways; this is particularly important at night when kit foxes are most active. Night-time construction should be minimized to the extent possible. However if it does occur, then the speed limit should be reduced to 10-mph. Off-road traffic outside of designated project areas should be prohibited.

2. To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2-feet deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the Service and the California Department of Fish and Game (CDFG) shall be contacted as noted under measure 13 referenced below.

3. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is

discovered inside a pipe, that section of pipe should not be moved until the Service has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.

4. All food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least once a week from a construction or project site.

5. No firearms shall be allowed on the project site.

6. No pets, such as dogs or cats, should be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.

7. Use of rodenticides and herbicides in project areas should be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the Service. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox.

8. A representative shall be appointed by the project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the Service.

9. An employee education program should be conducted for any project that has anticipated impacts to kit fox or other endangered species. The program should consist of a brief presentation by persons knowledgeable in kit fox biology and legislative protection to explain endangered species concerns to contractors, their employees, and military and/or agency personnel involved in the project. The program should include the following: A description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information should be prepared for distribution to the previously referenced people and anyone else who may enter the project site.

10. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. should be

re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas should be determined on a site-specific basis in consultation with the Service, California Department of Fish and Game (CDFG), and revegetation experts.

11. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape, or the Service should be contacted for guidance.

12. Any contractor, employee, or military or agency personnel who are responsible for inadvertently killing or injuring a San Joaquin kit fox shall immediately report the incident to their representative. This representative shall contact the CDFG immediately in the case of a dead, injured or entrapped kit fox. The CDFG contact for immediate assistance is State Dispatch at (916)445-0045. They will contact the local warden or Mr. Paul Hoffman, the wildlife biologist, at (530)934-9309. The Service should be contacted at the numbers below.

13. The Sacramento Fish and Wildlife Office and CDFG shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The Service contact is the Chief of the Division of Endangered Species, at the addresses and telephone numbers below. The CDFG contact is Mr. Paul Hoffman at 1701 Nimbus Road, Suite A, Rancho Cordova, California 95670, (530) 934-9309.

14. New sightings of kit fox shall be reported to the California Natural Diversity Database (CNDDB). A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to the Service at the address below.

Any project-related information required by the Service or questions concerning the above conditions or their implementation may be directed in writing to the U.S. Fish and Wildlife Service at:

Endangered Species Division
2800 Cottage Way, Suite W2605
Sacramento, California 95825-1846
(916) 414-6620 or (916) 414-6600

EXHIBIT "A" - DEFINITIONS

"Take" - Section 9 of the Endangered Species Act of 1973, as amended (Act) prohibits the "take" of any federally listed endangered species by any person (an individual, corporation, partnership, trust, association, etc.) subject to the jurisdiction of the United States. As defined in the Act, take means " . . . to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct". Thus, not only is a listed animal protected from activities such as hunting, but also from actions that damage or destroy its habitat.

"Dens" - San Joaquin kit fox dens may be located in areas of low, moderate, or steep topography. Den characteristics are listed below, however, the specific characteristics of individual dens may vary and occupied dens may lack some or all of these features. Therefore, caution must be exercised in determining the status of any den. Typical dens may include the following: (1) one or more entrances that are approximately 5 to 8 inches in diameter; (2) dirt berms adjacent to the entrances; (3) kit fox tracks, scat, or prey remains in the vicinity of the den; (4) matted vegetation adjacent to the den entrances; and (5) manmade features such as culverts, pipes, and canal banks.

"Known den" - Any existing natural den or manmade structure that is used or has been used at any time in the past by a San Joaquin kit fox. Evidence of use may include historical records, past or current radiotelemetry or spotlighting data, kit fox sign such as tracks, scat, and/or prey remains, or other reasonable proof that a given den is being or has been used by a kit fox. The Service discourages use of the terms "active" and "inactive" when referring to any kit fox den because a great percentage of occupied dens show no evidence of use, and because kit foxes change dens often, with the result that the status of a given den may change frequently and abruptly.

"Potential Den" - Any subterranean hole within the species' range that has entrances of appropriate dimensions for which available evidence is insufficient to conclude that it is being used or has been used by a kit fox. Potential dens shall include the following: (1) any suitable subterranean hole; or (2) any den or burrow of another species (e.g., coyote, badger, red fox, or ground squirrel) that otherwise has appropriate characteristics for kit fox use.

"Natal or Pupping Den" - Any den used by kit foxes to whelp and/or rear their pups. Natal/pupping dens may be larger with more numerous entrances than dens occupied exclusively by adults. These dens typically have more kit fox tracks, scat, and prey remains in the vicinity of the den, and may have a broader apron of matted dirt and/or vegetation at one or more entrances. A natal den, defined as a den in which kit fox pups are actually whelped but not necessarily reared, is a more restrictive version of the pupping den. In practice, however, it is difficult to distinguish between the two, therefore, for purposes of this definition either term applies.

APPENDIX D

RECOMMENDED TIMING AND METHODOLOGY FOR SWAINSON'S HAWK NESTING SURVEYS IN CALIFORNIA'S CENTRAL VALLEY (CDFW 2000)

RECOMMENDED TIMING AND METHODOLOGY FOR SWAINSON'S HAWK NESTING SURVEYS IN CALIFORNIA'S CENTRAL VALLEY

Swainson's Hawk Technical Advisory Committee

May 31, 2000

This set of survey recommendations was developed by the Swainson's Hawk Technical Advisory Committee (TAC) to maximize the potential for locating nesting Swainson's hawks, and thus reducing the potential for nest failures as a result of project activities/disturbances. The combination of appropriate surveys, risk analysis, and monitoring has been determined to be very effective in reducing the potential for project-induced nest failures. As with most species, when the surveyor is in the right place at the right time, Swainson's hawks may be easy to observe; but some nest sites may be very difficult to locate, and even the most experienced surveyors have missed nests, nesting pairs, mis-identified a hawk in a nest, or believed incorrectly that a nest had failed. There is no substitute for specific Swainson's hawk survey experience and acquiring the correct search image.

METHODOLOGY

Surveys should be conducted in a manner that maximizes the potential to observe the adult Swainson's hawks, as well as the nest/chicks second. To meet the California Department of Fish and Game's (CDFG) recommendations for mitigation and protection of Swainson's hawks, surveys should be conducted for a ½ mile radius around all project activities, and if active nesting is identified within the ½ mile radius, consultation is required. In general, the TAC recommends this approach as well.

Minimum Equipment

Minimum survey equipment includes a high-quality pair of binoculars and a high quality spotting scope. Surveying even the smallest project area will take hours, and poor optics often result in eye-strain and difficulty distinguishing details in vegetation and subject birds. Other equipment includes good maps, GPS units, flagging, and notebooks.

Walking vs Driving

Driving (car or boat) or "windshield surveys" are usually preferred to walking if an adequate roadway is available through or around the project site. While driving, the observer can typically approach much closer to a hawk without causing it to fly. Although it might appear that a flying bird is more visible, they often fly away from the observer using trees as screens; and it is difficult to determine from where a flying bird came. Walking surveys are useful in locating a nest after a nest territory is identified, or when driving is not an option.

Angle and Distance to the Tree

Surveying subject trees from multiple angles will greatly increase the observer's chance of detecting a nest or hawk, especially after trees are fully leafed and when surveying multiple trees

in close proximity. When surveying from an access road, survey in both directions. Maintaining a distance of 50 meters to 200 meters from subject trees is optimal for observing perched and flying hawks without greatly reducing the chance of detecting a nest/young: Once a nesting territory is identified, a closer inspection may be required to locate the nest.

Speed
Travel at a speed that allows for a thorough inspection of a potential nest site. Survey speeds should not exceed 5 miles per hour to the greatest extent possible. If the surveyor must travel faster than 5 miles per hour, stop frequently to scan subject trees.

Visual and Aural Ques
Surveys will be focused on both observations and vocalizations. Observations of nests, perched adults, displaying adults, and chicks during the nesting season are all indicators of nesting Swainson's hawks. In addition, vocalizations are extremely helpful in locating nesting territories. Vocal communication between. hawks is frequent during territorial displays; during courtship and mating; through the nesting period as mates notify each other that food is available or that a threat exists; and as older chicks and fledglings beg for food.

Distractions
Minimize distractions while surveying. Although two pairs of eyes may be better than one pair at times, conversation may limit focus. Radios should be off, not only are they distracting, they may cover a hawk's call.

Notes and Species Observed
Take thorough field notes. Detailed notes and maps of the location of observed Swainson's hawk nests are essential for filling gaps in the Natural Diversity Data Base; please report all observed nest sites. Also document the occurrence of nesting great homed owls, red-tailed hawks, red-shouldered hawks and other potentially competitive species. These species will infrequently nest within 100 yards of each other, so the presence of one species will not necessarily exclude another.

TIMING

To meet **the minimum level** of protection for the species, surveys should be completed for **at least** the two survey periods immediately prior to a project's initiation. For example, if a project is scheduled to begin on June 20, you should complete 3 surveys in Period III and 3 surveys in Period V. However, it is always recommended that surveys be completed in Periods II, III and V. **Surveys should not be conducted in Period IV.**

The survey periods are defined by the timing of migration, courtship, and nesting in a "typical" year for the majority of Swainson's hawks from San Joaquin County to Northern Yolo County. Dates should be adjusted in consideration of early and late nesting seasons, and geographic differences (northern nesters tend to nest slightly later, etc). If you are not sure, contact a TAC member or CDFG biologist.

Survey dates **Justification and search image**	**Survey time**	**Number of Surveys**
I. *January-March 20 (recommended optional)*	*All day*	*1*

Prior to Swainson's hawks returning, it may be helpful to survey the project site to determine potential nest locations. Most nests are easily observed from relatively long distances, giving the surveyor the opportunity to identify potential nest sites, as well as becoming familiar with the project area. It also gives the surveyor the opportunity to locate and map competing species nest sites such as great homed owls from February on, and red-tailed hawks from March on. After March 1, surveyors are likely to observe Swainson's hawks staging in traditional nest territories.

II. *March 20 to April 5*	*Sunrise to 1000* *1600 to sunset*	*3*

Most Central Valley Swainson's hawks return by April 1, and immediately begin occupying their traditional nest territories. For those few that do not return by April 1, there are often hawks ("floaters") that act as place-holders in traditional nest sites; they are birds that do not have mates, but temporarily attach themselves to traditional territories and/or one of the site's "owners." Floaters are usually displaced by the territories' owner(s) if the owner returns.

Most trees are leafless and are relatively transparent; it is easy to observe old nests, staging birds, and competing species. The hawks are usually in their territories during the survey hours, but typically soaring and foraging in the mid-day hours. Swainson's hawks may often be observed involved in territorial and courtship displays, and circling the nest territory. Potential nest sites identified by the observation of staging Swainson's hawks will usually be active territories during that season, although the pair may not successfully nest/reproduce that year.

III. *April 5 to April 20*	*Sunrise to 1200* *1630 to Sunset*	***3***

Although trees are much less transparent at this time, 'activity at the nest site increases significantly. Both males and females are actively nest building, visiting their selected site frequently. Territorial and courtship displays are increased, as is copulation. The birds tend to vocalize often, and nest locations are most easily identified. This period may require a great deal of "sit and watch" surveying.

IV. *April 21 to June 10*	*Monitoring known nest sites only* ***Initiating Surveys is not recommended***	

Nests are extremely difficult to locate this time of year, and even the most experienced surveyor will miss them, especially if the previous surveys have not been done. During this phase of nesting, the female Swainson's hawk is in brood position, very low in the nest, laying eggs, incubating, or protecting the newly hatched and vulnerable chicks; her head may or may not be visible. Nests are often well-hidden, built into heavily vegetated sections of trees or in clumps of mistletoe, making them all but invisible. Trees are usually not viewable from all angles, which may make nest observation impossible.

Following the male to the nest may be the only method to locate it, and the male will spend hours away from the nest foraging, soaring, and will generally avoid drawing attention to the nest site. Even if the observer is fortunate enough to see a male returning with food for the female, if the female determines it is not safe she will not call the male in, and he will not approach the nest; this may happen if the observer, or others, are too close to the nest or if other threats, such as rival hawks, are apparent to the female or male.

V. ***June 10 to JuIy 30 (post-fledging)*** ***Sunrise to 1200*** ***3***
1600 to sunset

Young are active and visible, and relatively safe without parental protection. Both adults make numerous trips to the nest and are often soaring above, or perched near or on the nest tree. The location and construction of the nest may still limit visibility of the nest, young, ‘and adults.

DETERMINING A PROJECT'S POTENTIAL
FOR IMPACTING SWAINSON'S HAWKS

LEVEL OF RISK	REPRODUCTIVE SUCCESS (Individuals)	LONGTERM SURVIVABILITY (Population)	NORMAL SITE CHARACTERISTICS (Daily Average)	NEST MONI-TORING
HIGH	Direct physical contact with the nest tree while the birds are on eggs or protecting young. (Helicopters in close proximity)	Loss of available foraging area.	Little human-created noise, little human use: nest is well away from dwellings, equipment yards, human access areas, etc. *Do not include general cultivation practices in evaluation.*	**MORE**
		Loss of nest trees.		
	Loss of nest tree after nest building is begun prior to laying eggs.	Loss of potential nest trees.		
	Personnel within 50 yards of nest tree (out of vehicles) for extended periods while birds are on eggs or protecting young that are < 10 days old.	Cumulative: Multi-year, multi-site projects with substantial noise/personnel disturbance.		
	Initiating construction activities (machinery and personnel) within 200 yards of the nest after eggs are laid and before young are > 10 days old.	Cumulative: Single-season projects with substantial noise/personnel disturbance that is greater than or significantly different from the daily norm.		
	Heavy machinery only working within 50 yards of nest.		Substantial human-created noise and occurrence: nest is near roadways, well-used waterways, active airstrips, areas that have high human use. *Do not include general cultivation practices in evaluation.*	
	Initiating construction activities within 200 yards of nest before nest building begins or after young > 10 days old.	Cumulative: Single-season projects with activities that "blend" well with site's "normal' activities.		
LOW	All project activities (personnel and machinery) greater than 200 yards from nest.			**LESS**

APPENDIX E

STAFF REPORT ON BURROWING OWL MITIGATION (CDFW 2012)

Staff Report on Burrowing Owl Mitigation

State of California

Natural Resources Agency

Department of Fish and Game

March 7, 2012[1]

[1] This document replaces the Department of Fish and Game 1995 Staff Report On Burrowing Owl Mitigation.

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INTRODUCTION AND PURPOSE

Maintaining California's rich biological diversity is dependent on the conservation of species and their habitats. The California Department of Fish and Game (Department) has designated certain species as "species of special concern" when their population viability and survival is adversely affected by risk factors such as precipitous declines or other vulnerability factors (Shuford and Gardali 2008). Preliminary analyses of regional patterns for breeding populations of burrowing owls (*Athene cunicularia*) have detected declines both locally in their central and southern coastal breeding areas, and statewide where the species has experienced modest breeding range retraction (Gervais et al. 2008). In California, threat factors affecting burrowing owl populations include habitat loss, degradation and modification, and eradication of ground squirrels resulting in a loss of suitable burrows required by burrowing owls for nesting, protection from predators, and shelter (See Appendix A).

The Department recognized the need for a comprehensive conservation and mitigation strategy for burrowing owls, and in 1995 directed staff to prepare a report describing mitigation and survey recommendations. This report, "1995 Staff Report on Burrowing Owl Mitigation," (Staff Report) (CDFG 1995), contained Department-recommended burrowing owl and burrow survey techniques and mitigation measures intended to offset the loss of habitat and slow or reverse further decline of this species. Notwithstanding these measures, over the past 15+ years, burrowing owls have continued to decline in portions of their range (DeSante et al. 2007, Wilkerson and Siegel, 2010). The Department has determined that reversing declining population and range trends for burrowing owls will require implementation of more effective conservation actions, and evaluating the efficacy of the Department's existing recommended avoidance, minimization and mitigation approaches for burrowing owls.

The Department has identified three main actions that together will facilitate a more viable, coordinated, and concerted approach to conservation and mitigation for burrowing owls in California. These include:

1. Incorporating burrowing owl comprehensive conservation strategies into landscape-based planning efforts such as Natural Community Conservation Plans (NCCPs) and multi-species Habitat Conservation Plans (HCPs) that specifically address burrowing owls.
2. Developing and implementing a statewide conservation strategy (Burkett and Johnson, 2007) and local or regional conservation strategies for burrowing owls, including the development and implementation of a statewide burrowing owl survey and monitoring plan.
3. Developing more rigorous burrowing owl survey methods, working to improve the adequacy of impacts assessments; developing clear and effective avoidance and minimization measures; and developing mitigation measures to ensure impacts to the species are effectively addressed at the project, local, and/or regional level (the focus of this document).

This Report sets forth the Department's recommendations for implementing the third approach identified above by revising the 1995 Staff Report, drawing from the most relevant and current knowledge and expertise, and incorporating the best scientific information

available pertaining to the species. It is designed to provide a compilation of the best available science for Department staff, biologists, planners, land managers, California Environmental Quality Act (CEQA) lead agencies, and the public to consider when assessing impacts of projects or other activities on burrowing owls.

This revised Staff Report takes into account the California Burrowing Owl Consortium's Survey Protocol and Mitigation Guidelines (CBOC 1993, 1997) and supersedes the survey, avoidance, minimization and mitigation recommendations in the 1995 Staff Report. Based on experiences gained from implementing the 1995 Staff Report, the Department believes revising that report is warranted. This document also includes general conservation goals and principles for developing mitigation measures for burrowing owls.

DEPARTMENT ROLE AND LEGAL AUTHORITIES

The mission of the Department is to manage California's diverse fish, wildlife and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitats necessary to maintain biologically sustainable populations of those species (Fish and Game Code (FGC) §1802). The Department, as trustee agency pursuant to CEQA (See CEQA Guidelines, §15386), has jurisdiction by law over natural resources, including fish and wildlife, affected by a project, as that term is defined in Section 21065 of the Public Resources Code. The Department exercises this authority by reviewing and commenting on environmental documents and making recommendations to avoid, minimize, and mitigate potential negative impacts to those resources held in trust for the people of California.

Field surveys designed to detect the presence of a particular species, habitat element, or natural community are one of the tools that can assist biologists in determining whether a species or habitat may be significantly impacted by land use changes or disturbance. The Department reviews field survey data as well as site-specific and regional information to evaluate whether a project's impacts may be significant. This document compiles the best available science for conducting habitat assessments and surveys, and includes considerations for developing measures to avoid impacts or mitigate unavoidable impacts.

CEQA

CEQA requires public agencies in California to analyze and disclose potential environmental impacts associated with a project that the agency will carry out, fund, or approve. Any potentially significant impact must be mitigated to the extent feasible. Project-specific CEQA mitigation is important for burrowing owls because most populations exist on privately owned parcels that, when proposed for development or other types of modification, may be subject to the environmental review requirements of CEQA.

Take

Take of individual burrowing owls and their nests is defined by FGC section 86, and prohibited by sections 3503, 3503.5 and 3513. Take is defined in FGC Section 86 as "hunt, pursue, catch, capture or kill, or attempt to hunt, pursue, catch, capture or kill."

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the United States and Canada, Japan, Mexico, and Russia for the protection of migratory birds, including the burrowing owl (50 C.F.R. § 10). The MBTA protects migratory bird nests from possession, sale, purchase, barter, transport, import and export, and collection. The other prohibitions of the MBTA - capture, pursue, hunt, and kill - are inapplicable to nests. The regulatory definition of take, as defined in Title 50 C.F.R. part 10.12, means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect. Only the verb "collect" applies to nests. It is illegal to collect, possess, and by any means transfer possession of any migratory bird nest. The MBTA prohibits the destruction of a nest when it contains birds or eggs, and no possession shall occur during the destruction (see Fish and Wildlife Service, Migratory Bird Permit Memorandum, April 15, 2003). Certain exceptions to this prohibition are included in 50 C.F.R. section 21. Pursuant to Fish & Game Code section 3513, the Department enforces the Migratory Bird Treaty Act consistent with rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act.

Regional Conservation Plans

Regional multiple species conservation plans offer long-term assurances for conservation of covered species at a landscape scale, in exchange for biologically appropriate levels of incidental take and/or habitat loss as defined in the approved plan. California's NCCP Act (FGC §2800 et seq.) governs such plans at the state level, and was designed to conserve species, natural communities, ecosystems, and ecological processes across a jurisdiction or a collection of jurisdictions. Complementary federal HCPs are governed by the Endangered Species Act (7 U.S.C. § 136, 16 U.S.C.§ 1531 et seq.) (ESA). Regional conservation plans (and certain other landscape-level conservation and management plans), may provide conservation for unlisted as well as listed species. Because the geographic scope of NCCPs and HCPs may span many hundreds of thousands of acres, these planning tools have the potential to play a significant role in conservation of burrowing owls, and grasslands and other habitats.

Fish and Game Commission Policies

There are a number of Fish and Game Commission policies (see FGC §2008) that can be applied to burrowing owl conservation. These include policies on: Raptors, Cooperation, Endangered and Threatened Species, Land Use Planning, Management and Utilization of Fish and Wildlife on Federal Lands, Management and Utilization of Fish and Wildlife on Private Lands, and Research.

GUIDING PRINCIPLES FOR CONSERVATION

Unless otherwise provided in a statewide, local, or regional conservation strategy, surveying and evaluating impacts to burrowing owls, as well as developing and implementing avoidance, minimization, and mitigation and conservation measures incorporate the following principles. These principles are a summary of Department staff expert opinion and were used to guide the preparation of this document.

1. Use the Precautionary Principle (Noss et al.1997), by which the alternative of increased conservation is deliberately chosen in order to buffer against incomplete knowledge of burrowing owl ecology and uncertainty about the consequences to burrowing owls of potential impacts, including those that are cumulative.
2. Employ basic conservation biology tenets and population-level approaches when determining what constitutes appropriate avoidance, minimization, and mitigation for impacts. Include mitigation effectiveness monitoring and reporting, and use an adaptive management loop to modify measures based on results.
3. Protect and conserve owls in wild, semi-natural, and agricultural habitats (conserve is defined at FGC §1802).
4. Protect and conserve natural nest burrows (or burrow surrogates) previously used by burrowing owls and sufficient foraging habitat and protect auxiliary "satellite" burrows that contribute to burrowing owl survivorship and natural behavior of owls.

CONSERVATION GOALS FOR THE BURROWING OWL IN CALIFORNIA

It is Department staff expert opinion that the following goals guide and contribute to the short and long-term conservation of burrowing owls in California:

1. Maintain size and distribution of extant burrowing owl populations (allowing for natural population fluctuations).
2. Increase geographic distribution of burrowing owls into formerly occupied historical range where burrowing owl habitat still exists, or where it can be created or enhanced, and where the reason for its local disappearance is no longer of concern.
3. Increase size of existing populations where possible and appropriate (for example, considering basic ecological principles such as carrying capacity, predator-prey relationships, and inter-specific relationships with other species at risk).
4. Protect and restore self-sustaining ecosystems or natural communities which can support burrowing owls at a landscape scale, and which will require minimal long-term management.
5. Minimize or prevent unnatural causes of burrowing owl population declines (e.g., nest burrow destruction, chemical control of rodent hosts and prey).
6. Augment/restore natural dynamics of burrowing owl populations including movement and genetic exchange among populations, such that the species does not require future listing and protection under the California Endangered Species Act (CESA) and/or the federal Endangered Species Act (ESA).
7. Engage stakeholders, including ranchers; farmers; military; tribes; local, state, and federal agencies; non-governmental organizations; and scientific research and education communities involved in burrowing owl protection and habitat management.

ACTIVITIES WITH THE POTENTIAL TO TAKE OR IMPACT BURROWING OWLS

The following activities are examples of activities that have the potential to take burrowing owls, their nests or eggs, or destroy or degrade burrowing owl habitat: grading, disking, cultivation, earthmoving, burrow blockage, heavy equipment compacting and crushing burrow tunnels, levee maintenance, flooding, burning and mowing (if burrows are impacted), and operating wind turbine collisions (collectively hereafter referred to as "projects" or "activities"

whether carried out pursuant to CEQA or not). In addition, the following activities may have impacts to burrowing owl populations: eradication of host burrowers; changes in vegetation management (i.e. grazing); use of pesticides and rodenticides; destruction, conversion or degradation of nesting, foraging, over-wintering or other habitats; destruction of natural burrows and burrow surrogates; and disturbance which may result in harassment of owls at occupied burrows.

PROJECT IMPACT EVALUATIONS

The following three progressive steps are effective in evaluating whether projects will result in impacts to burrowing owls. The information gained from these steps will inform any subsequent avoidance, minimization and mitigation measures. The steps for project impact evaluations are: 1) habitat assessment, 2) surveys, and 3) impact assessment. Habitat assessments are conducted to evaluate the likelihood that a site supports burrowing owl. Burrowing owl surveys provide information needed to determine the potential effects of proposed projects and activities on burrowing owls, and to avoid take in accordance with FGC sections 86, 3503, and 3503.5. Impact assessments evaluate the extent to which burrowing owls and their habitat may be impacted, directly or indirectly, on and within a reasonable distance of a proposed CEQA project activity or non-CEQA project. These three site evaluation steps are discussed in detail below.

Biologist Qualifications

The current scientific literature indicates that only individuals meeting the following minimum qualifications should perform burrowing owl habitat assessments, surveys, and impact assessments:

1. Familiarity with the species and its local ecology;
2. Experience conducting habitat assessments and non-breeding and breeding season surveys, or experience with these surveys conducted under the direction of an experienced surveyor;
3. Familiarity with the appropriate state and federal statutes related to burrowing owls, scientific research, and conservation;
4. Experience with analyzing impacts of development on burrowing owls and their habitat.

Habitat Assessment Data Collection and Reporting

A habitat assessment is the first step in the evaluation process and will assist investigators in determining whether or not occupancy surveys are needed. Refer to Appendix B for a definition of burrowing owl habitat. Compile the detailed information described in Appendix C when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report.

Surveys

Burrowing owl surveys are the second step of the evaluation process and the best available scientific literature recommends that they be conducted whenever burrowing owl habitat or sign (see Appendix B) is encountered on or adjacent to (within 150 meters) a project site

(Thomsen 1971, Martin 1973). Occupancy of burrowing owl habitat is confirmed at a site when at least one burrowing owl, or its sign at or near a burrow entrance, is observed within the last three years (Rich 1984). Burrowing owls are more detectable during the breeding season with detection probabilities being highest during the nestling stage (Conway et al. 2008). In California, the burrowing owl breeding season extends from 1 February to 31 August (Haug et al. 1993, Thompsen 1971) with some variances by geographic location and climatic conditions. Several researchers suggest three or more survey visits during daylight hours (Haug and Diduik 1993, CBOC 1997, Conway and Simon 2003) and recommend each visit occur at least three weeks apart during the peak of the breeding season, commonly accepted in California as between 15 April and 15 July (CBOC 1997). Conway and Simon (2003) and Conway et al. (2008) recommended conducting surveys during the day when most burrowing owls in a local area are in the laying and incubation period (so as not to miss early breeding attempts), during the nesting period, and in the late nestling period when most owls are spending time above ground.

Non-breeding season (1 September to 31 January) surveys may provide information on burrowing owl occupancy, but do not substitute for breeding season surveys because results are typically inconclusive. Burrowing owls are more difficult to detect during the non-breeding season and their seasonal residency status is difficult to ascertain. Burrowing owls detected during non-breeding season surveys may be year-round residents, young from the previous breeding season, pre-breeding territorial adults, winter residents, dispersing juveniles, migrants, transients or new colonizers. In addition, the numbers of owls and their pattern of distribution may differ during winter and breeding seasons. However, on rare occasions, non-breeding season surveys may be warranted (i.e., if the site is believed to be a wintering site only based on negative breeding season results). Refer to Appendix D for information on breeding season and non-breeding season survey methodologies.

Survey Reports

Adequate information about burrowing owls present in and adjacent to an area that will be disturbed by a project or activity will enable the Department, reviewing agencies and the public to effectively assess potential impacts and will guide the development of avoidance, minimization, and mitigation measures. The survey report includes but is not limited to a description of the proposed project or proposed activity, including the proposed project start and end dates, as well as a description of disturbances or other activities occurring on-site or nearby. Refer to Appendix D for details included in a survey report.

Impact Assessment

The third step in the evaluation process is the impact assessment. When surveys confirm occupied burrowing owl habitat in or adjoining the project area, there are a number of ways to assess a project's potential significant impacts to burrowing owls and their habitat. Richardson and Miller (1997) recommended monitoring raptor behavior prior to developing management recommendations and buffers to determine the extent to which individuals have been sensitized to human disturbance. Monitoring results will also provide detail necessary for developing site-specific measures. Postovit and Postovit (1987) recommended an analytical approach to mitigation planning: define the problem (impact), set goals (to guide mitigation development), evaluate and select mitigation methods, and monitor the results.

Define the problem. The impact assessment evaluates all factors that could affect burrowing owls. Postovit and Postovit (1987) recommend evaluating the following in assessing impacts to raptors and planning mitigation: type and extent of disturbance, duration and timing of disturbance, visibility of disturbance, sensitivity and ability to habituate, and influence of environmental factors. They suggest identifying and addressing all potential direct and indirect impacts to burrowing owls, regardless of whether or not the impacts will occur during the breeding season. Several examples are given for each impact category below; however, examples are not intended to be used exclusively.

Type and extent of the disturbance. The impact assessment describes the nature (source) and extent (scale) of potential project impacts on occupied, satellite and unoccupied burrows including acreage to be lost (temporary or permanent), fragmentation/edge being created, increased distance to other nesting and foraging habitat, and habitat degradation. Discuss any project activities that impact either breeding and/or non-breeding habitat which could affect owl home range size and spatial configuration, negatively affect onsite and offsite burrowing owl presence, increase energetic costs, lower reproductive success, increase vulnerability to predation, and/or decrease the chance of procuring a mate.

Duration and timing of the impact. The impact assessment describes the amount of time the burrowing owl habitat will be unavailable to burrowing owls (temporary or permanent) on the site and the effect of that loss on essential behaviors or life history requirements of burrowing owls, the overlap of project activities with breeding and/or non-breeding seasons (timing of nesting and/or non-breeding activities may vary with latitude and climatic conditions, which should be considered with the timeline of the project or activity), and any variance of the project activities in intensity, scale and proximity relative to burrowing owl occurrences.

Visibility and sensitivity. Some individual burrowing owls or pairs are more sensitive than others to specific stimuli and may habituate to ongoing visual or audible disturbance. Site-specific monitoring may provide clues to the burrowing owl's sensitivities. This type of assessment addresses the sensitivity of burrowing owls within their nesting area to humans on foot, and vehicular traffic. Other variables are whether the site is primarily in a rural versus urban setting, and whether any prior disturbance (e.g., human development or recreation) is known at the site.

Environmental factors. The impact assessment discusses any environmental factors that could be influenced or changed by the proposed activities including nest site availability, predators, prey availability, burrowing mammal presence and abundance, and threats from other extrinsic factors such as human disturbance, urban interface, feral animals, invasive species, disease or pesticides.

Significance of impacts. The impact assessment evaluates the potential loss of nesting burrows, satellite burrows, foraging habitat, dispersal and migration habitat, wintering habitat, and habitat linkages, including habitat supporting prey and host burrowers and other essential habitat attributes. This assessment determines if impacts to the species will result in significant impacts to the species locally, regionally and range-wide per CEQA Guidelines §15382 and Appendix G. The significance of the impact to habitat depends on the extent of habitat disturbed and length of time the habitat is unavailable (for example: minor – several days, medium – several weeks to months, high - breeding season affecting juvenile survival,

or over winter affecting adult survival).

Cumulative effects. The cumulative effects assessment evaluates two consequences: 1) the project's proportional share of reasonably foreseeable impacts on burrowing owls and habitat caused by the project or in combination with other projects and local influences having impacts on burrowing owls and habitat, and 2) the effects on the regional owl population resulting from the project's impacts to burrowing owls and habitat.

Mitigation goals. Establishing goals will assist in planning mitigation and selecting measures that function at a desired level. Goals also provide a standard by which to measure mitigation success. Unless specifically provided for through other FGC Sections or through specific regulations, take, possession or destruction of individual burrowing owls, their nests and eggs is prohibited under FGC sections 3503, 3503.5 and 3513. Therefore, a required goal for all project activities is to avoid take of burrowing owls. Under CEQA, goals would consist of measures that would avoid, minimize and mitigate impacts to a less than significant level. For individual projects, mitigation must be roughly proportional to the level of impacts, including cumulative impacts, in accordance with the provisions of CEQA (CEQA Guidelines, §§ 15126.4(a)(4)(B), 15064, 15065, and 16355). In order for mitigation measures to be effective, they must be specific, enforceable, and feasible actions that will improve environmental conditions. As set forth in more detail in Appendix A, the current scientific literature supports the conclusion that mitigation for permanent habitat loss necessitates replacement with an equivalent or greater habitat area for breeding, foraging, wintering, dispersal, presence of burrows, burrow surrogates, presence of fossorial mammal dens, well drained soils, and abundant and available prey within close proximity to the burrow.

MITIGATION METHODS

The current scientific literature indicates that any site-specific avoidance or mitigation measures developed should incorporate the best practices presented below or other practices confirmed by experts and the Department. The Department is available to assist in the development of site-specific avoidance and mitigation measures.

Avoiding. A primary goal is to design and implement projects to seasonally and spatially avoid negative impacts and disturbances that could result in take of burrowing owls, nests, or eggs. Other avoidance measures may include but not be limited to:

- Avoid disturbing occupied burrows during the nesting period, from 1 February through 31 August.
- Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls.
- Avoid direct destruction of burrows through chaining (dragging a heavy chain over an area to remove shrubs), disking, cultivation, and urban, industrial, or agricultural development.
- Develop and implement a worker awareness program to increase the on-site worker's recognition of and commitment to burrowing owl protection.
- Place visible markers near burrows to ensure that farm equipment and other machinery does not collapse burrows.
- Do not fumigate, use treated bait or other means of poisoning nuisance animals in areas where burrowing owls are known or suspected to occur (e.g., sites observed with nesting

owls, designated use areas).
- Restrict the use of treated grain to poison mammals to the months of January and February.

Take avoidance (pre-construction) surveys. Take avoidance surveys are intended to detect the presence of burrowing owls on a project site at a fixed period in time and inform necessary take avoidance actions. Take avoidance surveys may detect changes in owl presence such as colonizing owls that have recently moved onto the site, migrating owls, resident burrowing owls changing burrow use, or young of the year that are still present and have not dispersed. Refer to Appendix D for take avoidance survey methodology.

Site surveillance. Burrowing owls may attempt to colonize or re-colonize an area that will be impacted; thus, the current scientific literature indicates a need for ongoing surveillance at the project site during project activities is recommended. The surveillance frequency/effort should be sufficient to detect burrowing owls if they return. Subsequent to their new occupancy or return to the site, take avoidance measures should assure with a high degree of certainty that take of owls will not occur.

Minimizing. If burrowing owls and their habitat can be protected in place on or adjacent to a project site, the use of buffer zones, visual screens or other measures while project activities are occurring can minimize disturbance impacts. Conduct site-specific monitoring to inform development of buffers (see Visibility and sensitivity above). The following general guidelines for implementing buffers should be adjusted to address site-specific conditions using the impact assessment approach described above. The CEQA lead agency and/or project proponent is encouraged to consult with the Department and other burrowing owl experts for assistance in developing site-specific buffer zones and visual screens.

Buffers. Holroyd et al. (2001) identified a need to standardize management and disturbance mitigation guidelines. For instance, guidelines for mitigating impacts by petroleum industries on burrowing owls and other prairie species (Scobie and Faminow, 2000) may be used as a template for future mitigation guidelines (Holroyd et al. 2001). Scobie and Faminow (2000) developed guidelines for activities around occupied burrowing owl nests recommending buffers around low, medium, and high disturbance activities, respectively (see below).

Recommended restricted activity dates and setback distances by level of disturbance for burrowing owls (Scobie and Faminow 2000).

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

Based on existing vegetation, human development, and land uses in an area, resource managers may decide to allow human development or resource extraction closer to these area/sites than recommended above. However, if it is decided to allow activities closer than

the setback distances recommended, a broad-scale, long-term, scientifically-rigorous monitoring program ensures that burrowing owls are not detrimentally affected by alternative approaches.

Other minimization measures include eliminating actions that reduce burrowing owl forage and burrowing surrogates (e.g. ground squirrel), or introduce/facilitate burrowing owl predators. Actions that could influence these factors include reducing livestock grazing rates and/or changing the timing or duration of grazing or vegetation management that could result in less suitable habitat.

Burrow exclusion and closure. Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls, or permanently exclude burrowing owls and close burrows after verifying burrows are empty by site monitoring and scoping. Exclusion in and of itself is not a take avoidance, minimization or mitigation method. Eviction of burrowing owls is a potentially significant impact under CEQA.

The long-term demographic consequences of these techniques have not been thoroughly evaluated, and the fate of evicted or excluded burrowing owls has not been systematically studied. Because burrowing owls are dependent on burrows at all times of the year for survival and/or reproduction, evicting them from nesting, roosting, and satellite burrows may lead to indirect impacts or take. Temporary or permanent closure of burrows may result in significant loss of burrows and habitat for reproduction and other life history requirements. Depending on the proximity and availability of alternate habitat, loss of access to burrows will likely result in varying levels of increased stress on burrowing owls and could depress reproduction, increase predation, increase energetic costs, and introduce risks posed by having to find and compete for available burrows. Therefore, exclusion and burrow closure are not recommended where they can be avoided. The current scientific literature indicates consideration of all possible avoidance and minimization measures before temporary or permanent exclusion and closure of burrows is implemented, in order to avoid take.

The results of a study by Trulio (1995) in California showed that burrowing owls passively displaced from their burrows were quickly attracted to adjacent artificial burrows at five of six passive relocation sites. The successful sites were all within 75 meters (m) of the destroyed burrow, a distance generally within a pair's territory. This researcher discouraged using passive relocation to artificial burrows as a mitigation measure for lost burrows without protection of adjacent foraging habitat. The study results indicated artificial burrows were used by evicted burrowing owls when they were approximately 50-100 m from the natural burrow (Thomsen 1971, Haug and Oliphant 1990). Locating artificial or natural burrows more than 100 m from the eviction burrow may greatly reduce the chances that new burrows will be used. Ideally, exclusion and burrow closure is employed only where there are adjacent natural burrows and non-impacted, sufficient habitat for burrowing owls to occupy with permanent protection mechanisms in place. Any new burrowing owl colonizing the project site after the CEQA document has been adopted may constitute changed circumstances that should be addressed in a re-circulated CEQA document.

The current scientific literature indicates that burrow exclusion should only be conducted by qualified biologists (meeting the Biologist's Qualifications above) during the non-breeding

season, before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and/or scoping. The literature also indicates that when temporary or permanent burrow exclusion and/or burrow closure is implemented, burrowing owls should not be excluded from burrows unless or until:

- A Burrowing Owl Exclusion Plan (see Appendix E) is developed and approved by the applicable local DFG office;
- Permanent loss of occupied burrow(s) and habitat is mitigated in accordance with the Mitigating Impacts sections below. Temporary exclusion is mitigated in accordance with the item #1 under Mitigating Impacts below.
- Site monitoring is conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided. Conduct daily monitoring for one week to confirm young of the year have fledged if the exclusion will occur immediately after the end of the breeding season.
- Excluded burrowing owls are documented using artificial or natural burrows on an adjoining mitigation site (if able to confirm by band re-sight).

Translocation (Active relocation offsite >100 meters). At this time, there is little published information regarding the efficacy of translocating burrowing owls, and additional research is needed to determine subsequent survival and breeding success (Klute et al. 2003, Holroyd et al. 2001). Study results for translocation in Florida implied that hatching success may be decreased for populations of burrowing owls that undergo translocation (Nixon 2006). At this time, the Department is unable to authorize the capture and relocation of burrowing owls except within the context of scientific research (FGC §1002) or a NCCP conservation strategy.

Mitigating impacts. Habitat loss and degradation from rapid urbanization of farmland in the core areas of the Central and Imperial valleys is the greatest of many threats to burrowing owls in California (Shuford and Gardali, 2008). At a minimum, if burrowing owls have been documented to occupy burrows (see Definitions, Appendix B) at the project site in recent years, the current scientific literature supports the conclusion that the site should be considered occupied and mitigation should be required by the CEQA lead agency to address project-specific significant and cumulative impacts. Other site-specific and regionally significant and cumulative impacts may warrant mitigation. The current scientific literature indicates the following to be best practices. If these best practices cannot be implemented, the lead agency or lead investigator may consult with the Department to develop effective mitigation alternatives. The Department is also available to assist in the identification of suitable mitigation lands.

1. Where habitat will be temporarily disturbed, restore the disturbed area to pre-project condition including decompacting soil and revegetating. Permanent habitat protection may be warranted if there is the potential that the temporary impacts may render a nesting site (nesting burrow and satellite burrows) unsustainable or unavailable depending on the time frame, resulting in reduced survival or abandonment. For the latter potential impact, see the permanent impact measures below.
2. Mitigate for permanent impacts to nesting, occupied and satellite burrows and/or burrowing owl habitat such that the habitat acreage, number of burrows and burrowing owls impacted are replaced based on the information provided in Appendix A. Note: A

minimum habitat replacement recommendation is not provided here as it has been shown to serve as a default, replacing any site-specific analysis and discounting the wide variation in natal area, home range, foraging area, and other factors influencing burrowing owls and burrowing owl population persistence in a particular area.

3. Mitigate for permanent impacts to nesting, occupied and satellite burrows and burrowing owl habitat with (a) permanent conservation of similar vegetation communities (grassland, scrublands, desert, urban, and agriculture) to provide for burrowing owl nesting, foraging, wintering, and dispersal (i.e., during breeding and non-breeding seasons) comparable to or better than that of the impact area, and (b) sufficiently large acreage, and presence of fossorial mammals. The mitigation lands may require habitat enhancements including enhancement or expansion of burrows for breeding, shelter and dispersal opportunity, and removal or control of population stressors. If the mitigation lands are located adjacent to the impacted burrow site, ensure the nearest neighbor artificial or natural burrow clusters are at least within 210 meters (Fisher et al. 2007).
4. Permanently protect mitigation land through a conservation easement deeded to a non-profit conservation organization or public agency with a conservation mission, for the purpose of conserving burrowing owl habitat and prohibiting activities incompatible with burrowing owl use. If the project is located within the service area of a Department-approved burrowing owl conservation bank, the project proponent may purchase available burrowing owl conservation bank credits.
5. Develop and implement a mitigation land management plan to address long-term ecological sustainability and maintenance of the site for burrowing owls (see Management Plan and Artificial Burrow sections below, if applicable).
6. Fund the maintenance and management of mitigation land through the establishment of a long-term funding mechanism such as an endowment.
7. Habitat should not be altered or destroyed, and burrowing owls should not be excluded from burrows, until mitigation lands have been legally secured, are managed for the benefit of burrowing owls according to Department-approved management, monitoring and reporting plans, and the endowment or other long-term funding mechanism is in place or security is provided until these measures are completed.
8. Mitigation lands should be on, adjacent or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls present.
9. Where there is insufficient habitat on, adjacent to, or near project sites where burrowing owls will be excluded, acquire mitigation lands with burrowing owl habitat away from the project site. The selection of mitigation lands should then focus on consolidating and enlarging conservation areas located outside of urban and planned growth areas, within foraging distance of other conserved lands. If mitigation lands are not available adjacent to other conserved lands, increase the mitigation land acreage requirement to ensure a selected site is of sufficient size. Offsite mitigation may not adequately offset the biological and habitat values impacted on a one to one basis. Consult with the Department when determining offsite mitigation acreages.
10. Evaluate and select suitable mitigation lands based on a comparison of the habitat attributes of the impacted and conserved lands, including but not limited to: type and structure of habitat being impacted or conserved; density of burrowing owls in impacted and conserved habitat; and significance of impacted or conserved habitat to the species range-wide. Mitigate for the highest quality burrowing owl habitat impacted first and foremost when identifying mitigation lands, even if a mitigation site is located outside of

a lead agency's jurisdictional boundary, particularly if the lead agency is a city or special district.

11. Select mitigation lands taking into account the potential human and wildlife conflicts or incompatibility, including but not limited to, human foot and vehicle traffic, and predation by cats, loose dogs and urban-adapted wildlife, and incompatible species management (i.e., snowy plover).
12. Where a burrowing owl population appears to be highly adapted to heavily altered habitats such as golf courses, airports, athletic fields, and business complexes, permanently protecting the land, augmenting the site with artificial burrows, and enhancing and maintaining those areas may enhance sustainability of the burrowing owl population onsite. Maintenance includes keeping lands grazed or mowed with weed-eaters or push mowers, free from trees and shrubs, and preventing excessive human and human-related disturbance (e.g., walking, jogging, off-road activity, dog-walking) and loose and feral pets (chasing and, presumably, preying upon owls) that make the environment uninhabitable for burrowing owls (Wesemann and Rowe 1985, Millsap and Bear 2000, Lincer and Bloom 2007). Items 4, 5 and 6 also still apply to this mitigation approach.
13. If there are no other feasible mitigation options available and a lead agency is willing to establish and oversee a Burrowing Owl Mitigation and Conservation Fund that funds on a competitive basis acquisition and permanent habitat conservation, the project proponent may participate in the lead agency's program.

Artificial burrows. Artificial burrows have been used to replace natural burrows either temporarily or long-term and their long-term success is unclear. Artificial burrows may be an effective addition to in-perpetuity habitat mitigation if they are augmenting natural burrows, the burrows are regularly maintained (i.e., no less than annual, with biennial maintenance recommended), and surrounding habitat patches are carefully maintained. There may be some circumstances, for example at airports, where squirrels will not be allowed to persist and create a dynamic burrow system, where artificial burrows may provide some support to an owl population.

Many variables may contribute to the successful use of artificial burrows by burrowing owls, including pre-existence of burrowing owls in the area, availability of food, predators, surrounding vegetation and proximity, number of natural burrows in proximity, type of materials used to build the burrow, size of the burrow and entrance, direction in which the burrow entrance is facing, slope of the entrance, number of burrow entrances per burrow, depth of the burrow, type and height of perches, and annual maintenance needs (Belthoff and King 2002, Smith et al. 2005, Barclay et al. 2011). Refer to Barclay (2008) and (2011) and to Johnson et al. 2010 (unpublished report) for guidance on installing artificial burrows including recommendations for placement, installation and maintenance.

Any long-term reliance on artificial burrows as natural burrow replacements must include semi-annual to annual cleaning and maintenance and/or replacement (Barclay et al. 2011, Smith and Conway 2005, Alexander et al. 2005) as an ongoing management practice. Alexander et al. (2005), in a study of the use of artificial burrows found that all of 20 artificial burrows needed some annual cleaning and maintenance. Burrows were either excavated by predators, blocked by soil or vegetation, or experienced substrate erosion forming a space beneath the tubing that prevented nestlings from re-entering the burrow.

Mitigation lands management plan. Develop a Mitigation Lands Management Plan for projects that require off-site or on-site mitigation habitat protection to ensure compliance with and effectiveness of identified management actions for the mitigation lands. A suggested outline and related vegetation management goals and monitoring success criteria can be found in Appendix E.

Mitigation Monitoring and Reporting

Verify the compliance with required mitigation measures, the accuracy of predictions, and ensure the effectiveness of all mitigation measures for burrowing owls by conducting follow-up monitoring, and implementing midcourse corrections, if necessary, to protect burrowing owls. Refer to CEQA Guidelines Section 15097 and the CEQA Guidelines for additional guidance on mitigation, monitoring and reporting. Monitoring is qualitatively different from site surveillance; monitoring normally has a specific purpose and its outputs and outcomes will usually allow a comparison with some baseline condition of the site before the mitigation (including avoidance and minimization) was undertaken. Ideally, monitoring should be based on the Before-After Control-Impact (BACI) principle (McDonald et al. 2000) that requires knowledge of the pre-mitigation state to provide a reference point for the state and change in state after the project and mitigation have been implemented.

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Appendix A. Burrowing Owl Natural History and Threats

Diet

Burrowing owl diet includes arthropods, small rodents, birds, amphibians, reptiles, and carrion (Haug et al. 1993).

Breeding

In California, the breeding season for the burrowing owl typically occurs between 1 February and 31 August although breeding in December has been documented (Thompson 1971, Gervais et al. 2008); breeding behavior includes nest site selection by the male, pair formation, copulation, egg laying, hatching, fledging, and post-fledging care of young by the parents. The peak of the breeding season occurs between 15 April and 15 July and is the period when most burrowing owls have active nests (eggs or young). The incubation period lasts 29 days (Coulombe 1971) and young fledge after 44 days (Haug et al. 1993). Note that the timing of nesting activities may vary with latitude and climatic conditions. Burrowing owls may change burrows several times during the breeding season, starting when nestlings are about three weeks old (Haug et al. 1993).

Dispersal

The following discussion is an excerpt from Gervais et al (2008):

> "The burrowing owl is often considered a sedentary species (e.g., Thomsen 1971). A large proportion of adults show strong fidelity to their nest site from year to year, especially where resident, as in Florida (74% for females, 83% for males; Millsap and Bear 1997). In California, nest-site fidelity rates were 32%–50% in a large grassland and 57% in an agricultural environment (Ronan 2002, Catlin 2004, Catlin et al. 2005). Differences in these rates among sites may reflect differences in nest predation rates (Catlin 2004, Catlin et al. 2005). Despite the high nest fidelity rates, dispersal distances may be considerable for both juveniles (natal dispersal) and adults (postbreeding dispersal), but this also varied with location (Catlin 2004, Rosier et al. 2006). Distances of 53 km to roughly 150 km have been observed in California for adult and natal dispersal, respectively (D. K. Rosenberg and J. A. Gervais, unpublished data), despite the difficulty in detecting movements beyond the immediate study area (Koenig et al. 1996)."

Habitat

The burrowing owl is a small, long-legged, ground-dwelling bird species, well-adapted to open, relatively flat expanses. In California, preferred habitat is generally typified by short, sparse vegetation with few shrubs, level to gentle topography and well-drained soils (Haug et al. 1993). Grassland, shrub steppe, and desert are naturally occurring habitat types used by the species. In addition, burrowing owls may occur in some agricultural areas, ruderal grassy fields, vacant lots and pastures if the vegetation structure is suitable and there are useable burrows and foraging habitat in proximity (Gervais et al 2008). Unique amongst North

American raptors, the burrowing owl requires underground burrows or other cavities for nesting during the breeding season and for roosting and cover, year round. Burrows used by the owls are usually dug by other species termed host burrowers. In California, California ground squirrel (*Spermophilus beecheyi*) and round-tailed ground squirrel (*Citellus tereticaudus*) burrows are frequently used by burrowing owls but they may use dens or holes dug by other fossorial species including badger (*Taxidea taxus*), coyote (*Canis latrans*), and fox (e.g., San Joaquin kit fox, *Vulpes macrotis mutica*; Ronan 2002). In some instances, owls have been known to excavate their own burrows (Thompson 1971, Barclay 2007). Natural rock cavities, debris piles, culverts, and pipes also are used for nesting and roosting (Rosenberg et al. 1998). Burrowing owls have been documented using artificial burrows for nesting and cover (Smith and Belthoff, 2003).

Foraging habitat. Foraging habitat is essential to burrowing owls. The following discussion is an excerpt from Gervais et al. (2008):

> "Useful as a rough guide to evaluating project impacts and appropriate mitigation for burrowing owls, adult male burrowing owls home ranges have been documented (calculated by minimum convex polygon) to comprise anywhere from 280 acres in intensively irrigated agroecosystems in Imperial Valley (Rosenberg and Haley 2004) to 450 acres in mixed agricultural lands at Lemoore Naval Air Station, CA (Gervais et al. 2003), to 600 acres in pasture in Saskatchewan, Canada (Haug and Oliphant 1990). But owl home ranges may be much larger, perhaps by an order of magnitude, in non-irrigated grasslands such as at Carrizo Plain, California (Gervais et al. 2008), based on telemetry studies and distribution of nests. Foraging occurs primarily within 600 m of their nests (within approximately 300 acres, based on a circle with a 600 m radius) during the breeding season."

Importance of burrows and adjacent habitat. Burrows and the associated surrounding habitat are essential ecological requisites for burrowing owls throughout the year and especially during the breeding season. During the non-breeding season, burrowing owls remain closely associated with burrows, as they continue to use them as refuge from predators, shelter from weather and roost sites. Resident populations will remain near the previous season's nest burrow at least some of the time (Coulombe 1971, Thomsen 1971, Botelho 1996, LaFever et al. 2008).

In a study by Lutz and Plumpton (1999) adult males and females nested in formerly used sites at similar rates (75% and 63%, respectively) (Lutz and Plumpton 1999). Burrow fidelity has been reported in some areas; however, more frequently, burrowing owls reuse traditional nesting areas without necessarily using the same burrow (Haug et al. 1993, Dechant et al. 1999). Burrow and nest sites are re-used at a higher rate if the burrowing owl has reproduced successfully during the previous year (Haug et al. 1993) and if the number of burrows isn't limiting nesting opportunity.

Burrowing owls may use "satellite" or non-nesting burrows, moving young at 10-14 days, presumably to reduce risk of predation (Desmond and Savidge 1998) and possibly to avoid nest parasites (Dechant et al. 1999). Successful nests in Nebraska had more active satellite burrows within 75 m of the nest burrow than unsuccessful nests (Desmond and Savidge

1999). Several studies have documented the number of satellite burrows used by young and adult burrowing owls during the breeding season as between one and 11 burrows with an average use of approximately five burrows (Thompsen 1984, Haug 1985, Haug and Oliphant 1990). Supporting the notion of selecting for nest sites near potential satellite burrows, Ronan (2002) found burrowing owl families would move away from a nest site if their satellite burrows were experimentally removed through blocking their entrance.

Habitat adjacent to burrows has been documented to be important to burrowing owls. Gervais et al. (2003) found that home range sizes of male burrowing owls during the nesting season were highly variable within but not between years. Their results also suggested that owls concentrate foraging efforts within 600 meters of the nest burrow, as was observed in Canada (Haug and Oliphant 1990) and southern California (Rosenberg and Haley 2004). James et al. (1997), reported habitat modification factors causing local burrowing owl declines included habitat fragmentation and loss of connectivity.

In conclusion, the best available science indicates that essential habitat for the burrowing owl in California must include suitable year-round habitat, primarily for breeding, foraging, wintering and dispersal habitat consisting of short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey within close proximity to the burrow.

Threats to Burrowing Owls in California

Habitat loss. Habitat loss, degradation, and fragmentation are the greatest threats to burrowing owls in California. According to DeSante et al. (2007), "the vast majority of burrowing owls [now] occur in the wide, flat lowland valleys and basins of the Imperial Valley and Great Central Valley [where] for the most part,...the highest rates of residential and commercial development in California are occurring." Habitat loss from the State's long history of urbanization in coastal counties has already resulted in either extirpation or drastic reduction of burrowing owl populations there (Gervais et al. 2008). Further, loss of agricultural and other open lands (such as grazed landscapes) also negatively affect owl populations. Because of their need for open habitat with low vegetation, burrowing owls are unlikely to persist in agricultural lands dominated by vineyards and orchards (Gervais et al. 2008).

Control of burrowing rodents. According to Klute et al. (2003), the elimination of burrowing rodents through control programs is a primary factor in the recent and historical decline of burrowing owl populations nationwide. In California, ground squirrel burrows are most often used by burrowing owls for nesting and cover; thus, ground squirrel control programs may affect owl numbers in local areas by eliminating a necessary resource.

Direct mortality. Burrowing owls suffer direct losses from a number of sources. Vehicle collisions are a significant source of mortality especially in the urban interface and where owls nest alongside roads (Haug et al. 1993, Gervais et al. 2008). Road and ditch maintenance, modification of water conveyance structures (Imperial Valley) and discing to control weeds in fallow fields may destroy burrows (Rosenberg and Haley 2004, Catlin and Rosenberg 2006) which may trap or crush owls. Wind turbines at Altamont Pass Wind Resource Area are known to cause direct burrowing owl mortality (Thelander et al. 2003). Exposure to

pesticides may pose a threat to the species but is poorly understood (Klute et al. 2003, Gervais et al. 2008).

Appendix B. Definitions

Some key terms that appear in this document are defined below.

Adjacent habitat means burrowing owl habitat that abuts the area where habitat and burrows will be impacted and rendered non-suitable for occupancy.

Breeding (nesting) season begins as early as 1 February and continues through 31 August (Thomsen 1971, Zarn 1974). The timing of breeding activities may vary with latitude and climatic conditions. The breeding season includes pairing, egg-laying and incubation, and nestling and fledging stages.

Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls or permanently exclude burrowing owls and excavate and close burrows after confirming burrows are empty.

Burrowing owl habitat generally includes, but is not limited to, short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey.

Burrow surrogates include culverts, piles of concrete rubble, piles of soil, burrows created along soft banks of ditches and canals, pipes, and similar structures.

Civil twilight - Morning civil twilight begins when the geometric center of the sun is 6 degrees below the horizon (civil dawn) and ends at sunrise. Evening civil twilight begins at sunset and ends when the geometric center of the sun reaches 6 degrees below the horizon (civil dusk). During this period there is enough light from the sun that artificial sources of light may not be needed to carry on outdoor activities. This concept is sometimes enshrined in laws, for example, when drivers of automobiles must turn on their headlights (called lighting-up time in the UK); when pilots may exercise the rights to fly aircraft. Civil twilight can also be described as the limit at which twilight illumination is sufficient, under clear weather conditions, for terrestrial objects to be clearly distinguished; at the beginning of morning civil twilight, or end of evening civil twilight, the horizon is clearly defined and the brightest stars are visible under clear atmospheric conditions.

Conservation for burrowing owls may include but may not be limited to protecting remaining breeding pairs or providing for population expansion, protecting and enhancing breeding and essential habitat, and amending or augmenting land use plans to stabilize populations and other specific actions to avoid the need to list the species pursuant to California or federal Endangered Species Acts.

Contiguous means connected together so as to form an uninterrupted expanse in space.

Essential habitat includes nesting, foraging, wintering, and dispersal habitat.

Foraging habitat is habitat within the estimated home range of an occupied burrow, supports suitable prey base, and allows for effective hunting.

Host burrowers include ground squirrels, badgers, foxes, coyotes, gophers etc.

Locally significant species is a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or occurring in a unique habitat type.

Non-breeding season is the period of time when nesting activity is not occurring, generally September 1 through January 31, but may vary with latitude and climatic conditions.

Occupied site or occupancy means a site that is assumed occupied if at least one burrowing owl has been observed occupying a burrow within the last three years (Rich 1984). Occupancy of suitable burrowing owl habitat may also be indicated by owl sign including its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance or perch site.

Other impacting activities may include but may not be limited to agricultural practices, vegetation management and fire control, pest management, conversion of habitat from rangeland or natural lands to more intensive agricultural uses that could result in “take”. These impacting activities may not meet the definition of a project under CEQA.

Passive relocation is a technique of installing one-way doors in burrow openings to temporarily or permanently evict burrowing owls and prevent burrow re-occupation.

Peak of the breeding season is between 15 April and 15 July.

Sign includes its tracks, molted feathers, cast pellets (defined as 1-2” long brown to black regurgitated pellets consisting of non-digestible portions of the owls’ diet, such as fur, bones, claws, beetle elytra, or feathers), prey remains, egg shell fragments, owl white wash, nest burrow decoration materials (e.g., paper, foil, plastic items, livestock or other animal manure, etc.), possible owl perches, or other items.

Appendix C. Habitat Assessment and Reporting Details

Habitat Assessment Data Collection and Reporting

Current scientific literature indicates that it would be most effective to gather the data in the manner described below when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report:

1. Conduct at least one visit covering the entire potential project/activity area including areas that will be directly or indirectly impacted by the project. Survey adjoining areas within 150 m (Thomsen 1971, Martin 1973), or more where direct or indirect effects could potentially extend offsite. If lawful access cannot be achieved to adjacent areas, surveys can be performed with a spotting scope or other methods.
2. Prior to the site visit, compile relevant biological information for the site and surrounding area to provide a local and regional context.
3. Check all available sources for burrowing owl occurrence information regionally prior to a field inspection. The CNDDB and BIOS (see References cited) may be consulted for known occurrences of burrowing owls. Other sources of information include, but are not limited to, the Proceedings of the California Burrowing Owl Symposium (Barclay et al. 2007), county bird atlas projects, Breeding Bird Survey records, eBIRD (http://ebird.org), Gervais et al. (2008), local reports or experts, museum records, and other site-specific relevant information.
4. Identify vegetation and habitat types potentially supporting burrowing owls in the project area and vicinity.
5. Record and report on the following information:
    a. A full description of the proposed project, including but not limited to, expected work periods, daily work schedules, equipment used, activities performed (such as drilling, construction, excavation, etc.) and whether the expected activities will vary in location or intensity over the project's timeline;
    b. A regional setting map, showing the general project location relative to major roads and other recognizable features;
    c. A detailed map (preferably a USGS topo 7.5' quad base map) of the site and proposed project, including the footprint of proposed land and/or vegetation-altering activities, base map source, identifying topography, landscape features, a north arrow, bar scale, and legend;
    d. A written description of the biological setting, including location (Section, Township, Range, baseline and meridian), acreage, topography, soils, geographic and hydrologic characteristics, land use and management history on and adjoining the site (i.e., whether it is urban, semi-urban or rural; whether there is any evidence of past or current livestock grazing, mowing, disking, or other vegetation management activities);
    e. An analysis of any relevant, historical information concerning burrowing owl use or occupancy (breeding, foraging, over-wintering) on site or in the assessment area;
    f. Vegetation type and structure (using Sawyer et al. 2009), vegetation height, habitat types and features in the surrounding area plus a reasonably sized (as supported with logical justification) assessment area; (Note: use caution in discounting habitat based on grass height as it can be a temporary condition variable by season and conditions (such as current grazing regime) or may be distributed as a mosaic).

g. The presence of burrowing owl individuals or pairs or sign (see Appendix B);
h. The presence of suitable burrows and/or burrow surrogates (>11 cm in diameter (height and width) and >150 cm in depth) (Johnson et al. 2010), regardless of a lack of any burrowing owl sign and/or burrow surrogates; and burrowing owls and/or their sign that have recently or historically (within the last 3 years) been identified on or adjacent to the site.

Appendix D. Breeding and Non-breeding Season Surveys and Reports

Current scientific literature indicates that it is most effective to conduct breeding and non-breeding season surveys and report in the manner that follows:

Breeding Season Surveys

Number of visits and timing. Conduct 4 survey visits: 1) at least one site visit between 15 February and 15 April, and 2) a minimum of three survey visits, at least three weeks apart, between 15 April and 15 July, with at least one visit after 15 June. Note: many burrowing owl migrants are still present in southwestern California during mid-March, therefore, exercise caution in assuming breeding occupancy early in the breeding season.

Survey method. Rosenberg et al. (2007) confirmed walking line transects were most effective in smaller habitat patches. Conduct surveys in all portions of the project site that were identified in the Habitat Assessment and fit the description of habitat in Appendix A. Conduct surveys by walking straight-line transects spaced 7 m to 20 m apart, adjusting for vegetation height and density (Rosenberg et al. 2007). At the start of each transect and, at least, every 100 m, scan the entire visible project area for burrowing owls using binoculars. During walking surveys, record all potential burrows used by burrowing owls as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration. Some burrowing owls may be detected by their calls, so observers should also listen for burrowing owls while conducting the survey.

Care should be taken to minimize disturbance near occupied burrows during all seasons and not to "flush" burrowing owls especially if predators are present to reduce any potential for needless energy expenditure or burrowing owl mortality. Burrowing owls may flush if approached by pedestrians within 50 m (Conway et al. 2003). If raptors or other predators are present that may suppress burrowing owl activity, return at another time or later date for a follow-up survey.

Check all burrowing owls detected for bands and/or color bands and report band combinations to the Bird Banding Laboratory (BBL). Some site-specific variations to survey methods discussed below may be developed in coordination with species experts and Department staff.

Weather conditions. Poor weather may affect the surveyor's ability to detect burrowing owls, therefore, avoid conducting surveys when wind speed is >20 km/hr, and there is precipitation or dense fog. Surveys have greater detection probability if conducted when ambient temperatures are >20º C, <12 km/hr winds, and cloud cover is <75% (Conway et al. 2008).

Time of day. Daily timing of surveys varies according to the literature, latitude, and survey method. However, surveys between morning civil twilight and 10:00 AM and two hours before sunset until evening civil twilight provide the highest detection probabilities (Barclay pers. comm. 2012, Conway et al. 2008).

Alternate methods. If the project site is large enough to warrant an alternate method, consult current literature for generally accepted survey methods and consult with the Department on the proposed survey approach.

Additional breeding season site visits. Additional breeding season site visits may be necessary, especially if non-breeding season exclusion methods are contemplated. Detailed information, such as approximate home ranges of each individual or of family units, as well as foraging areas as related to the proposed project, will be important to document for evaluating impacts, planning avoidance measure implementation and for mitigation measure performance monitoring.

Adverse conditions may prevent investigators from determining presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owls in any given year. Any such conditions should be identified and discussed in the survey report. Visits to the site in more than one year may increase the likelihood of detection. Also, visits to adjacent known occupied habitat may help determine appropriate survey timing.

Given the high site fidelity shown by burrowing owls (see Appendix A, Importance of burrows), conducting surveys over several years may be necessary when project activities are ongoing, occur annually, or start and stop seasonally. (See Negative surveys).

Non-breeding Season Surveys

If conducting non-breeding season surveys, follow the methods described above for breeding season surveys, but conduct at least four (4) visits, spread evenly, throughout the non-breeding season. Burrowing owl experts and local Department staff are available to assist with interpreting results.

Negative Surveys

Adverse conditions may prevent investigators from documenting presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owl in any given year. Discuss such conditions in the Survey Report. Visits to the site in more than one year increase the likelihood of detection and failure to locate burrowing owls during one field season does not constitute evidence that the site is no longer occupied, particularly if adverse conditions influenced the survey results. Visits to other nearby known occupied sites can affirm whether the survey timing is appropriate.

Take Avoidance Surveys

Field experience from 1995 to present supports the conclusion that it would be effective to complete an initial take avoidance survey no less than 14 days prior to initiating ground disturbance activities using the recommended methods described in the Detection Surveys section above. Implementation of avoidance and minimization measures would be triggered by positive owl presence on the site where project activities will occur. The development of avoidance and minimization approaches would be informed by monitoring the burrowing owls.

Burrowing owls may re-colonize a site after only a few days. Time lapses between project activities trigger subsequent take avoidance surveys including but not limited to a final survey conducted within 24 hours prior to ground disturbance.

Survey Reports

Report on the survey methods used and results including the information described in the Summary Report and include the reports within the CEQA documentation:

1. Date, start and end time of surveys including weather conditions (ambient temperature, wind speed, percent cloud cover, precipitation and visibility);
2. Name(s) of surveyor(s) and qualifications;
3. A discussion of how the timing of the survey affected the comprehensiveness and detection probability;
4. A description of survey methods used including transect spacing, point count dispersal and duration, and any calls used;
5. A description and justification of the area surveyed relative to the project area;
6. A description that includes: number of owls or nesting pairs at each location (by nestlings, juveniles, adults, and those of an unknown age), number of burrows being used by owls, and burrowing owl sign at burrows. Include a description of individual markers, such as bands (numbers and colors), transmitters, or unique natural identifying features. If any owls are banded, request documentation from the BBL and bander to report on the details regarding the known history of the banded burrowing owl(s) (age, sex, origins, whether it was previously relocated) and provide with the report if available;
7. A description of the behavior of burrowing owls during the surveys, including feeding, resting, courtship, alarm, territorial defense, and those indicative of parents or juveniles;
8. A list of possible burrowing owl predators present and documentation of any evidence of predation of owls;
9. A detailed map (1:24,000 or closer to show details) showing locations of all burrowing owls, potential burrows, occupied burrows, areas of concentrated burrows, and burrowing owl sign. Locations documented by use of global positioning system (GPS) coordinates must include the datum in which they were collected. The map should include a title, north arrow, bar scale and legend;
10. Signed field forms, photos, etc., as appendices to the field survey report;
11. Recent color photographs of the proposed project or activity site; and
12. Original CNDDB Field Survey Forms should be sent directly to the Department's CNDDB office, and copies should be included in the environmental document as an appendix. (http://www.dfg.ca.gov/bdb/html/cnddb.html).

Appendix E. Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans

Whereas the Department does not recommend exclusion and burrow closure, current scientific literature and experience from 1995 to present, indicate that the following example components for burrowing owl artificial burrow and exclusion plans, combined with consultation with the Department to further develop these plans, would be effective.

Artificial Burrow Location

If a burrow is confirmed occupied on-site, artificial burrow locations should be appropriately located and their use should be documented taking into consideration:

1. A brief description of the project and project site pre-construction;
2. The mitigation measures that will be implemented;
3. Potential conflicting site uses or encumbrances;
4. A comparison of the occupied burrow site(s) and the artificial burrow site(s) (e.g., vegetation, habitat types, fossorial species use in the area, and other features);
5. Artificial burrow(s) proximity to the project activities, roads and drainages;
6. Artificial burrow(s) proximity to other burrows and entrance exposure;
7. Photographs of the site of the occupied burrow(s) and the artificial burrows;
8. Map of the project area that identifies the burrow(s) to be excluded as well as the proposed sites for the artificial burrows;
9. A brief description of the artificial burrow design;
10. Description of the monitoring that will take place during and after project implementation including information that will be provided in a monitoring report.
11. A description of the frequency and type of burrow maintenance.

Exclusion Plan

An Exclusion Plan addresses the following including but not limited to:

1. Confirm by site surveillance that the burrow(s) is empty of burrowing owls and other species preceding burrow scoping;
2. Type of scope and appropriate timing of scoping to avoid impacts;
3. Occupancy factors to look for and what will guide determination of vacancy and excavation timing (one-way doors should be left in place 48 hours to ensure burrowing owls have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape i.e., look for sign immediately inside the door).
4. How the burrow(s) will be excavated. Excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow);
5. Removal of other potential owl burrow surrogates or refugia on site;
6. Photographing the excavation and closure of the burrow to demonstrate success and sufficiency;

7. Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take;
8. How the impacted site will continually be made inhospitable to burrowing owls and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete.

Appendix F. Mitigation Management Plan and Vegetation Management Goals

Mitigation Management Plan

A mitigation site management plan will help ensure the appropriate implementation and maintenance for the mitigation site and persistence of the burrowing owls on the site. For an example to review, refer to Rosenberg et al. (2009). The current scientific literature and field experience from 1995 to present indicate that an effective management plan includes the following:

1. Mitigation objectives;
2. Site selection factors (including a comparison of the attributes of the impacted and conserved lands) and baseline assessment;
3. Enhancement of the conserved lands (enhancement of reproductive capacity, enhancement of breeding areas and dispersal opportunities, and removal or control of population stressors);
4. Site protection method and prohibited uses;
5. Site manager roles and responsibilities;
6. Habitat management goals and objectives:
    a. Vegetation management goals,
        i. Vegetation management tools:
            1. Grazing
            2. Mowing
            3. Burning
            4. Other
    b. Management of ground squirrels and other fossorial mammals,
    c. Semi-annual and annual artificial burrow cleaning and maintenance,
    d. Non-natives control – weeds and wildlife,
    e. Trash removal;
7. Financial assurances:
    a. Property analysis record or other financial analysis to determine long-term management funding,
    b. Funding schedule;
8. Performance standards and success criteria;
9. Monitoring, surveys and adaptive management;
10. Maps;
11. Annual reports.

Vegetation Management Goals

- Manage vegetation height and density (especially in immediate proximity to burrows). Suitable vegetation structure varies across sites and vegetation types, but should generally be at the average effective vegetation height of 4.7 cm (Green and Anthony 1989) and <13 cm average effective vegetation height (MacCracken et al. 1985*a)*.
- Employ experimental prescribed fires (controlled, at a small scale) to manage vegetation structure;

- Vegetation reduction or ground disturbance timing, extent, and configuration should avoid take. While local ordinances may require fire prevention through vegetation management, activities like disking, mowing, and grading during the breeding season can result in take of burrowing owls and collapse of burrows, causing nest destruction. Consult the take avoidance surveys section above for pre-management avoidance survey recommendations;
- Promote natural prey distribution and abundance, especially in proximity to occupied burrows; and
- Promote self-sustaining populations of host burrowers by limiting or prohibiting lethal rodent control measures and by ensuring food availability for host burrowers through vegetation management.

Refer to Rosenberg et al. (2009) for a good discussion of managing grasslands for burrowing owls.

Mitigation Site Success Criteria

In order to evaluate the success of mitigation and management strategies for burrowing owls, monitoring is required that is specific to the burrowing owl management plan. Given limited resources, Barclay et al. (2011) suggests managers focus on accurately estimating annual adult owl populations rather than devoting time to estimating reproduction, which shows high annual variation and is difficult to accurately estimate. Therefore, the key objective will be to determine accurately the number of adult burrowing owls and pairs, and if the numbers are maintained. A frequency of 5-10 years for surveys to estimate population size may suffice if there are no changes in the management of the nesting and foraging habitat of the owls.

Effective monitoring and evaluation of off-site and on-site mitigation management success for burrowing owls includes (Barclay, pers. comm.):

- Site tenacity;
- Number of adult owls present and reproducing;
- Colonization by burrowing owls from elsewhere (by band re-sight);
- Evidence and causes of mortality;
- Changes in distribution; and
- Trends in stressors.

APPENDIX D

CULTURAL RESOURCE REPORT

TECHNICAL MEMORANDUM

Date: April 11, 2018

Project: Cultural Resource Records Search for Cartmill Crossings project, Tulare County, CA

To: Jaymie Brauer

From: Robert Parr, MS, RPA, Senior Archaeologist

Subject: Cultural Resources Records Search Results (RS#18-279)

Background

This Technical Memo is to provide a cultural record search and to determine whether the proposed project would impact cultural resources.

Project Description

The proposed Project is the construction of a multi-use commercial and residential development. Approximately 68.6 acres of commercial businesses on both sides of Akers Street will be developed in accordance with the permitted uses of the C-3 zone district. Examples of permitted uses include restaurants, fast food restaurants, retail stores, hotels, and fuel stations. The northeastern portion of the project site will consist of approximately 30 acres of low density single-family residential homes with lots no smaller than 6,000 sq. ft. West of the low-density residential development will be approximately 4.4 acres of medium density residential development, which will likely consist of fourplex residences. Southeast of the medium density area will be approximately 7.7 acres of high-density multi-family development, which will likely consist of an apartment complex. Northeast of the multi-family development will be a 7-acre park.

Project Location

Cartmill Crossings is a 127-acre land development project proposed to be constructed in an area immediately north and adjacent to the city of Tulare, California (Figure 1). Tulare is eight miles south of Visalia and sixty miles north of Bakersfield. The project site is in the northeast corner of the State Route (SR) 99 and the Cartmill Avenue interchange and bounded by SR 99 to the west and Cartmill Avenue to the south (Figure 2). The Project site is within the Tulare USGS Visalia quadrangle in Section 26, Township 19S, Range 19E, Mount Diablo Base and Meridian (BDM&M) (Figure 3)

Methodology

A cultural resources records search (RS# 18-279) was conducted at the Southern San Joaquin Valley Information Center, CSU Bakersfield, for the Cartmill Crossings project north of the City

of Tulare in Tulare County, CA. The proposed project consists of approximately 130 acres of land at the junction of West Cartmill Ave. and US Route 99.

The records search covered an area within one quarter mile of the project site and included a review of the *National Register of Historic Places (NRHP), California Points of Historical Interest, California Registry of Historic Resources (CRHR), California Historical Landmarks, California State Historic Resources Inventory*, and a review of cultural resource reports on file.

A Sacred Land File search was requested from the Native American Heritage Commission (NAHC). The results of that search were negative. A copy of the letter and NAHC's response is included.

Results

The records search indicated that the entire property previously had been surveyed for cultural resources (Basin Research Associates 2006). One additional survey included a small portion of the southwestern portion of the property (Haley 2011). Neither survey revealed any cultural resources.

Five cultural resource studies have been carried out within a half mile of the project. Two cultural sites, a historical building and a segment of the Southern Pacific/Central Pacific Railroad, have been recorded within a half mile of the project.

Conclusions

Based on the results of cultural records search findings and the lack of historical or archaeological resources previously identified within a 0.5-mile radius of the proposed project, the potential to encounter subsurface cultural resources is minimal.

However, there is still a possibility that historical or archaeological materials may be exposed during construction of the project. Grading and trenching, as well as other ground-disturbing actions have the potential to damage or destroy these previously unidentified and potentially significant cultural resources within the project area, including historical or archaeological resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact under CEQA.

With implementation of Measures CUL-01 and CUL-03 as outlined below, potential Project-specific and cumulative impacts related to cultural resources, including historical and archaeological resources, would be considered ***less-than-significant***.

Recommended Measures:

Measure CUL-1: In the event that resources potentially qualifying as historical resources or unique archaeological resources per CEQA Guidelines Section 15064.5 and Public Resources

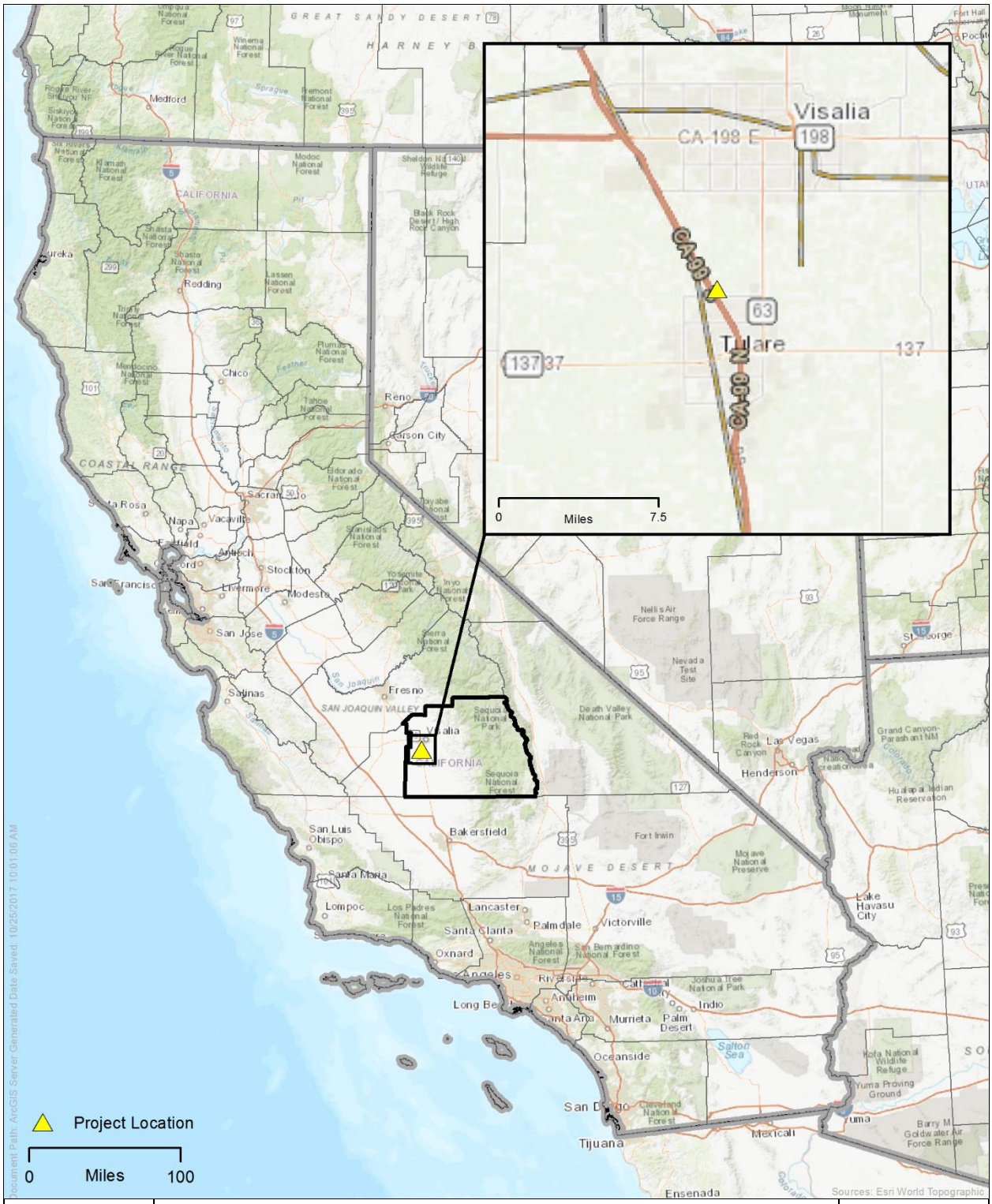
Code section 21083.2 are inadvertently discovered during ground-disturbing activities, all work within 50 feet of the find shall halt until a qualified archaeologist who meets the Secretary of the Interior's professional qualifications standards in prehistoric or historical archaeology, as appropriate, shall evaluate the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified archaeologist determines that the discovery represents either an historical resource or a unique archaeological resource, the archaeologist shall recommend to the City potential means of addressing impacts to such resources. Such additional measures may include avoidance, testing, and evaluation or data recovery excavation. The City shall then determine whether any such recommended measures are feasible in light of project design, economics, logistics, and other factors. If avoidance is infeasible based on these factors, then testing or data recovery shall be the preferred method of dealing with the affected resources. Once the measure(s) chosen by the City have been identified and implemented, construction work in the area within 50 feet of the find shall be resumed.

Measure CUL-2: If human remains are uncovered during Project construction, the Project proponent shall immediately halt work, contact the Tulare County Coroner to evaluate the remains, and follow the procedures and protocols set forth in §15064.5 (e)(1) of the CEQA Guidelines. The City of Tulare Community and Economic Development Director shall also be notified of the discovery. If the County Coroner determines that the remains are Native American, the City shall contact the Native American Heritage Commission, in accordance with Health and Safety Code §7050.5, subdivision (c), and Public Resources Code §5097.98 (as amended by AB 2641). The NAHC shall identify the person or persons believed to be most likely descended from the deceased Native American. The Most Likely Descendant (MLD) shall be afforded the opportunity to provide recommendations concerning the future disposition of the remains and any associated grave goods as provided in PRC 5097.98. Per Public Resources Code §5097.98, the Project operator shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this section (PRC 5097.98), with the most likely descendent regarding their recommendations, if applicable, taking into account the possibility of multiple human remains

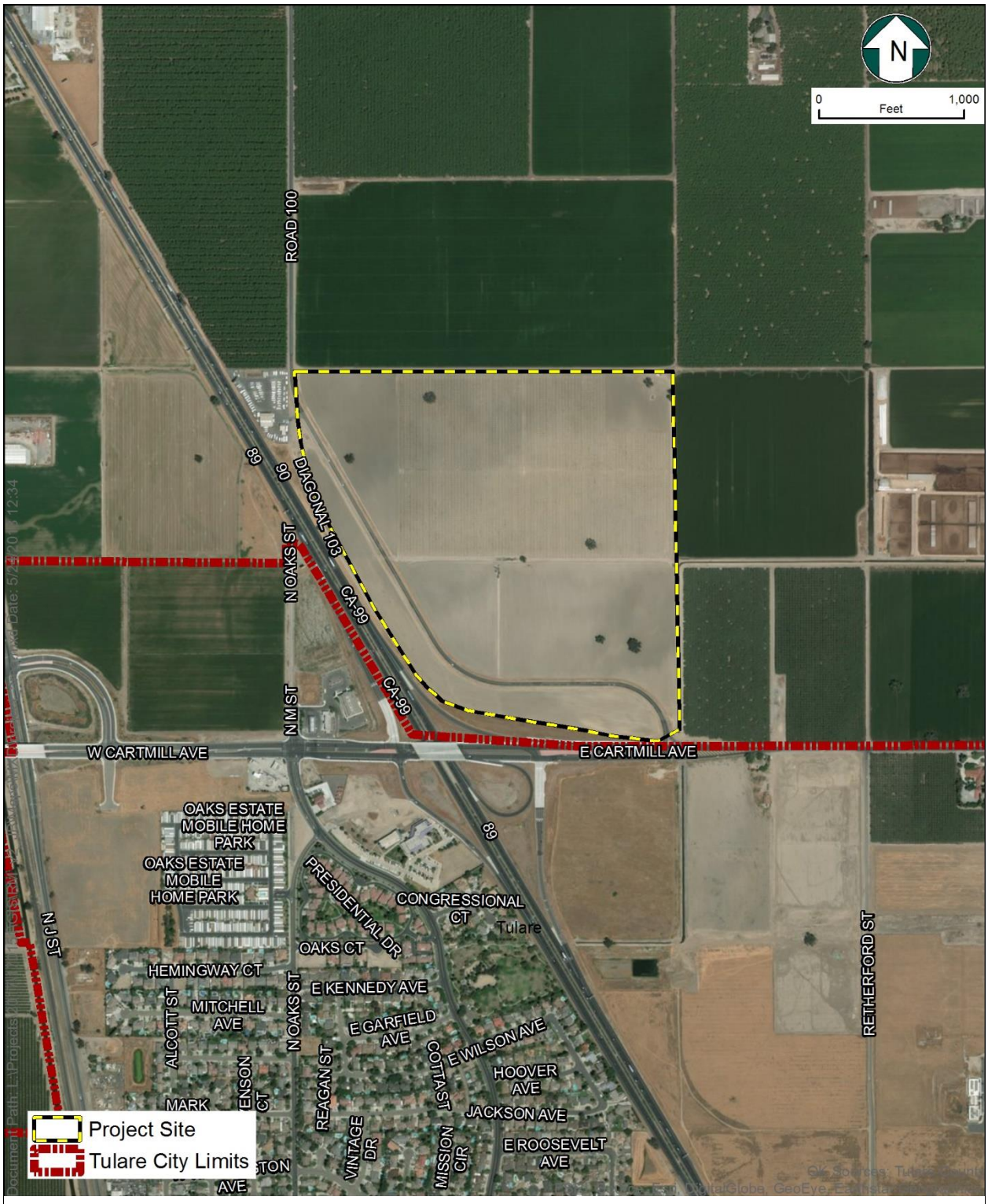
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Basin Research Associates
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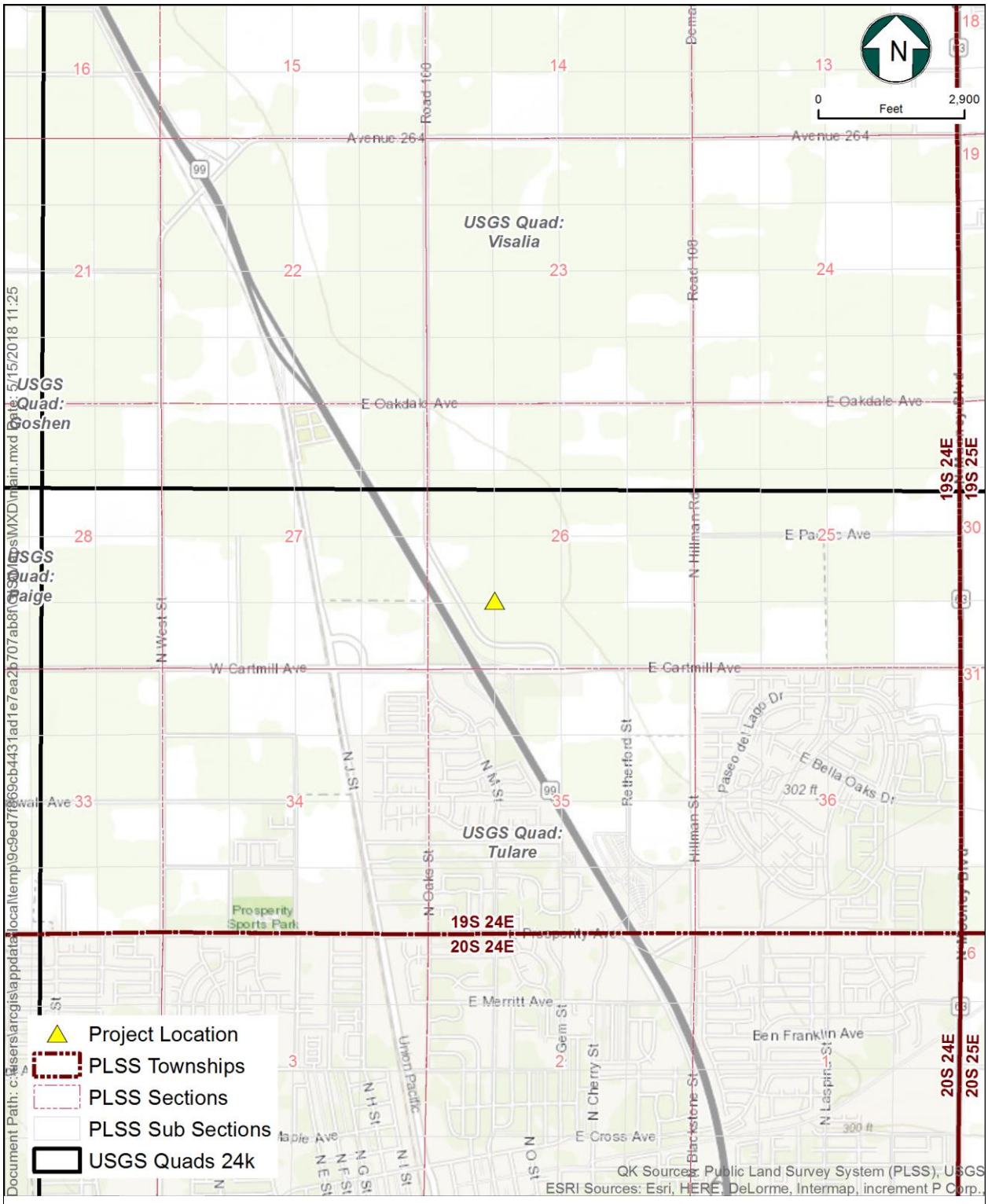
Haley, Kathryn
2011 Cartmill Avenue Interchange Project Historical Resources Evaluation Report. Report prepared for California Department of Transportation and City of Tulare. (TU-1677).



QK	**Project Vicinity**	**Figure 1**



QK	**Project Location**	**Figure 2**



QK	**PLSS**	**Figure 3**

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710

November 19, 2018

Jaymie Brauer
Quad Knopf Inc.

Sent by Email: Jaymie.brauer@qkinc.com
Number of Pages: 2

RE: Cartmill Crossings Project, Visalia, Tulare County

Dear Ms. Brauer:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. **Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.**

I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. **By contacting all those on the list, your organization will be better able to respond to claims of failure to consult.** If a response has not been received within two weeks of notification, the NAHC 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 via email: Sharaya.Souza@nahc.ca.gov.

Sincerely,

Sharaya Souza
Staff Services Analyst
(916) 573-0168

Native American Heritage Commission
Native American Contacts List
11/19/2018

Kern Valley Indian Community
Julie Turner, Secretary
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(661) 340-0032 Cell

Kawaiisu
Tubatulabal

Kern Valley Indian Community
Robert Robinson, Chairperson
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Tubatulabal
Kawaiisu

Santa Rosa Rancheria Tachi Yokut Tribe
Rueben Barrios Sr., Chairperson
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Tachi
Yokut

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Tubatulabal

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Porterville ,CA 93258
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(559) 781-4610 Fax

Yokuts

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct.
Salinas ,CA 93906
kwood8934@aol.com
(831) 443-9702

Foothill Yokuts
Mono
Wuksache

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

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, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes for the proposed:
Cartmill Crossings Project, Visalia, Tulare County.

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710

November 19, 2018

Jaymie Brauer
Quad Knopf Inc.

Sent by Email: Jaymie.brauer@qkinc.com
Number of Pages: 2

RE: Cartmill Crossings Project, Visalia, Tulare County

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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 via email: Sharaya.Souza@nahc.ca.gov.

Sincerely,

Sharaya Souza
Staff Services Analyst
(916) 573-0168

Community & Economic Development Department

November 14, 2018

FROM: City of Tulare

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). A Formal Notification of a Decision to Undertake a Project and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

SB 18 Tribal Consultation Government Code §65352.3

Dear Tribal Chairperson:

The City of Tulare (City) has decided to undertake the following project: Cartmill Crossings Project (project). The proposed project includes an Annexation, General Plan Amendment, and Pre-zone to allow for a multi-use project consisting of a commercial shopping district and multi-family and single- family residential development. Below please find the maps showing the Project location (Figures 1- 4).

Cartmill Crossings is a land development project proposed to be constructed in an area immediately north and adjacent to the City of Tulare, California (Figure 1). The Project site currently consists of approximately 120 acres of undeveloped land (APN 149-230-010, -019, -020 and -021). The Project site is in the northeast corner of the State Route 99 (SR 99)/Cartmill Avenue interchange and bounded by SR 99 to the west and Cartmill Avenue to the south (Figure 2). The Project site is within the Tulare USGS Visalia quadrangle. It is located in Section 26, Township 19S, Range 19E, Mount Diablo Base and Meridian (BDM&M).

Pursuant to PRC § 21080.3.1 (b), you have 30 days from the receipt of this letter to request consultation, in writing, with the City. In compliance with SB 18 pursuant to Government Code §65352.3, this Department is requesting your review and comments on the potential impacts on cultural places associated with your tribe by this proposal. Your participation is important at this early stage of processing to ensure that cultural places important to your tribe are identified, and the potential impacts associated with implementation of the project are mitigated.

If you have not responded by **January 15, 2019**, this Department will assume your tribe has declined consultation as per Government Code §65352.3. Notification of the availability of public hearing notices will continue to be provided, even if consultation is declined.

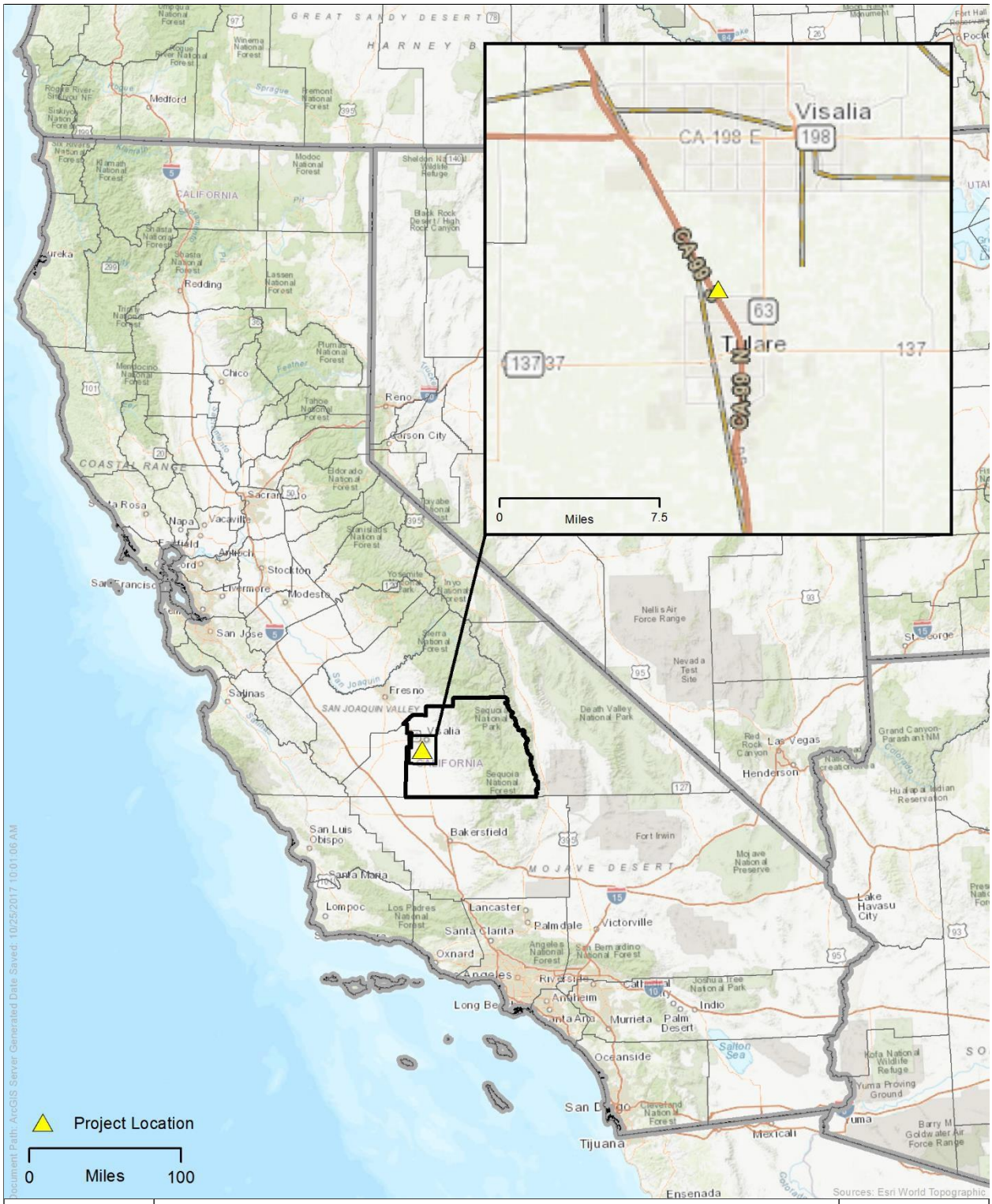
Should you have any comments or questions please contact our designated representative, Mario Anaya, Principal Planner at (559) 684-4223 or at manaya@tulare.ca.gov.

Very Respectfully,

Josh McDonnell

Josh McDonnell, AICP
Community and Economic Development Director City of Tulare

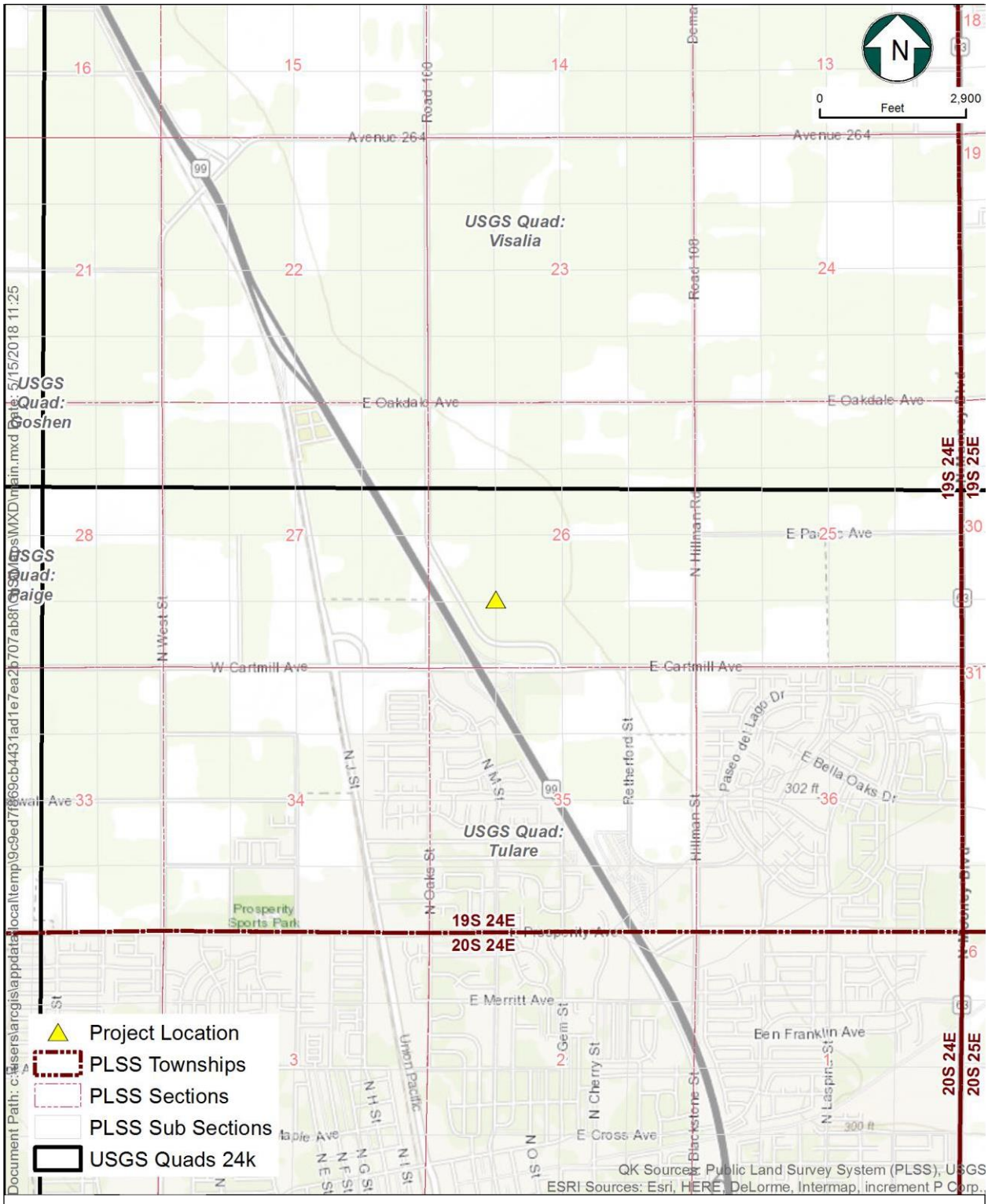
Enclosure: Figures 1 - 4



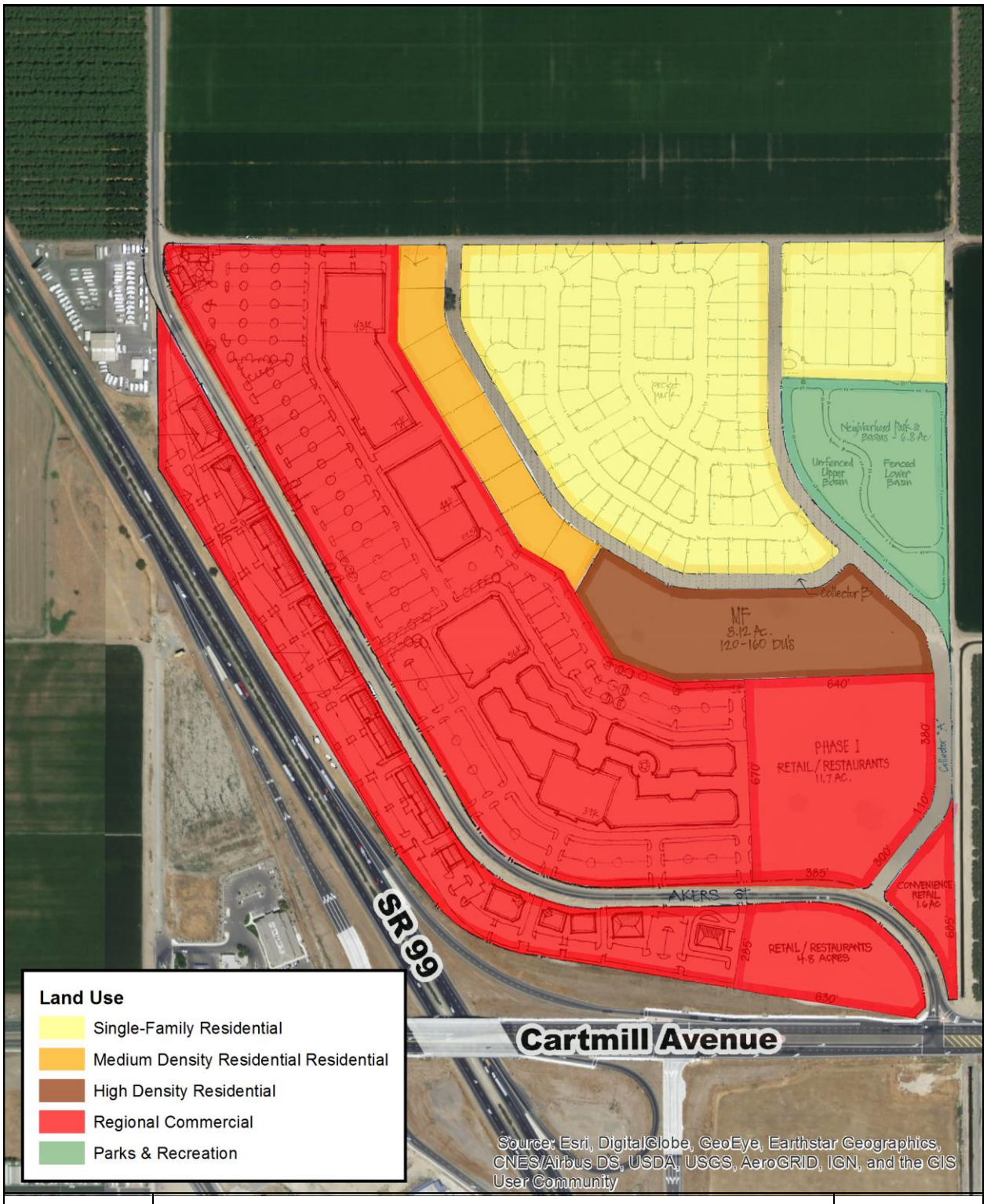
	Project Vicinity	**Fig 1**



QK	**Project Location**	**Fig 2**


N
0
2,900
Feet
USGS Quad: Visalia
USGS Quad: Goshen
USGS Quad: Raige
USGS Quad: Tulare
Avenue 264
E Oakdale Ave
W Cartmill Ave
E Cartmill Ave
E Prosperity Ave
E Merritt Ave
E Cross Ave
Ben Franklin Ave
E Bella Oaks Dr
Paseo de Lago Dr
N West St
N Oak St
N Hillman Rd
Hillman St
Retherford St
N Cherry St
Gem St
N Blackstone St
N Laspia St
Road 100
Prosperity Sports Park
19S 24E
19S 25E
20S 24E
20S 25E
Project Location
PLSS Townships
PLSS Sections
PLSS Sub Sections
USGS Quads 24k
QK Sources: Public Land Survey System (PLSS), USGS
ESRI Sources: Esri, HERE, DeLorme, Intermap, increment P Corp.
Document Path: c:\users\arcgis\appdata\local\temp\9c9ed7f869cb4431ad1e7ea2b707ab8f\GIS\MXD\main.mxd Date: 5/15/2018 11:25

QK	**PLSS**	**Fig 3**



QK	**Proposed Project Development**	**Fig 4**

APPENDIX E

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Prepared For

WEST COAST CONSTRUCTION FTB AG2 LLC
4930 WEST KAWEAH COURT, SUITE B
VISALIA, CALIFORNIA 93277

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

AGRICULTURAL LAND
NEC Cartmill Avenue & Highway 99
APNs 149-230-010, 149-230-019, 149-230-020 & 149-230-021
Tulare, California

Date Issued: December 7, 2018
Project Number E2151-18

Prepared By

CTL, Inc.
CONSOLIDATED TESTING LABS
710 S. KAWEAH AVENUE
EXETER, CALIFORNIA 93221
TEL (559) 592-3555 FAX (559) 592-3553

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EXECUTIVE SUMMARY

Consolidated Testing Labs, Inc. (CTL) has performed a Phase I Environmental Site Assessment (ESA) in general accordance with the scope of work and limitations set forth by West Coast Construction FTB Ag2 LLC for the property identified as Tulare County Assessor's Parcel Numbers (APNs) 149-230-010, 149-230-019, 149-230-020 and 149-230-021, Tulare, California (the "Property").

The Phase I Environmental Site Assessment is designed to provide West Coast Construction FTB Ag2 LLC with an assessment concerning environmental conditions (limited to those issues identified in the report) as they exist at the property. This assessment was conducted utilizing generally accepted ESA industry standards in accordance with ASTM E 1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (40 CFR Part 312).

The Property consists of four parcels of agricultural land approximately 120.16 acres in size. The Property is situated at the northeast corner (NEC) of Cartmill Avenue and Highway 99 in Tulare, California. At the time of the site visit, the southern portion of the Property consisted of disked soil and the north portion of the Property was planted with almond trees. Road 100 enters the Property at the southeast corner of the site then travels northwest, west, then turns northwest and exits the Property at the northwest corner of the site. Road 100 is not part of the subject Property. Improvements included one active irrigation water well and associated filtration system, one inactive irrigation water well, an irrigation water pump and piping, an advertising sign on the west portion of the Property, and irrigation water pipelines for conveyance of water beneath two sections of Road 100. The property also included an evaporation pond for the sand flush water of the irrigation water filtration system. The active well, inactive well, filtration system, and pond are located on the northeast portion of the Property. The irrigation water pump is located near the central east boundary of the Property.

Based on historical resources, the Property was in use as agricultural land in 1937. By the mid-1950s the Property was in use as agricultural land and also occupied by a landing strip on the south-central portion of the site and a small residence and airplane hangar on the southeast portion of the site. The landing strip and associated structures were part of a crop-dusting business identified as Moore Aviation. The landing strip was converted to agricultural land in the late 1980s. Use as agricultural land has continued up to present day.

Various investigations, to assess impacts by the former crop-dusting occupant, have occurred on the Property with involvement and review by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). Available information reviewed indicates these investigations began in December 2005 and concluded with issuance of a Determination of No Further Action by the DTSC dated August 5, 2008. The investigations were performed in accordance with a Voluntary Cleanup Agreement (VCA) between EHA-Tulare, LLC and DTSC, dated February 10, 2000. The following information is included in a Risk Assessment Report (RAR) conducted by Vestech Environmental, Infrastructure and Restoration (VEIR) and dated May 14, 2008:

- The former crop-dusting occupant included an airplane hangar, residence, and storage areas on approximately 3.5 acres of the southeast portion of the subject Property. The runway extended from the 3.5-acre area to the west northwest.
- Soil assessment activities in 2007 provided information that lead to the excavation and disposal of 1,937 cubic yards of soil impacted by agricultural chemicals. Impacts to the near surface soils by

the crop-dusting facility at the site included petroleum hydrocarbons, chlorinated herbicides, organophosphorus pesticides, organochlorine pesticides, dioxins, and inorganic compounds.

- Five areas of concern were identified and included the former runway, airplane storage area, airplane refueling area, airplane hangar, and former outbuildings.
- Soil sampling of the five areas of concern identified impacts above the screening levels in all areas except the former runway. Soil excavation, off-site disposal of impacted soil, and confirmation soil sampling occurred at the airplane storage area, airplane refueling area, airplane hangar, and former outbuildings. From November 19 through December 20, 2007, soil was removed in three phases to achieve the removal of impacted soil that were known to exceed the most stringent cleanup levels.
- According to the DTSC's, Determination of No Further Action letter issued on August 5, 2008, the former crop-dusting site "*does not appear to pose a threat to human health or the environment under a residential land use.*"

The letter of Determination of No Further Action by the DTSC and VEIR's Risk Assessment Report are included in Appendix C, Exhibit C-2.

The Property is situated in an agricultural area of Tulare County. The Property is bound to the north and east by agricultural land; to the south by Cartmill Avenue followed by vacant land and the north-bound on-ramp of Highway 99; and to the west by a travel trailer sales lot and Highway 99 followed by agricultural land and Farm Credit West Bank. On December 15, 2006, groundwater in the irrigation water well located at the northeast corner of the site was sounded at 107.8 feet below grade (fbg). Groundwater flow direction in the site area is generally west southwest based on the Spring 2004 Kaweah Groundwater Basin potentiometric map Department of Water Resources (DWR).

CTL obtained and reviewed a database report from Environmental Risk Information Services (ERIS) for the Property and the surrounding area. The subject Property was not identified in the database. The ERIS database identified one RCRA SQG site, one ENVIROSTOR site, one LUST site, one UST site, one Delisted TNK site, two CERS TANK sites, one CLEANUP site, two Tulare CUPA sites, two FINDS/FRS sites, one ALT Fuels site, two HAZNET sites, and four EMISSIONS sites located within the prescribed search radii. All of the sites identified had regulatory closure or were either cross or downgradient of the Property and therefore are not considered to represent a Recognized Environmental Condition.

Conclusions

CTL has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-13 of the property identified as APNs 149-230-010, 149-230-019, 149-230-020 and 149-230-021, Tulare, California, the Property. Any exceptions to or deletions from this practice are described in Section 1.4 of this report.

Recognized Environmental Conditions (RECs) are defined by the ASTM Standard Practice E1527-13 as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. CTL assessment has revealed the following RECs associated with the Property or nearby properties:

- No on-site RECs were identified during the course of this assessment.

Controlled Recognized Environmental Conditions (CRECs) are defined by the ASTM Standard Practice E1527-13 as a past release of hazardous substances or petroleum products that has been addressed to the

satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. CTL assessment has revealed the following CRECs associated with the Property or nearby properties:

- No on-site CRECs were identified during the course of this assessment.

Historical Recognized Environmental Condition (HREC) is defined by the ASTM Standard Practice E1527-13 as a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. CTL assessment has revealed the following HRECs associated with the Property or nearby properties:

- Based on the known release of agricultural related chemicals associated with the former crop-dusting facility, subsequent cleanup, and issuance of Determination of No Further Action letter by the DTSC on August 5, 2008, the release of agricultural chemicals to site soils by the former crop-dusting facility represents a HREC requiring no additional investigation.

Environmental Issues include environmental concerns identified by CTL that warrant discussion, but do not qualify as recognized environmental conditions, as defined by the ASTM Standard Practice E1527-13. These can include, but are not limited to risks which can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of the subject property. CTL's investigation has revealed the following environmental issues associated with the Property:

- The Property includes one active and one inactive irrigation water well. These wells should be properly destroyed in accordance with State and local guidelines prior to redevelopment of the Property.

Non-ASTM Considerations may include the presence of environmental conditions such as asbestos containing materials, lead-based paint, radon, mold, lead in drinking water, etc. which can affect the liabilities and financial obligations of the client, the health & safety of site occupants, and the value and marketability of the subject property. CTL's assessment has revealed the following Non-ASTM considerations associated with the Property:

- No Non-ASTM considerations were identified during the course of the investigation.

Recommendations

Based on the information available at the time of this assessment, CTL does not recommend further investigation of the Property at this time.

1.0 INTRODUCTION

CTL was retained by West Coast Construction FTB Ag2 LLC to conduct a Phase I Environmental Site Assessment (ESA) of the property identified as APNs 149-230-010, 149-230-019, 149-230-020 and 149-230-021, Tulare, California (the Property). The protocol used for this assessment is in general conformance with ASTM E 1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (40 CFR Part 312).

On September 22, 2018, Paul Humphrey, EP representing CTL, conducted a site reconnaissance to assess the possible presence of petroleum products and hazardous materials at the Property. CTL's investigation included a review of aerial photographs, a reconnaissance of adjacent properties, background research, and a review of available local, state, and federal regulatory records regarding the presence of petroleum products and/or hazardous materials at the Property.

CTL contracted ERIS, to perform a computer database search for local, state, and Federal regulatory records pertaining to environmental concerns for the Property and properties in the vicinity of the Property (see Section 3.0).

1.1 Purpose

The purpose of this Phase I Environmental Site Assessment (ESA) was to identify Recognized Environmental Conditions (as defined by ASTM Standard E-1527-13) in connection with the Property. CTL understands that the findings of this study will be used by West Coast Construction FTB Ag2 LLC to evaluate a pending financial transaction in connection with the Property.

1.2 Detailed Scope of Services

The purpose of the Phase I Environmental Site Assessment is to assist the client in identifying potential environmental liabilities associated with the presence of any hazardous substances or petroleum products, their use, storage, and disposal at and in the vicinity of the subject property, as well as regulatory non-compliance that may have occurred at the subject property. Property assessment activities focused on: 1) a review of federal, state, tribal and local databases that identify and describe underground fuel tank sites, leaking underground fuel tank sites, hazardous waste generation sites, and hazardous waste storage and disposal facility sites within the ASTM approximate minimum search distance; 2) a property and surrounding site reconnaissance, and interviews with the past and present owners and current occupants and operators to identify potential environmental contamination; and 3) a review of historical sources to help ascertain previous land use at the site and in the surrounding area.

The goal of CTL in conducting the Phase I Environmental Site Assessment was to identify the presence or likely presence of any hazardous substances or petroleum products on the property that may indicate an existing release, a past release, or a material threat of a release of any hazardous substance or petroleum product into the soil, groundwater, or surface water of the property.

No other warranties are implied or expressed.

1.3 Significant Assumptions

There is a possibility that even with the proper application of these methodologies there may exist on the Property conditions that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. CTL believes that the information obtained from the record review and the interviews concerning the site is reliable. However, CTL cannot and does not warrant or guarantee that the information provided by these other sources is accurate or complete. The methodologies of this assessment are not intended to produce all inclusive or comprehensive results, but rather to provide West Coast Construction FTB Ag2 LLC with information relating to the Property.

1.4 Limitations and Exceptions

The findings and conclusions contain all of the limitations inherent in these methodologies that are referred to in ASTM 1527-13. Specific limitations and exceptions to this ESA are more specifically set forth below:

- A Phase I ESA interview with the previous owner of the Property was not reasonably ascertainable. Consequently, information regarding the history and historical uses of the Property obtained from an interview of the previous owner constitutes a data gap. Taken in consideration with the available information obtained in the course of preparing this report in conjunction with professional experience, there is no evidence to suggest that this data gap might alter the conclusions of this assessment.

1.5 Special Terms and Conditions

The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. The conclusions presented in the report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed-upon services or the time and budgeting restraints imposed by the client. No subsurface exploratory drilling or sampling was done under the scope of this work. Unless specifically stated otherwise in the report, no chemical analyses have been performed during the course of this ESA.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This is subject to the limitations of historical documentation, availability, and accuracy of pertinent records, and the personal recollections of those persons contacted.

1.6 Use Reliance

All reports, both verbal and written, are for the benefit of West Coast Construction FTB Ag2 LLC. This report has no other purpose and may not be relied upon by any other person or entity without the written consent of CTL.

2.0 SITE DESCRIPTION

2.1 Location and Legal Description

The Property is identified as APNs 149-230-010, 149-230-019, 149-230-020 and 149-230-021 in Tulare, California. The Property is situated at the NEC of Cartmill Avenue and Highway 99. The Property is located in an agricultural area of Tulare County.

2.2 Site and Vicinity General Characteristics

The Property is located in an area characterized by agricultural land. The Property is zoned agricultural land by the County of Tulare.

2.3 Current Use of the Property

At the present time the Property consists of agricultural land.

2.4 Description of Site Improvements

The Property consists of four parcels of agricultural land approximately 120.16 acres in size. The Property is situated at the NEC of Cartmill Avenue and Highway 99 in Tulare, California. At the time of the site visit, the southern portion of the Property consisted of disked soil and the north portion of the Property was planted with almond trees. Road 100 enters the Property at the southeast corner of the site then travels northwest, west, then turns northwest and exits the Property at the northwest corner of the site. Road 100 is not part of the subject Property. Improvements included one active irrigation water well and associated filtration system, one inactive irrigation water well, an irrigation water pump and piping, an advertising sign on the west portion of the Property, and irrigation water pipelines for conveyance of water beneath two sections of Road 100. The property also included an evaporation pond for the sand flush water of the irrigation water filtration system. The active well, inactive well, filtration system, and pond are located on the northeast portion of the Property. The irrigation water pump is located near the central east boundary of the Property.

2.5 Current Use of Adjoining Properties

During the vicinity reconnaissance, CTL observed the following land use on properties in the immediate vicinity of the Property.

North: Agricultural land

East: Agricultural land

South: Cartmill Avenue followed by vacant land and the north-bound on-ramp of Highway 99

West: Travel trailer sales lot and Highway 99 followed by agricultural land and Farm Credit West Bank

3.0 USER PROVIDED INFORMATION

Pursuant to ASTM E 1527-13, CTL requested the following site information from West Coast Construction FTB Ag2 LLC (User of this report).

3.1 Title Records

A 50-year chain of title was not provided or reviewed. Based on other historical documentation reviewed by CTL as part of this investigation, the lack of review of a 50-year chain of title is not considered significant.

3.2 Environmental Liens or Activity and Use Limitation

CTL requested information from the User regarding knowledge of environmental liens, activity and use limitations for the Property. The User had no knowledge of any environmental liens or use or activity limitations.

3.3 Specialized Knowledge

CTL inquired with the User regarding any specialized knowledge of environmental conditions associated with the Property. The User was not aware of any environmental conditions associated with the Property.

3.4 Commonly Known or Reasonably Ascertainable Information

CTL inquired with the User regarding any commonly known or *reasonably ascertainable* information within the local community about the Property that is material to *recognized environmental conditions* in connection with the Property. The User had no reasonably ascertainable information within the local community about the Property that is material to recognized environmental conditions in connection with the Property.

3.5 Valuation Reduction for Environmental Issues

CTL inquired with the User regarding any knowledge of reductions in property value due to environmental issues. The User was not aware of any valuation reductions associated with the Property.

3.6 Owner, Property Manager, and Occupant Information

The following information regarding the Owner, Property Manager and Occupants was provided by the User.

Property Owner:	FTB Ag2 LLC
Property Manager:	Mr. Johnny Starling
Occupants:	Agricultural Land

3.7 Reason for Performing Phase I ESA

The purpose of this ESA was to identify existing or potential Recognized Environmental Conditions (as defined by ASTM Standard E-1527-13) in connection with the Property. This ESA was also performed to permit the *User* to satisfy one of the requirements to qualify for the *innocent landowner*, *contiguous property owner*, or *bona fide prospective purchaser* limitations on scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) liability (hereinafter, the "*landowner liability protections*," or "*LLPs*"). ASTM Standard E-1527-13 constitutes "*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B).

CTL understands that the findings of this study will be used by West Coast Construction FTB Ag2 LLC to evaluate a pending financial transaction in connection with the Property.

4.0 RECORDS REVIEW

4.1 Standard Environmental Record Sources

Information from standard Federal and state environmental record sources was provided through ERIS. Data from governmental agency lists are updated and integrated into one database, which is updated as these data are released. This integrated database also contains postal service data in order to enhance address matching. Records from one government source are compared to records from another to clarify any address ambiguities. The demographic and geographic information available provides assistance in identifying and managing risk. The accuracy of the geocoded locations is approximately +/-300 feet.

In some cases, location information supplied by the regulatory agencies is insufficient to allow the database companies to geocode facility locations. These facilities are listed under the unmappables ("orphan sites") section within the ERIS report. A review of the unmappable facilities indicated that none of these facilities are within the ASTM minimum search distance from the Property.

Regulatory information from the database sources regarding possible recognized environmental conditions, within the ASTM minimum search distance from the Property, was reviewed. Specific facilities are discussed below the Table if determined likely that a potential recognized environmental condition has resulted at the Property from the listed facilities. Please refer to Appendix C for a complete listing.

Database	Search Distance (Miles)	Subject Property Listed	Total Number of Listings	Potential Environmental Concern to the Subject Property
NPL, PROPOSED NPL	1	No	0	
DELISTED NPL	0.5	No	0	
SEMS, SEMS ARCHIVE	0.5	No	0	
CERCLIS, CERCLIS NFRAP, CERCLIS LIENS	0.5	No	0	
RCRA CORRACTS	1	No	0	
RCRA-TSD	0.5	No	0	
RCRA LQG, SQG, CESQGs, VGN, NLR, NON GEN	0.25	No	1	No
FED ENG, FED INST	TP	No	0	
ERNS	TP	No	0	
FED BROWNFIELDS	0.5	No	0	

Database	Search Distance (Miles)	Subject Property Listed	Total Number of Listings	Potential Environmental Concern to the Subject Property
STATE/TRIBAL HWS (includes RESPONSE, Envirostor, DELISTED ENVS)	1	No	1	No
SWF/LF	0.5	No	0	
HWP	1	No	0	
LDS	0.5	No	0	
LUST, DELISTED LST	0.5	No	1	No
UST	0.25	No	1	No
UST CLOSURE	0.5	No	0	
HHSS, AST, DELISTED TNK, CERS TANK	0.25	No	3	No
DELISTED HAZ, LUR, HLUR, DEED, VCP	0.5	No	0	
CLEANUP SITES	0.5	No	1	No
CERS HAZ	0.125	No	0	
DELISTED CTNK, HIST TANK	0.25	No	0	
TRIBAL LISTINGS	0.25-0.5	No	0	
DELISTED COUNTY, CUPA, TULARE CUPA	0.25	No	2	No
Additional State & Federal Listings	PO-1	No	9	No

The subject Property was not identified in the database. The ERIS database identified one RCRA SQG site, one ENVIROSTOR site, one LUST site, one UST site, one Delisted TNK site, two CERS TANK sites, one CLEANUP site, two Tulare CUPA sites, two FINDS/FRS sites, one ALT Fuels site, two HAZNET sites, and four EMISSIONS sites located within the prescribed search radii. All of the sites identified had regulatory closure or were either cross or downgradient of the Property and therefore are not considered to represent a Recognized Environmental Condition.

4.2 Additional Environmental Record Sources

4.2.1 County Recorder/ Assessor

According the Tulare County Recorder's Office, no environmentally-related liens or deed restrictions have been recorded against the Property.

4.2.2 Fire Officials

Records from the City of Tulare Fire Department were reviewed for evidence indicating the presence of underground storage tanks and for the use of hazardous materials. No record of environmental concern was found for the subject Property.

4.2.3 Building Department

Records from the County of Tulare Building Department were reviewed for evidence indicating the developmental history of the subject Site, and for the presence of documentation relative to underground storage tanks. No documentation relative to underground storage tanks or environmental significance was identified for the Property.

4.2.4 Other Agencies

CTL's September 22, 2018 review of the SWRCB Geotracker LUFT database available via the SWRCB Internet Website indicated that no record of LUFTs are on file with the SWRCB for the subject Property.

CTL reviewed available records on the California Environmental Protection Agency, Department of Toxic Substances Control Envirostor California cleanup sites database available via the DTSC Internet Website. The following information is included in a Risk Assessment Report (RAR) conducted by Vestech Environmental, Infrastructure and Restoration (VEIR) and dated May 14, 2008:

- The former crop-dusting occupant included an airplane hangar, residence, and storage areas on approximately 3.5 acres of the southeast portion of the subject Property. The runway extended from the 3.5-acre area to the west northwest.
- Soil assessment activities in 2007 provided information that lead to the excavation and disposal of 1,937 cubic yards of soil impacted by agricultural chemicals. Impacts to the near surface soils by the crop-dusting facility at the site included petroleum hydrocarbons, chlorinated herbicides, organophosphorus pesticides, organochlorine pesticides, dioxins, and inorganic compounds.
- Five areas of concern were identified and included the former runway, airplane storage area, airplane refueling area, airplane hangar, and former outbuildings.
- Soil sampling of the five areas of concern identified impacts above the screening levels in all areas except the former runway. Soil excavation, off-site disposal of impacted soil, and confirmation soil sampling occurred at the airplane storage area, airplane refueling area, airplane hangar, and former outbuildings. From November 19 through December 20, 2007, soil was removed in three phases to achieve the removal of impacted soil that were known to exceed the most stringent cleanup levels.
- According to the DTSC's, Determination of No Further Action letter issued on August 5, 2008, the former crop-dusting site "*does not appear to pose a threat to human health or the environment under a residential land use.*"

The letter of Determination of No Further Action by the DTSC and VEIR's Risk Assessment Report are included in Appendix C, Exhibit C-2.

4.3 Physical Setting Sources

4.3.1 Topography

The United States Geological Survey (USGS), Tulare, California Quadrangle 7.5 minute series topographic map was reviewed for this ESA. The map was published by the USGS in 1950, photorevised 1969. According to the contour lines on the topographic map, the Property is located at an elevation of approximately 295 feet above mean sea level (MSL). The contour lines in the area of the Property indicate the area is sloping to the west southwest. The Property is depicted as having one small commercial type building on the southeast portion of the site and a landing strip on the south central portion of the site.

4.3.2 Soils/Geology

The Property is located within the Great Valley geomorphic province, a long structural trough situated between the Sierra Nevada Mountains to the east, the Coast Range Mountains to the west and Tehachapi Mountains to the south. In the Tulare area, the sediments consist of recent and older alluvium derived primarily from the Sierra Nevada Mountains. Older (Pleistocene) alluvium unconformably overlies Pliocene-Pleistocene continental and marine deposits. The valley basement, consisting of pre-Tertiary granitic and metamorphic rocks, underlies the clastic section at a depth in excess of 2,000 feet below ground surface. Shallow soil stratigraphy in the Tulare County area is primarily sandy soils and sand-silt combination soils.

4.3.3 Hydrology

The Property is located in the San Joaquin Valley groundwater basin, which is part of the San Joaquin Basin Hydrologic Study Area (HSA). Twenty-six ground-water basins and areas of potential groundwater storage have been identified in the San Joaquin Basin HSA. The HSA is bounded by the Sacramento-San Joaquin Delta to the north, the Sierra Nevada to the east, the Tehachapi Mountains to the south, and the Coastal Ranges to the west.

Groundwater in the vicinity of the Property is found within the Central Valley regional aquifer system, an unconfined to semi-confined aquifer system within the older alluvium and deeper continental deposits (Muir, 1977). On December 15, 2006, groundwater in the irrigation water well located at the northeast corner of the site was sounded at 107.8 feet below grade (fbg). Groundwater flow direction in the site area is generally west-southwest based on the Spring 2004 Kaweah Groundwater Basin potentiometric map (DWR, 2004).

The Property does not overly a sole source aquifer.

4.3.4 Flood Zone Information

A review of the Flood Insurance Rate Maps, published by the Federal Emergency Management Agency, was performed. According to Panel Number 06107C1275E, dated June 16, 2009, the Property is located in Flood Zone X. Flood Zone X regions consist of an area that is determined to be outside the 100- and 500-year floodplains.

4.3.5 Oil and Gas Exploration

The on-site reconnaissance addressed oil and gas exploration at the Property. According to the State of California, Department of Conservation, Division of Oil, Gas and Geothermal Resources, no operating or abandoned oil or gas wells are on or adjacent to the Property.

4.3.6 Vapor Encroachment

A Tier 1 Vapor Encroachment Screen (VES) pursuant to ASTM E2600-10 was performed as part of this assessment to determine whether a potential *vapor encroachment condition* (VEC) exists at the subject Property. The VES included the review of reasonably ascertainable information for the subject Property and nearby properties. During the course of this assessment, a reasonable probability was not identified to indicate that a VEC exists at the subject Property.

4.4 Historical Use Information on the Property

Based on historical resources, the Property was in use as agricultural land in 1937. By the mid-1950s the Property was in use as agricultural land and also occupied by a landing strip on the south-central portion of the site and a small residence and airplane hangar on the southeast portion of the site. The landing strip and associated structures were part of a crop-dusting business identified as Moore Aviation. The landing strip was converted to agricultural land in the late 1980s. Use as agricultural land has continued up to present day.

4.4.1 Aerial Photographs

Available aerial photographs dated 1934, 1952, 1956, 1969, 1977, 1984, 1987, 1994, 2003, 2004, 2005, 2006, 2009, 2010, 2012, 2014, and 2016, from ERIS were reviewed for this ESA. Copies of selected photographs are included in Appendix B-1 of this report. The photographs are discussed below:

Date:	1937
Scale:	1" = 500'
Photo ID:	ASCS
Description:	The 1937 photograph depicts the Property as agricultural land. The north, east, and west adjoining properties appear as agricultural land. The south adjoining property appears as agricultural land and a roadway followed by agricultural land and a possible rural residence.

Date:	1954
Scale:	1" = 500'
Photo ID:	AMS
Description:	The 1954 photograph depicts the Property as mostly agricultural land. A small structure is located on the southeast portion of the site and an airplane runway is located on the south and central portion of the site. The north and east adjoining properties appear as agricultural land. The south adjoining property appears as a roadway

and vacant land and a roadway followed by agricultural land and an off-ramp and small building. The west adjoining property appears as a freeway followed by agricultural land.

Date:	1969
Scale:	1" = 500'
Photo ID:	USGS
Description:	The 1969 photograph depicts the Property as mostly agricultural land. Two small structures are located on the southeast portion of the site and an airplane runway is located on the south and central portion of the site which connects to a vacant area between the runway and structures. The north, east, and south adjoining properties appear as noted in the 1954 photograph. The west adjoining property appears as a freeway followed by agricultural land and a few farm type structures.

Date:	1977
Scale:	1" = 500'
Photo ID:	USGS
Description:	The 1977 photograph depicts the Property and adjoining properties as in the 1969 photograph.

Date:	1984
Scale:	1" = 500'
Photo ID:	NHAP
Description:	The 1984 photograph depicts the Property and the north, east, and south and northwest adjoining properties as in the 1977 photograph. The west adjoining property appears as a storage yard and freeway followed by agricultural land and a few farm structures.

Date:	1994
Scale:	1" = 500'
Photo ID:	USGS
Description:	The 1994 photograph depicts the Property as mostly agricultural land. The previously noted on-site runway is no longer present and the area now appears as agricultural land. Two small structures and vacant land are located on the southeast portion of the Property. The north, east, and south adjoining properties appear as in the 1984 photograph. The west adjoining property appears as a car or vehicle lot and freeway followed by agricultural land and a few farm structures.

Date:	2003, 2005, 2006
Scale:	1" = 500'
Photo ID:	NAIP
Description:	The 2003, 2005 and 2006 photographs depict the Property and the north, east, and south adjoining properties as in the 1994 photograph. The west adjoining property appears as a car or vehicle lot and freeway followed by agricultural land.

Date:	2009, 2010, 2012
Scale:	1" = 500'
Photo ID:	NAIP
Description:	The 2009, 2010 and 2012 photographs depict the Property as mostly agricultural land. The southeast portion of the Property appears as vacant land. The adjoining properties appear as in the previous photographs.

Date:	2014
Scale:	1" = 500'
Photo ID:	NAIP
Description:	The 2014 photograph depicts the Property and the north and east adjoining properties as in the 2009, 2010 and 2012 photographs. The south adjoining property appears as a roadway followed by vacant land and an off-ramp. The west adjoining property appears as a car or vehicle lot and freeway followed by agricultural land and a commercial building.

Date:	2016
Scale:	1" = 500'
Photo ID:	NAIP
Description:	The 2016 photograph depicts the Property as agricultural land with a roadway traversing the southeast, south and west portion of the site. The adjoining properties appear as in the 2014 photograph.

4.4.2 Fire Insurance Maps

Historical Sanborn Fire Insurance maps were reviewed online at http://www.spl.org/. Fire insurance maps, which commonly date back to the 1800s, are typically reviewed in order to evaluate whether past usage or construction on the Property or within the near vicinity is environmentally noteworthy. Fire insurance map coverage of the area of the Property was not identified.

4.4.3 City Directories

Historical City directories published by RL Polk were reviewed at the County of Tulare Library in Visalia, California for past names and business that were listed for the Property.

Based on a search of the 1973, 1978, 1983, 1987, 1993, 1997, 2003, 2008, and 2013 directories, no listing of the subject Property was identified.

4.4.4 Historical Topographic Maps

The review of historical topographic maps was not reviewed for this study. Historical use of the Property was researched using other standard historical sources.

4.4.5 Additional Historical Record Sources

No additional historical record sources were reviewed.

4.4.6 Prior Assessment Reports

Prior reports or relevant documentation in association with the subject Property were reviewed in Section 4.2.4.

5.0 SITE RECONNAISSANCE

5.1 Methodology and Limiting Conditions

The Property was inspected by Paul Humphrey on September 22, 2018. The weather at the time of the site visit was clear and approximately 75 degrees.

5.2 General Site Setting

The Property is located in an area that is characterized by agricultural land.

5.3 Exterior Observations

5.3.1 Solid Waste Disposal

Solid waste is not generated on the Property. No indication of potentially hazardous material disposal was noted during the site reconnaissance.

5.3.2 Surface Water Drainage

The Property consists of agricultural land which has no stormwater drainage system. Drainage appears sufficient as no areas of ponding or standing water were noted during the site visit.

5.3.3 Wells and Cisterns

The Property included one active irrigation water well and one inactive irrigation water well. Both wells are located on the northeast portion of the Property. These wells should be properly destroyed in accordance with State and local guidelines prior to redevelopment of the Property.

No indications of cisterns were observed during the onsite reconnaissance.

5.3.4 Wastewater

No indications of industrial wastewater disposal or treatment facilities were observed during the onsite reconnaissance.

5.3.5 Additional Site Observations

No additional relevant general site characteristics of an environmental concern were observed.

5.4 Interior Observations

The Property had no buildings or structures.

5.5 Potential Environmental Conditions

5.5.1 Hazardous Materials and Petroleum Products Used or Stored at the Site

No evidence of the use of hazardous materials was observed on the Property.

5.5.1.1 Unlabeled Containers and Drums

No unlabeled containers or drums were observed during the site reconnaissance.

5.5.1.2 Disposal Locations of Regulated/ Hazardous Waste

No obvious indications of hazardous waste generation, storage or disposal were observed on the Property or were indicated during interviews.

5.5.2 Evidence of Releases

No obvious indications of hazardous material or petroleum product releases, such as stained areas or stressed vegetation, was observed during the site reconnaissance.

5.5.3 Polychlorinated Biphenyls (PCBs)

Older transformers and other electrical equipment could contain polychlorinated biphenyls (PCBs) at a level that subjects them to regulation by the U.S. EPA. PCBs in electrical equipment are controlled by United States Environmental Protection Agency regulations 40 CFR, Part 761. Under the regulations, there are three categories into which electrical equipment can be classified:

- Less than 50 parts per million (PPM) of PCBs – *"Non-PCB" transformer*
- 50 ppm-500 ppm – *"PCB-Contaminated" electrical equipment*
- Greater than 500 ppm – *"PCB" transformer*

No electrical transformers or other potential PCB-containing equipment such as oil-filled switches, hoists, lifts, dock levelers, hydraulic elevators, etc., are present.

5.5.4 Landfills

No evidence of on-site landfilling was observed or reported during the site reconnaissance.

5.5.5 Pits, Ponds, Lagoons, Sumps, and Catch Basins

No evidence of on-site pits, ponds, lagoons, sumps, or catch basins was observed during the site reconnaissance.

5.5.6 On-Site ASTs and USTs

No evidence of ASTs or USTs was observed during the Property reconnaissance.

5.5.7 Radiological Hazards

No radiological substances or equipment was observed or reported stored on the subject site.

5.5.8 Drinking Water

Drinking water is not provided or supplied to the Property.

5.5.9 Additional Hazard Observations

No additional hazards were observed on the site.

5.5.10 Asbestos-Containing Materials (ACM)

An evaluation of ACM was not included in the scope of services and was not conducted.

5.5.11 Radon

The US EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, Zone 1 being those areas with the average predicted indoor radon concentration in residential dwellings exceeding the EPA Action limit of 4.0 picoCuries per Liter (pCi/L). It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the EPA recommends site specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures. Review of the EPA Map of Radon Zones places the Property in Zone 2, where average predicted radon levels are between 2.0 and 4.0 pCi/L.

5.5.12 Lead-Based Paint

An evaluation of lead-based paint was not included in the scope of services and was not conducted.

5.5.13 Mold Evaluation

A mold evaluation was not included in the scope of services and was not conducted.

6.0 INTERVIEWS

6.1 Interview with Owner

The owner of the Property was identified as FTB Ag2 LLC. The representative of the owner, Mr. Johnny Starling, stated that there are no known pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

Mr. Starling is the Ranch Manager of the Property and stated that the Property included one inactive irrigation well and one active irrigation well. Mr. Starling indicated that the on-site pond is for flushing out the water filtration system and the site included one pump on the east portion of the property which is for pumping district canal water from the east adjoining irrigation ditch.

6.2 Interview with Site Manager

See Section 6.1 Above.

6.3 Interview with Occupants

The Property is not occupied.

6.4 Interview with Local Government Officials

An interview was conducted with the Tulare County Environmental Health Department. According to TCEHD staff, no records were identified for the Property.

An interview was conducted with the County of Tulare Planning and Development Department. According to staff, no records of environmental concern were identified for the Property.

An interview was conducted with the City of Tulare Fire Department. According to the receptionist, no record was identified for the Property.

6.5 Interview with Others

Additional interviews were not conducted.

7.0 FINDINGS AND CONCLUSIONS

7.1 Findings

7.1.1 On-Site Environmental Conditions

No on-site recognized environmental conditions were identified during the course of this assessment.

7.1.2 Off-Site Environmental Conditions

No off-site recognized environmental conditions were identified that were considered likely to impact the Property.

7.1.3 Controlled Recognized Environmental Conditions

No controlled recognized environmental conditions were identified in connection with the Property during the course of this assessment.

7.1.4 Previously Resolved Environmental Conditions

Historical resolved recognized environmental conditions were identified in connection with the Property during the course of this assessment.

7.1.5 De Minimis Environmental Conditions

No *de minimis* environmental conditions were identified in connection with the Property during the course of this assessment.

7.2 Opinion

Based on our professional opinion, no current recognized environmental conditions in connection with the subject Property were identified during the course of this assessment.

7.3 Conclusions

CTL has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-13 of the property identified as APNs 149-230-010, 149-230-019, 149-230-020 and 149-230-021, Tulare, California, the Property. Any exceptions to or deletions from this practice are described in Section 1.4 of this report. This assessment has identified no RECs associated with the Property.

CTL's investigation has revealed the following HREC associated with the Property:

- Based on the known release of agricultural related chemicals associated with the former crop-dusting facility, subsequent cleanup, and issuance of Determination of No Further Action letter by the DTSC on August 5, 2008, the release of agricultural chemicals to site soils by the former crop-dusting facility represents a HREC requiring no additional investigation.

CTL's investigation has revealed the following environmental issues associated with the Property:

- The Property includes one active and one inactive irrigation water well. These wells should be properly destroyed in accordance with State and local guidelines prior to redevelopment of the Property.

7.4 Recommendations

Based on the information available at the time of this assessment, CTL does not recommend further investigation of the Property at this time.

7.5 Deviations

This Phase I ESA substantially complies with the scope of services and ASTM 1527-13 and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), as amended, except for exceptions and/or limiting conditions as discussed in Section 1.4.

8.0 REFERENCES

Reports, Plans, and Other Documents Reviewed:

American Society for Testing and Materials, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, ASTM Designation: E 1527-2013

California Environmental Protection Agency, Department of Toxic Substances Control Envirostor California database, https://www.envirostor.dtsc.ca.gov/public/

ERIS, Aerial Photograph Report, Cartmill Avenue, Tulare, California, Job Number E2151-18

ERIS, Radius Database Report, Cartmill Avenue, Tulare, California, Job Number E2151-18

Risk Assessment Report by Vestech Environmental, Infrastructure and Restoration, dated May 14, 2008

State of California, Department of Conservation, Division of Oil and Gas, California, 2001

State of California Department of Water Resources Division of Planning and Local Assistance, Groundwater Level Data Retrieval Map Interface web page, http://well.water.ca.gov/map/map.html

United States Department of Agriculture, Soil Conservation Service Soil Survey Tulare County, California

US Environmental Protection Agency, Map of Radon Zones web page, http://www.epa.gov/iaq/radon/zonemap.html

US Environmental Protection Agency, Office of Water web page, http://www.epa.gov/ogwdw000/swp/ssa/ssahome.html

U.S. Geological Survey, Tulare, California Topographic Quadrangle, 1951, photorevised 1969

Agencies Contacted:

City of Tulare Fire Department

Tulare County Planning and Building Department

Tulare County Assessor's Office

Tulare County Environmental Health Department

9.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

We declare that, to the best of our professional knowledge and belief, we have met the definition of *Environmental professional* as defined in §312.10 of 40 CFR 312" and have the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the subject *property*. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Paul Humphrey, EP
Environmental Professional

REGISTERED PROFESSIONAL ENGINEER
SANTIAGO ESPINOZA JR
NO. 83299
EXP.
CIVIL
STATE OF CALIFORNIA

Santiago Espinoza, RCE 83299
Registered Civil Engineer

10.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

10.1 Definition of an Environmental Professional

An Environmental Professional means: *(1)* a person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases (see §312.1(c)) on, at, in, or to a property, sufficient to meet the objectives and performance factors in §312.20(e) and (f). *(2)* Such a person must: (i) hold a current Professional Engineer's or Professional Geologist's license or registration from a state, tribe, or U.S. territory (or the Commonwealth of Puerto Rico) and have the equivalent of three (3) years of full-time relevant experience; or (ii) be licensed or certified by the federal government, a state, tribe, or U.S. territory (or the Commonwealth of Puerto Rico) to perform environmental inquiries as defined in §312.21 and have the equivalent of three (3) years of full-time relevant experience; or (iii) have a Baccalaureate or higher degree from an accredited institution of higher education in a discipline of engineering or science and the equivalent of five (5) years of full-time relevant experience; or (iv) have the equivalent of ten (10) years of full-time relevant experience. *(3)* An environmental professional should remain current in his or her field through participation in continuing education or other activities. *(4)* The definition of environmental professional provided above does not preempt state professional licensing or registration requirements such as those for a professional geologist, engineer, or site remediation professional. Before commencing work, a person should determine the applicability of state professional licensing or registration laws to the activities to be undertaken as part of the inquiry identified in §312.21(b). *(5)* A person who does not qualify as an environmental professional under the foregoing definition may assist in the conduct of all appropriate inquiries in accordance with this part if such person is under the supervision or responsible charge of a person meeting the definition of an environmental professional provided above when conducting such activities.

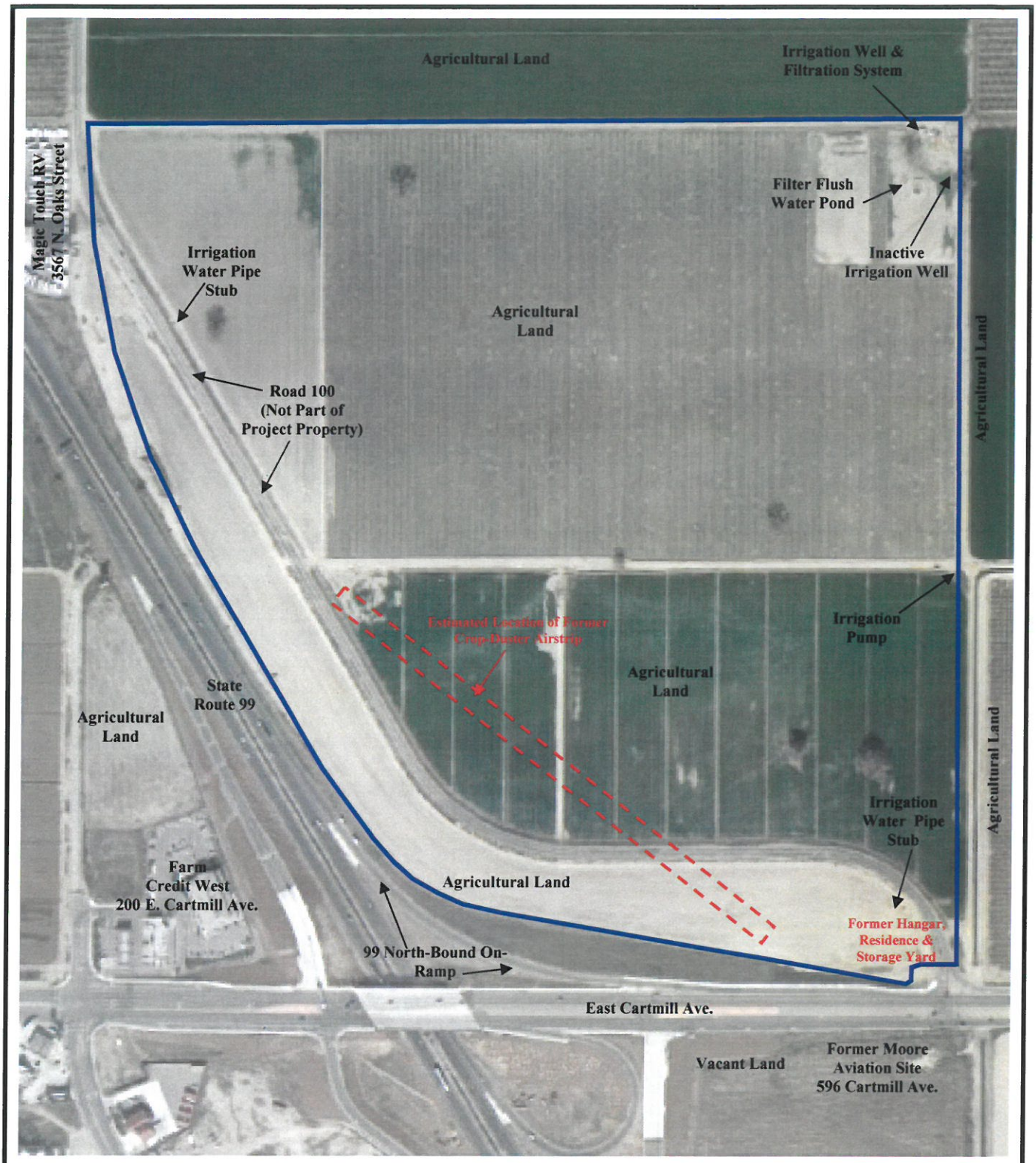
10.2 Relevant Experience

Relevant experience, as used in the definition of environmental professional in this section, means: participation in the performance of all appropriate inquiries investigations, environmental site assessments, or other site investigations that may include environmental analyses, investigations, and remediation which involve the understanding of surface and subsurface environmental conditions and the processes used to evaluate these conditions and for which professional judgment was used to develop opinions regarding conditions indicative of releases or threatened releases (see §312.1(c)) to the subject property.

Resumes for the Environmental Professionals involved in this project are included in Appendix G.

FIGURES

SITE LOCATION MAP
SITE PLAN
SITE TOPOGRAPHIC MAP



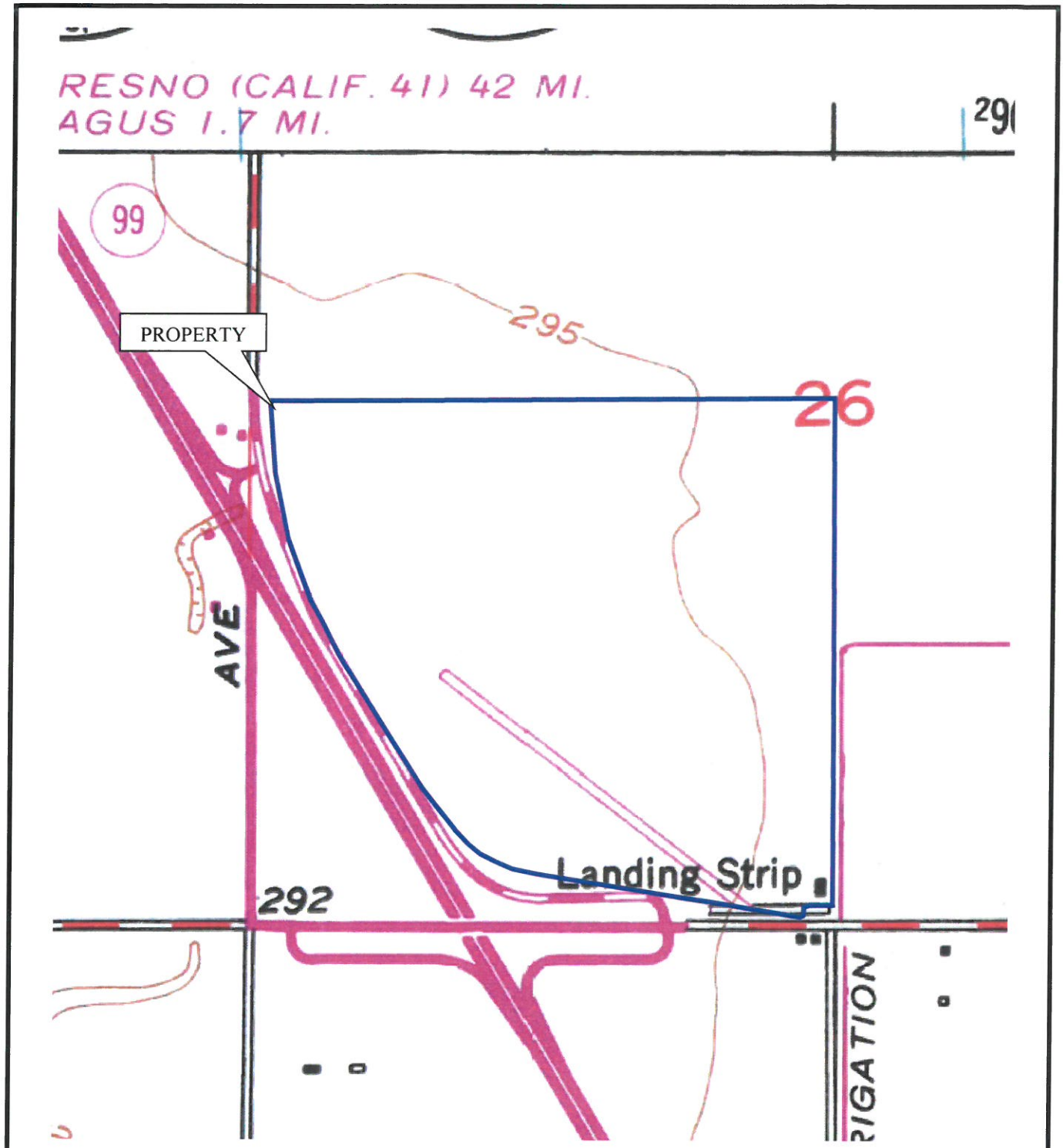
SITE PLAN	NORTH Not to scale
CTL, INC. 710 S. KAWEAH AVENUE EXETER, CA 93221 (559) 592-3555	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18



SITE VICINITY MAP

CTL, INC.
710 S. KAWEAH AVENUE
EXETER, CA 93221
(559) 592-3555

Site Name:	Agricultural Land
Site Address:	NEC Cartmill Ave. & Highway 99 Tulare, California
Project Number:	E2151-18



CTL, INC. **710 S. KAWEAH AVENUE** **EXETER, CA 93221** **(559) 592-3555**	**TOPOGRAPHIC MAP**	⇑ **N**
	Source: U.S.G.S. 7.5 Minute Topographic Map Tulare, California Quadrangle, 1950, revised 1969	

APPENDIX A

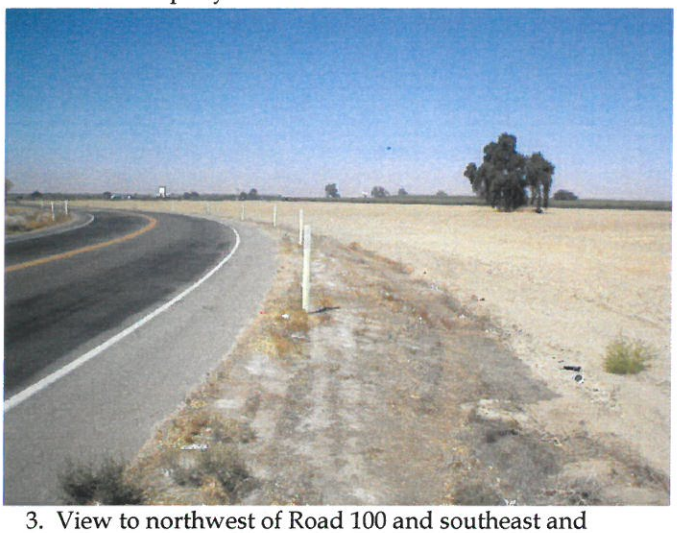
SITE PHOTOGRAPHS



1. View looking west at the south and southeast portion of the Property from southeast corner of the site.



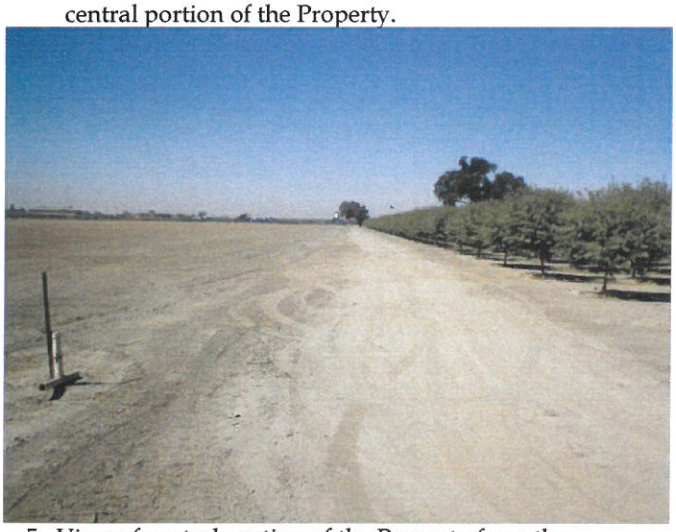
2. View of the southeast corner and east portion of the Property. East boundary is far right dirt road.



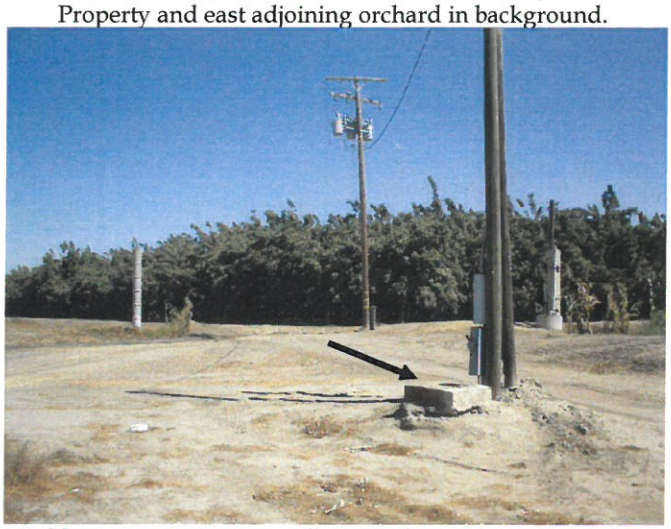
3. View to northwest of Road 100 and southeast and central portion of the Property.



4. Irrigation pump near the central east boundary of the Property and east adjoining orchard in background.



5. View of central portion of the Property from the central east boundary.



6. Not-in-use irrigation well on northeast portion of the Property. Northeast adjoining ag land in background.



7. Active irrigation well and filtration system on northeast portion of the Property.



8. Irrigation filtration flush water pond on northeast portion of the Property.



9. On-site almond orchard.



10. Central portion of the Property.



11. Irrigation water pipe to convey water beneath Road 100.



12. West portion of the Property.



13. Not in use irrigation water conveyance pipe and advertising sign on west boundary of the Property.



14. Tree stakes on central southwest portion of the Property.



15. North adjoining agricultural land.



16. View across Cartmill Avenue of south adjoining vacant land.



17. View across Highway 99 of west adjoining agricultural land.



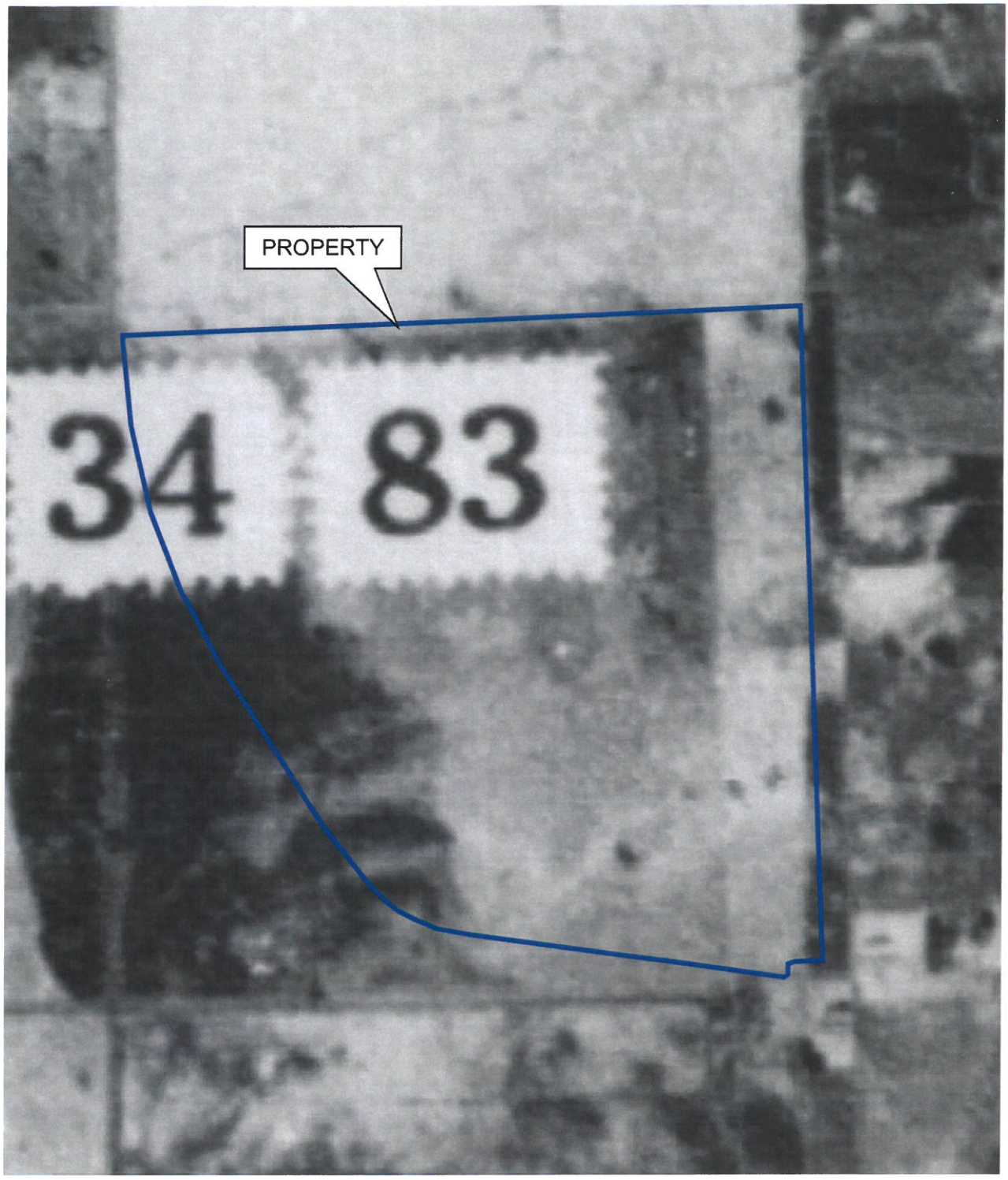
18. West adjoining trailer sales lot.

APPENDIX B

HISTORICAL RESEARCH DOCUMENTATION

EXHIBIT B-1

AERIAL PHOTOGRAPHS



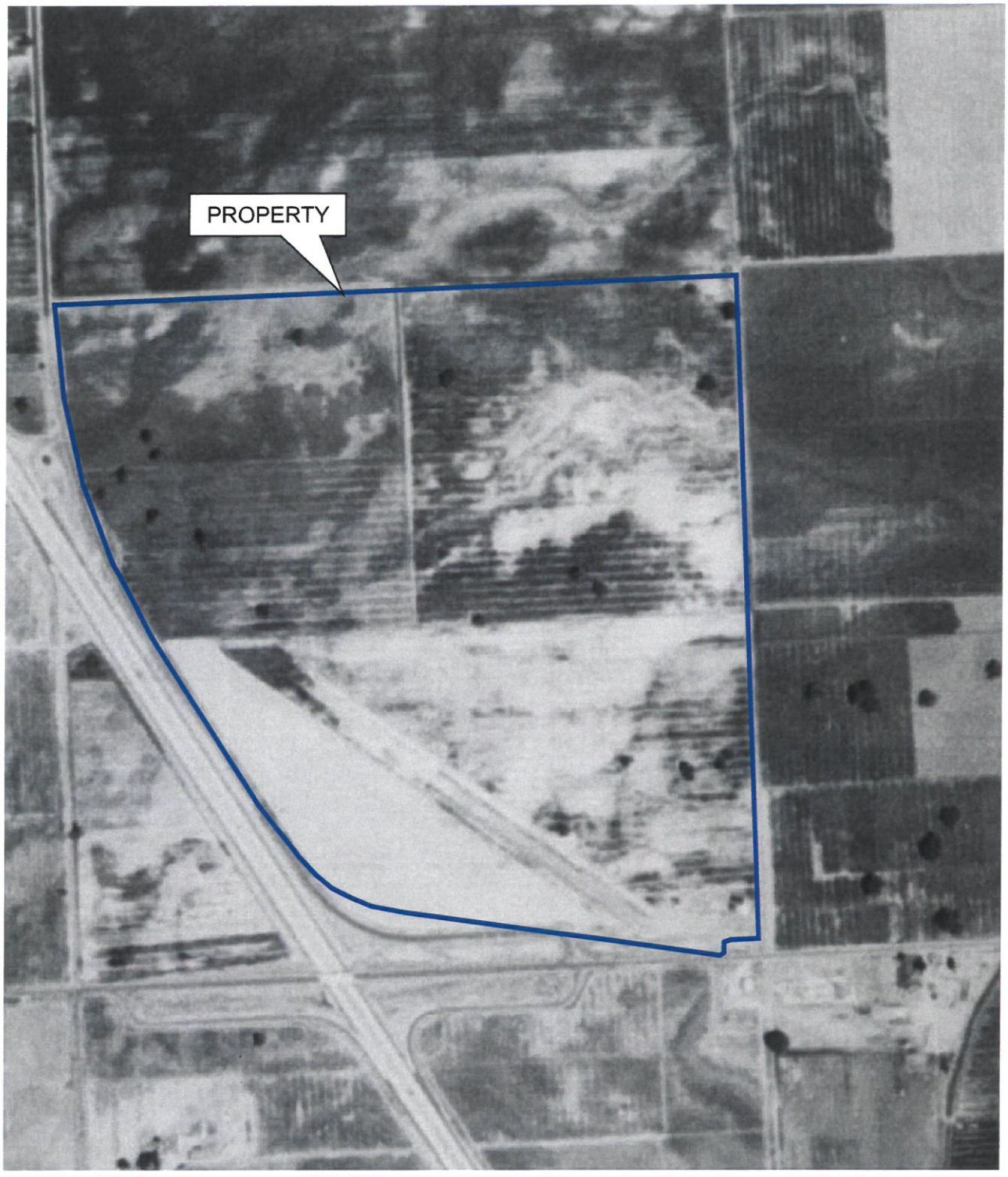
AERIAL PHOTOGRAPH

Scale:1" 500'
Date: 1937
Photo ID No. ASCS

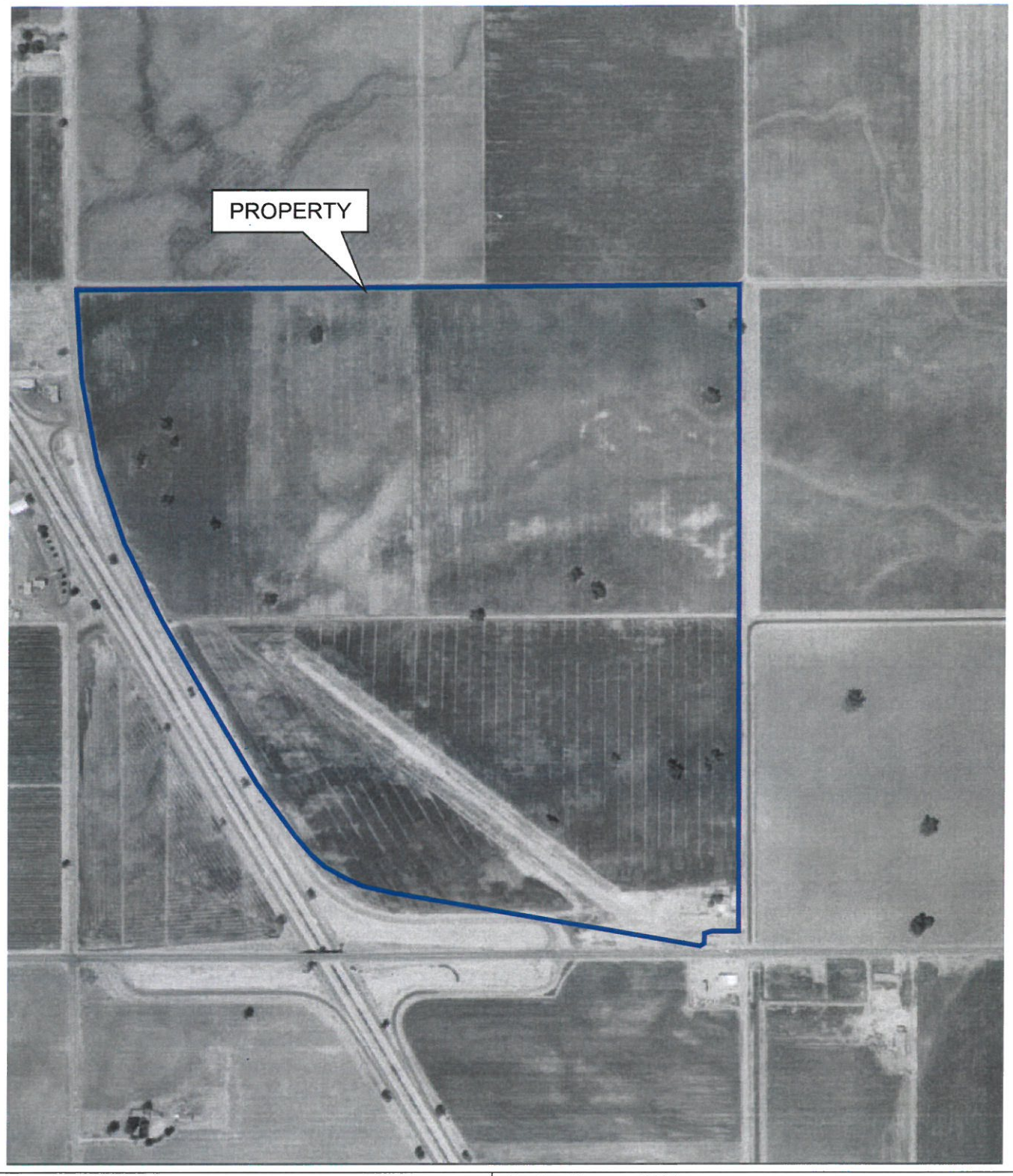
N↑

CTL, INC.
710 S. KAWEAH AVENUE
EXETER, CA 93221
(559) 592-3555

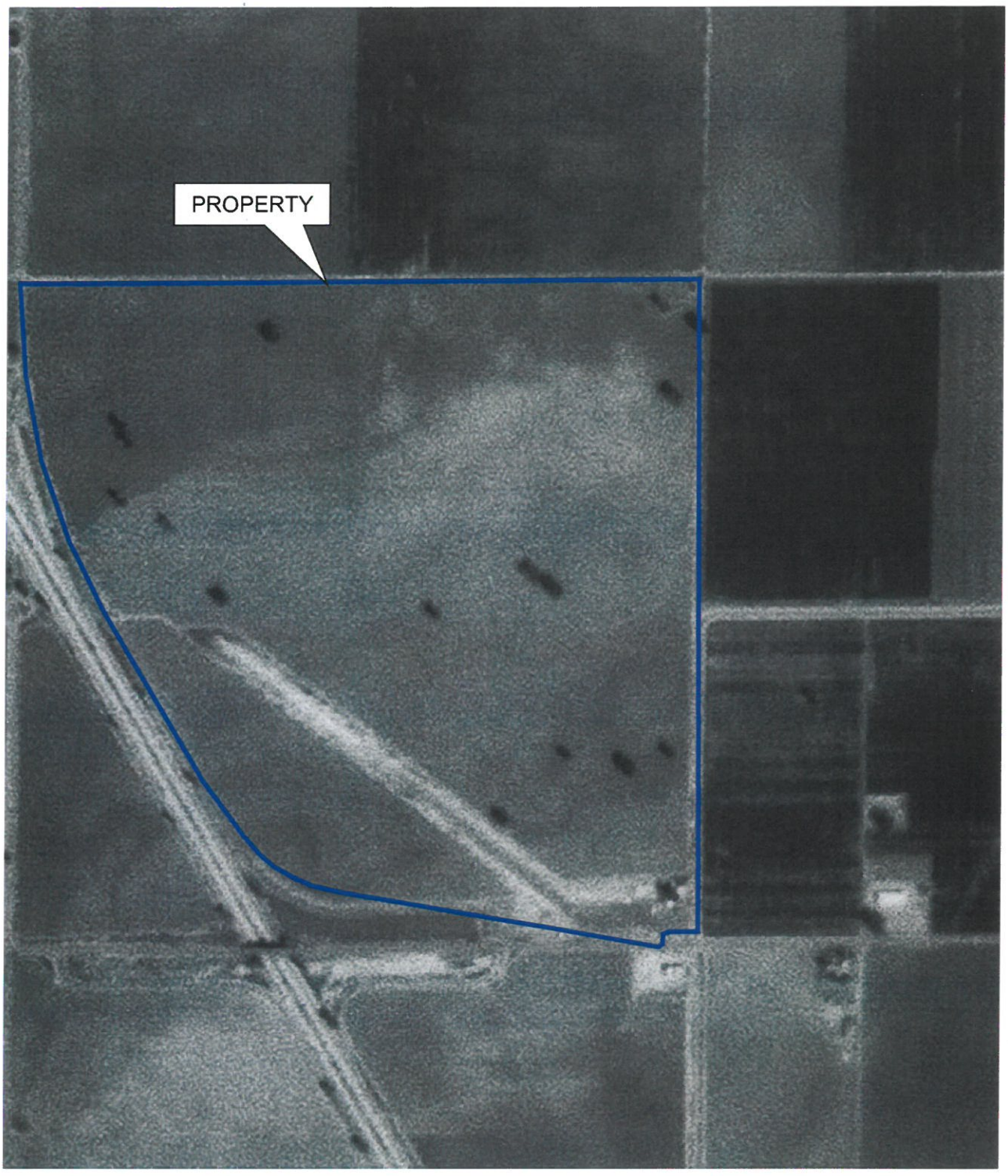
Site Name:	Agricultural Land
Site Address:	NEC Cartmill Ave. & Highway 99 Tulare, California
Project Number:	E2151-18



AERIAL PHOTOGRAPH	Scale:1" 500' Date: 1954 Photo ID No. AMS	N↑
CTL, INC. 710 S. KAWEAH AVENUE EXETER, CA 93221 (559) 592-3555	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18	



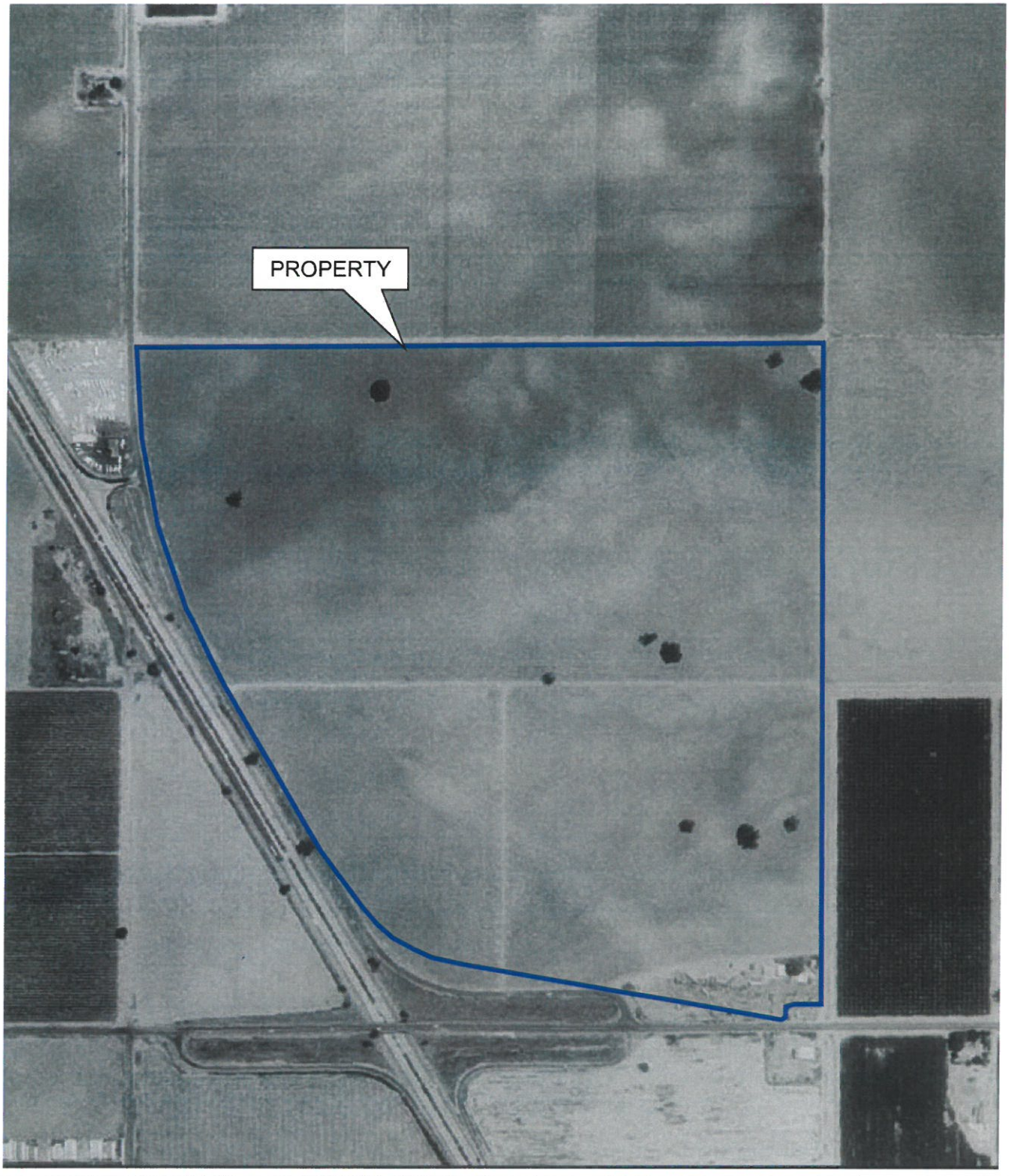
AERIAL PHOTOGRAPH	Scale:1" 500' Date: 1969 Photo ID No. USGS	N↑
CTL, INC. 710 S. KAWEAH AVENUE EXETER, CA 93221 (559) 592-3555	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18	



AERIAL PHOTOGRAPH	Scale:1" 500' Date: 1977 Photo ID No. USGS	N↑
CTL, INC. 710 S. KAWEAH AVENUE EXETER, CA 93221 (559) 592-3555	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18	



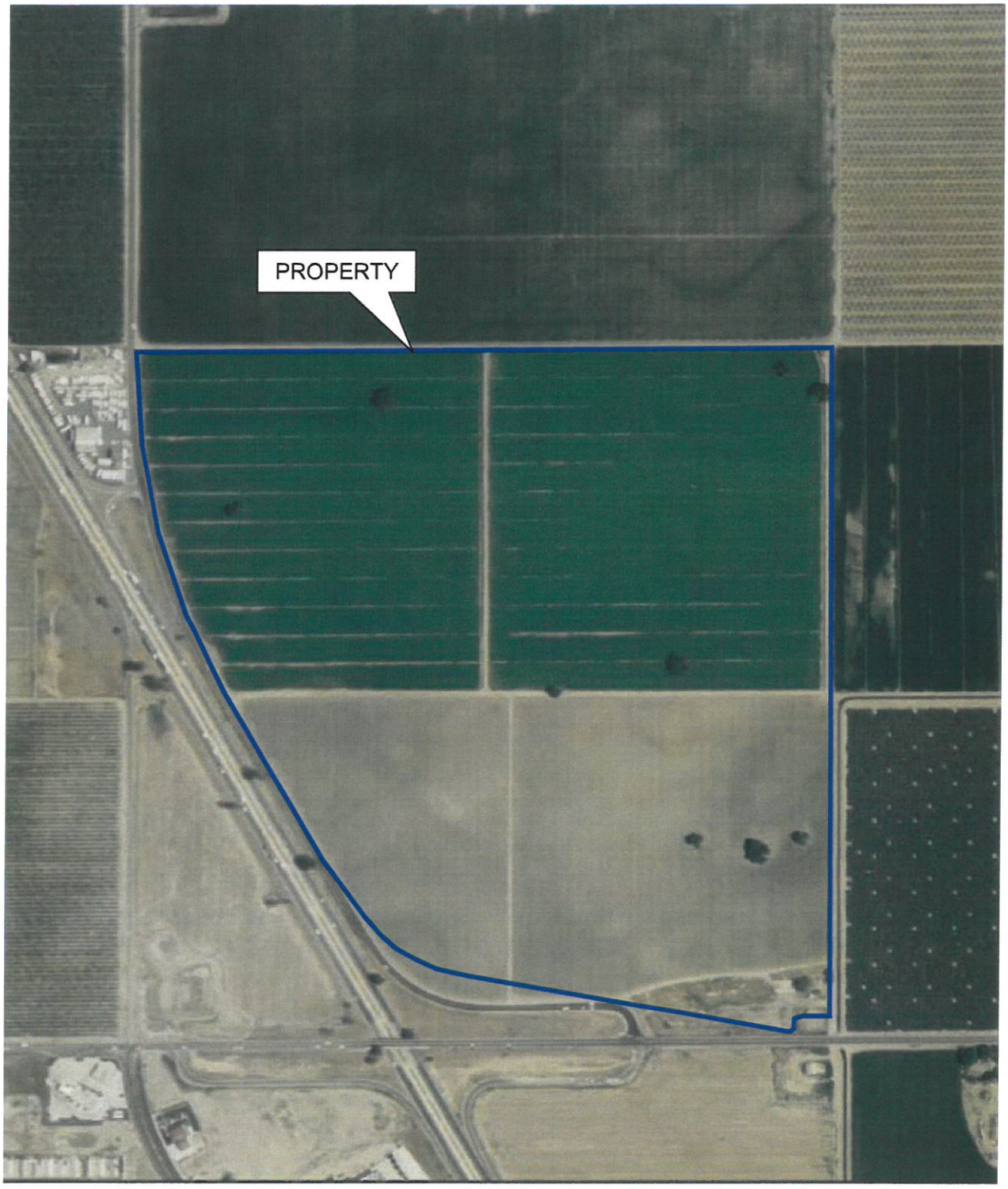
AERIAL PHOTOGRAPH	Scale:1" 500' Date: 1984 Photo ID No. NHAP	N↑
CTL, INC. 710 S. KAWEAH AVENUE EXETER, CA 93221 (559) 592-3555	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18	



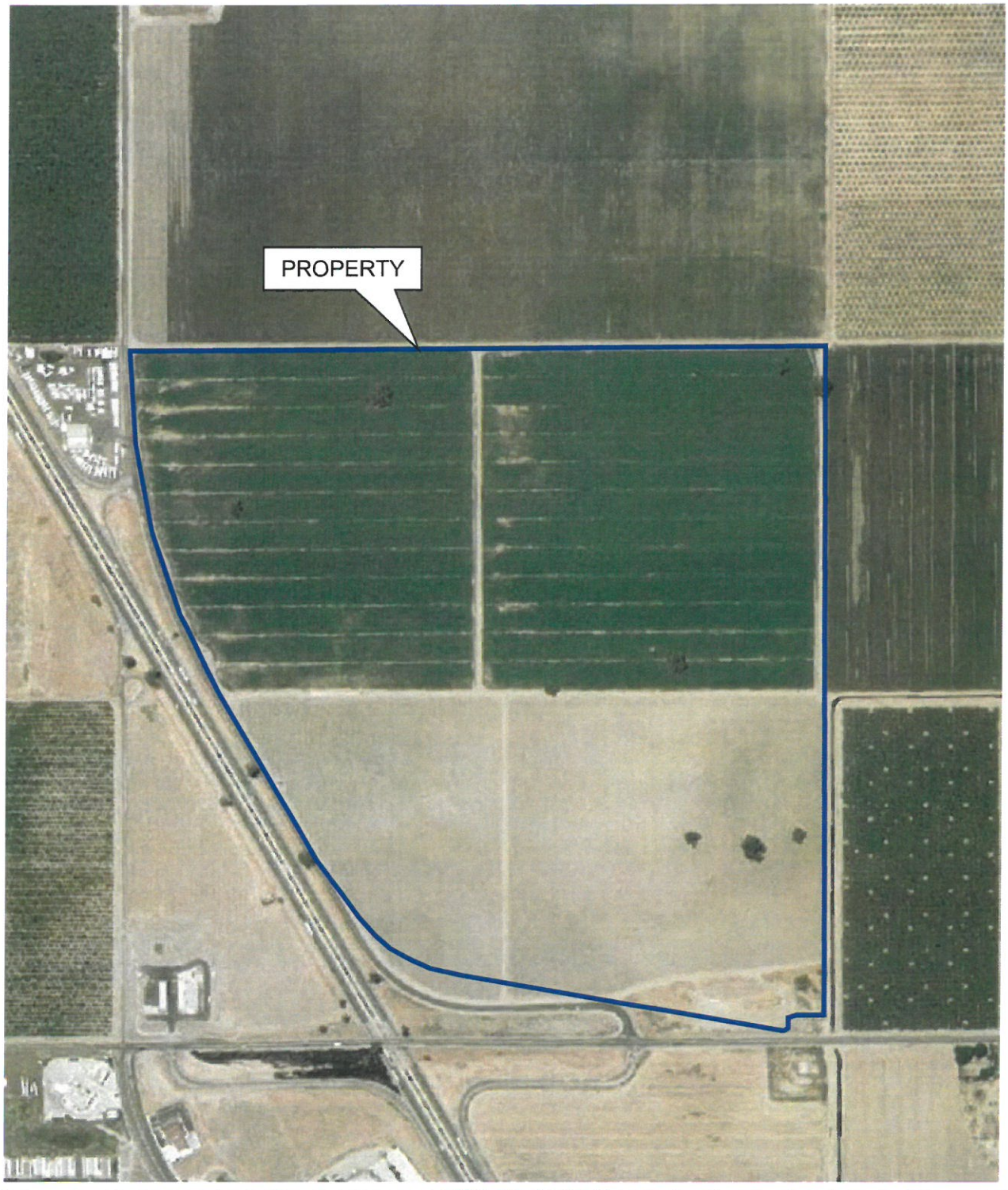
AERIAL PHOTOGRAPH	Scale:1" 500' Date: 1994 Photo ID No. USGS	N↑
CTL, INC. 710 S. KAWEAH AVENUE EXETER, CA 93221 (559) 592-3555	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18	



AERIAL PHOTOGRAPH	Scale:1" 500' Date: 2003 Photo ID No. NAIP	N↑
CTL, INC. 710 S. KAWEAH AVENUE EXETER, CA 93221 (559) 592-3555	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18	



AERIAL PHOTOGRAPH	Scale:1" 500' Date: 2005 Photo ID No. NAIP	N↑
CTL, INC. 710 S. KAWEAH AVENUE EXETER, CA 93221 (559) 592-3555	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18	



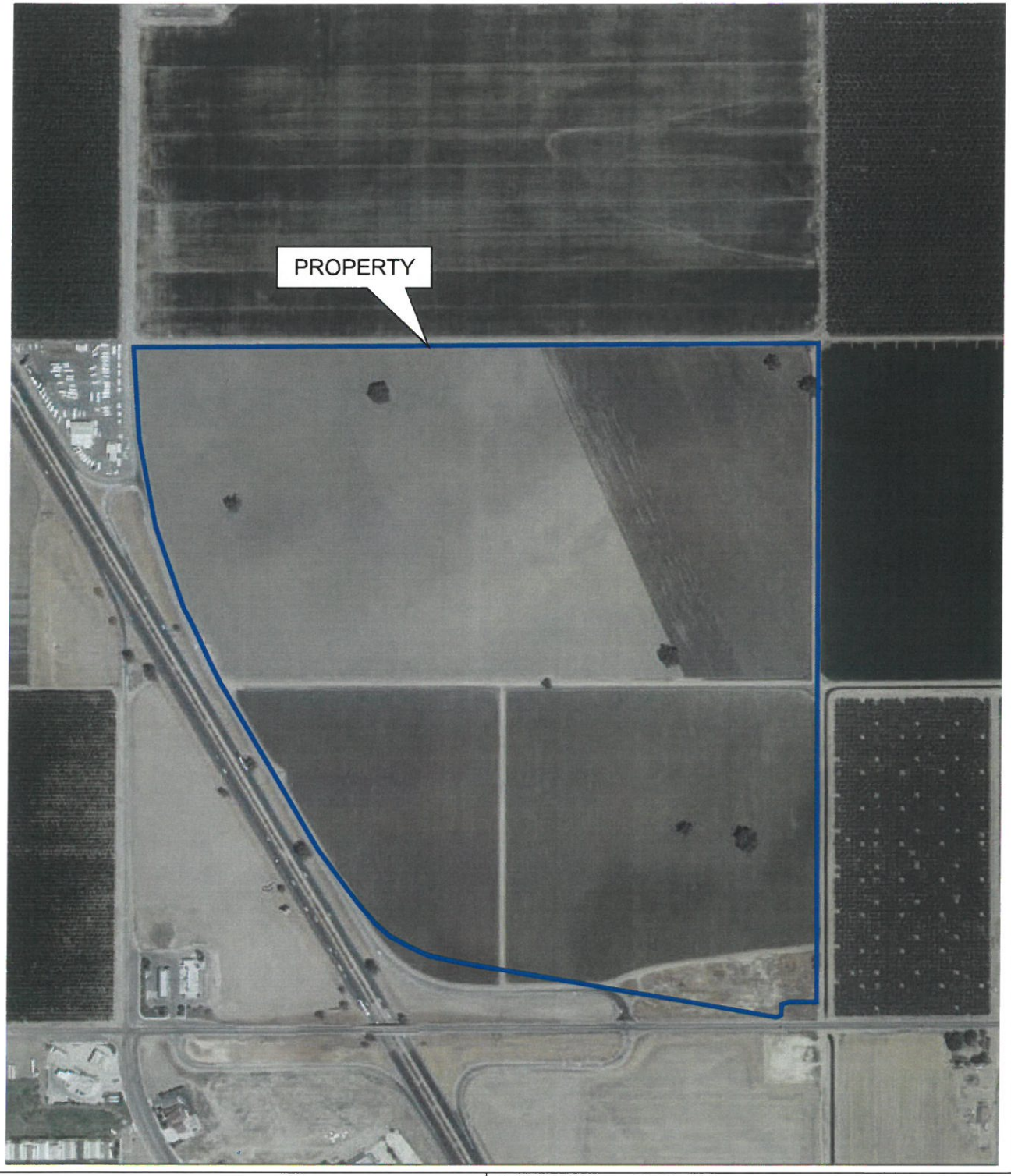
AERIAL PHOTOGRAPH	Scale:1" 500' Date: 2006 Photo ID No. NAIP	N↑

CTL, INC.
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(559) 592-3555

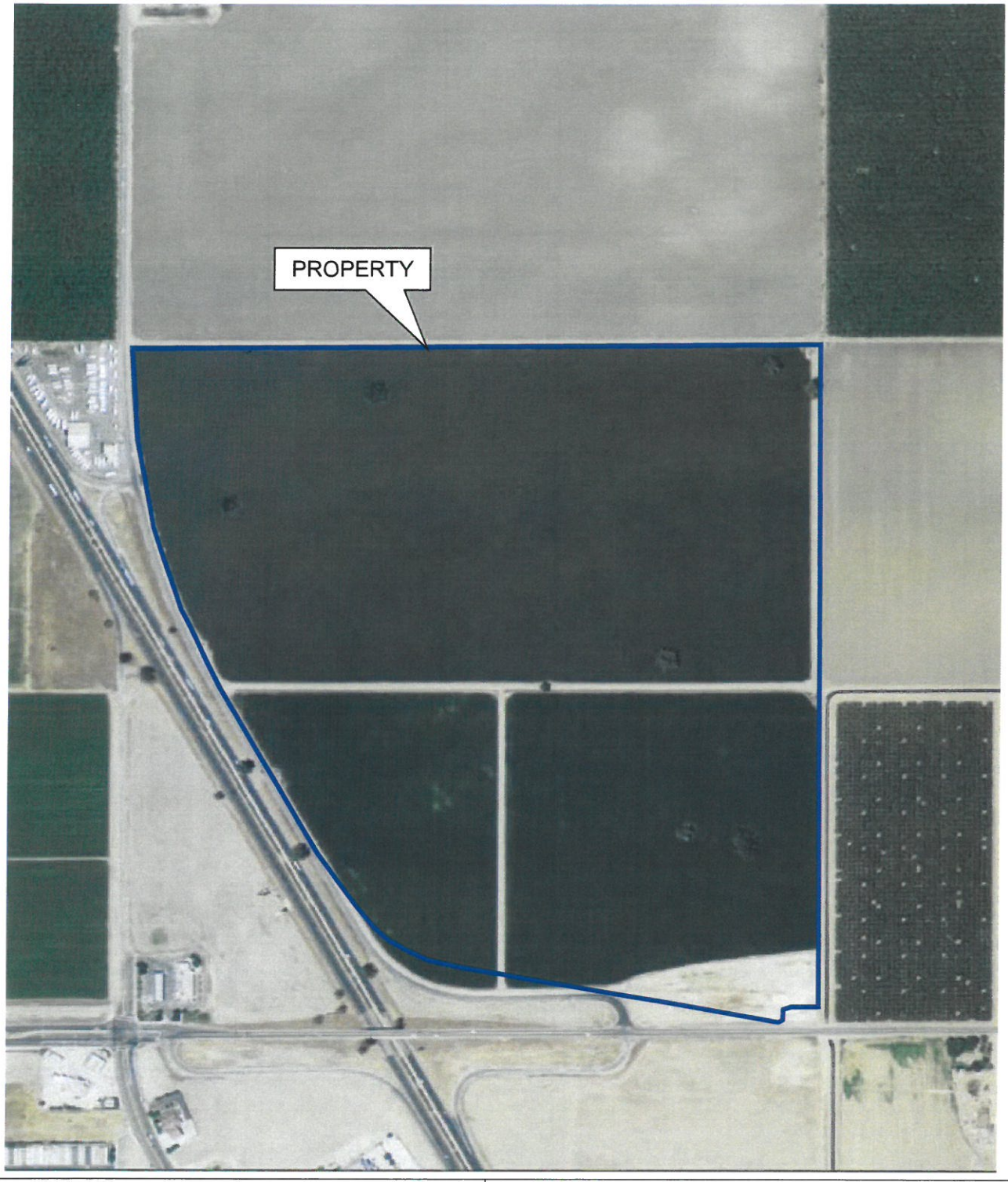
Site Name:	Agricultural Land
Site Address:	NEC Cartmill Ave. & Highway 99 Tulare, California
Project Number:	E2151-18



AERIAL PHOTOGRAPH	Scale:1" 500' Date: 2009 Photo ID No. NAIP	N↑
CTL, INC. 710 S. KAWEAH AVENUE EXETER, CA 93221 (559) 592-3555	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18	



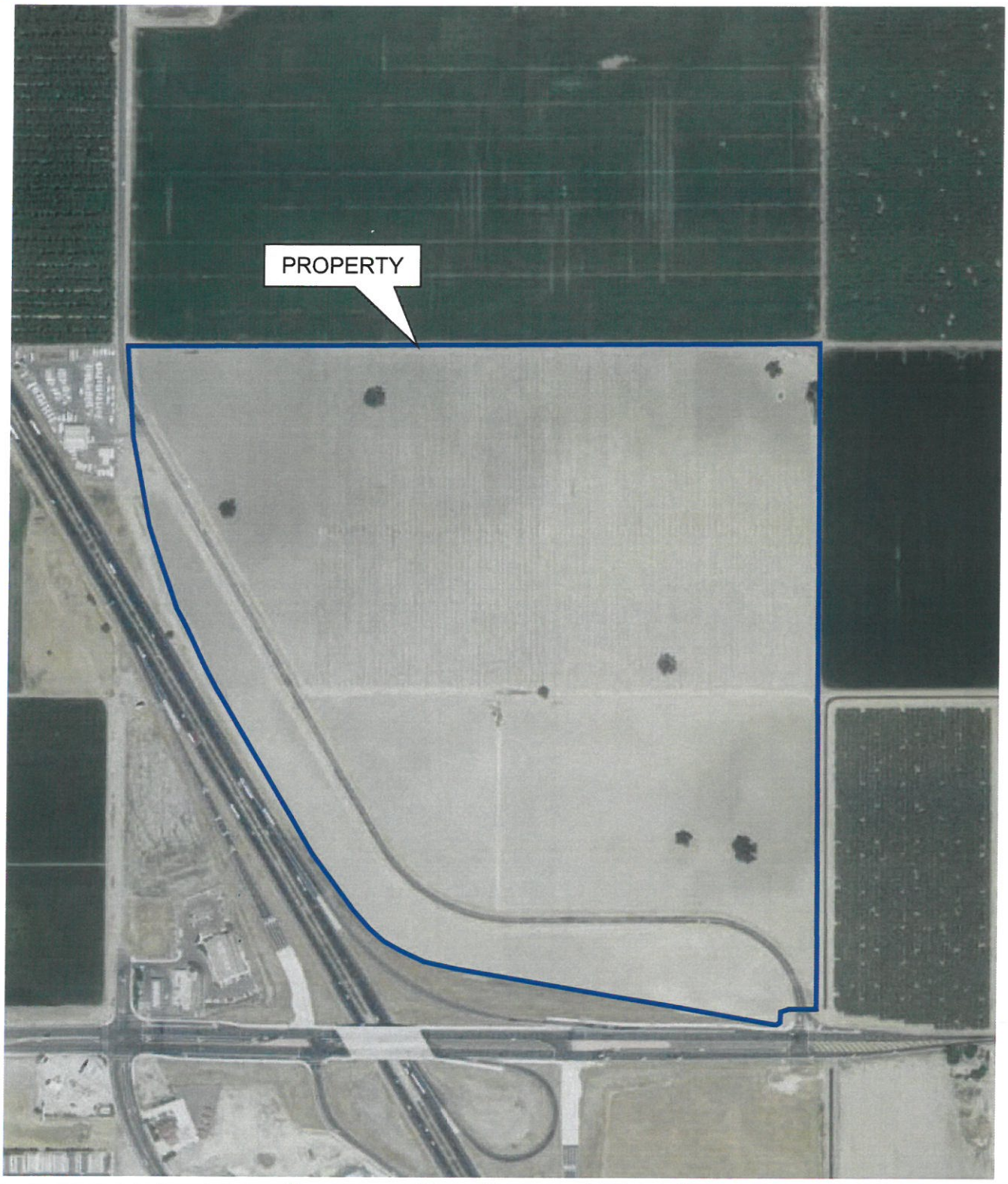
AERIAL PHOTOGRAPH	Scale:1" 500' Date: 2010 Photo ID No. NAIP	N↑
CTL, INC. 710 S. KAWEAH AVENUE EXETER, CA 93221 (559) 592-3555	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18	



AERIAL PHOTOGRAPH	Scale:1" 500' Date: 2012 Photo ID No. NAIP	N↑
CTL, INC. **710 S. KAWEAH AVENUE** **EXETER, CA 93221** **(559) 592-3555**	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18	



AERIAL PHOTOGRAPH	Scale:1" 500' Date: 2014 Photo ID No. NAIP	N↑
CTL, INC. 710 S. KAWEAH AVENUE EXETER, CA 93221 (559) 592-3555	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18	



AERIAL PHOTOGRAPH	Scale:1" 500' Date: 2016 Photo ID No. NAIP	N↑
CTL, INC. 710 S. KAWEAH AVENUE EXETER, CA 93221 (559) 592-3555	Site Name: Agricultural Land Site Address: NEC Cartmill Ave. & Highway 99 Tulare, California Project Number: E2151-18	

APPENDIX C

REGULATORY RECORDS DOCUMENTATION

EXHIBIT C-1

MAPPED DATABASE REPORT

ENVIRONMENTAL RISK INFORMATION SERVICES

DATABASE REPORT

Project Property:	*Cartmill* *Cartmill Avenue* *Tulare CA 93274*
Project No:	*18-137*
Report Type:	*Database Report*
Order No:	*20180926226*
Requested by:	*Paul Humphrey, REPA*
Date Completed:	*September 28, 2018*

Environmental Risk Information Services
A division of Glacier Media Inc.
P: 1.866.517.5204
E: info@erisinfo.com

www.erisinfo.com

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Executive Summary

Property Information:

Project Property:		*Cartmill* *Cartmill Avenue Tulare CA 93274*
Project No:		*18-137*
Coordinates:		
	Latitude:	*36.244347*
	Longitude:	*-119.343915*
	UTM Northing:	*4,013,598.51*
	UTM Easting:	*289,384.33*
	UTM Zone:	*UTM Zone 11S*
Elevation:		*297 FT*

Order Information:

Order No:	*20180926226*
Date Requested:	*September 26, 2018*
Requested by:	*Paul Humphrey, REPA*
Report Type:	*Database Report*

Historicals/Products:

Executive Summary: Report Summary

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
Standard Environmental Records								
Federal								
NPL	Y	1	0	0	0	0	0	0
PROPOSED NPL	Y	1	0	0	0	0	0	0
DELETED NPL	Y	.5	0	0	0	0	-	0
SEMS	Y	.5	0	0	0	0	-	0
ODI	Y	.5	0	0	0	0	-	0
SEMS ARCHIVE	Y	.5	0	0	0	0	-	0
CERCLIS	Y	.5	0	0	0	0	-	0
IODI	Y	.5	0	0	0	0	-	0
CERCLIS NFRAP	Y	.5	0	0	0	0	-	0
CERCLIS LIENS	Y	PO	0	-	-	-	-	0
RCRA CORRACTS	Y	1	0	0	0	0	0	0
RCRA TSD	Y	.5	0	0	0	0	-	0
RCRA LQG	Y	.25	0	0	0	-	-	0
RCRA SQG	Y	.25	0	1	0	-	-	1
RCRA CESQG	Y	.25	0	0	0	-	-	0
RCRA NON GEN	Y	.25	0	0	0	-	-	0
FED ENG	Y	.5	0	0	0	0	-	0
FED INST	Y	.5	0	0	0	0	-	0
ERNS 1982 TO 1986	Y	PO	0	-	-	-	-	0
ERNS 1987 TO 1989	Y	PO	0	-	-	-	-	0
ERNS	Y	PO	0	-	-	-	-	0
FED BROWNFIELDS	Y	.5	0	0	0	0	-	0
FEMA UST	Y	.25	0	0	0	-	-	0
SEMS LIEN	Y	PO	0	-	-	-	-	0
SUPERFUND ROD	Y	1	0	0	0	0	0	0
State								
RESPONSE	Y	1	0	0	0	0	0	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
ENVIROSTOR	Y	1	0	0	0	0	1	1
DELISTED ENVS	Y	1	0	0	0	0	0	0
SWF/LF	Y	.5	0	0	0	0	-	0
HWP	Y	1	0	0	0	0	0	0
LDS	Y	.5	0	0	0	0	-	0
SWAT	Y	.5	0	0	0	0	-	0
LUST	Y	.5	0	1	0	0	-	1
DELISTED LST	Y	.5	0	0	0	0	-	0
UST	Y	.25	0	0	1	-	-	1
SWRCB SWF	Y	.5	0	0	0	0	-	0
UST CLOSURE	Y	.5	0	0	0	0	-	0
HHSS	Y	.25	0	0	0	-	-	0
AST	Y	.25	0	0	0	-	-	0
DELISTED TNK	Y	.25	0	0	1	-	-	1
CERS TANK	Y	.25	0	0	2	-	-	2
LUR	Y	.5	0	0	0	0	-	0
HLUR	Y	.5	0	0	0	0	-	0
DEED	Y	.5	0	0	0	0	-	0
VCP	Y	.5	0	0	0	0	-	0
CLEANUP SITES	Y	.5	0	1	0	0	-	1
DELISTED CTNK	Y	.25	0	0	0	-	-	0
HIST TANK	Y	.25	0	0	0	-	-	0
Tribal								
INDIAN LUST	Y	.5	0	0	0	0	-	0
INDIAN UST	Y	.25	0	0	0	-	-	0
DELISTED ILST	Y	.5	0	0	0	0	-	0
DELISTED IUST	Y	.25	0	0	0	-	-	0
County								
DELISTED COUNTY	Y	.25	0	0	0	-	-	0
TULARE CUPA	Y	.25	0	0	2	-	-	2
Additional Environmental Records								
Federal								
FINDS/FRS	Y	PO	0	2	-	-	-	2
TRIS	Y	PO	0	-	-	-	-	0
HMIRS	Y	.125	0	0	-	-	-	0
NCDL	Y	PO	0	-	-	-	-	0
TSCA	Y	.125	0	0	-	-	-	0
HIST TSCA	Y	.125	0	0	-	-	-	0
FTTS ADMIN	Y	PO	0	-	-	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
FTTS INSP	Y	PO	0	-	-	-	-	0
PRP	Y	PO	0	-	-	-	-	0
SCRD DRYCLEANER	Y	.5	0	0	0	0	-	0
ICIS	Y	PO	0	-	-	-	-	0
FED DRYCLEANERS	Y	.25	0	0	0	-	-	0
DELISTED FED DRY	Y	.25	0	0	0	-	-	0
FUDS	Y	1	0	0	0	0	0	0
MLTS	Y	PO	0	-	-	-	-	0
HIST MLTS	Y	PO	0	-	-	-	-	0
MINES	Y	.25	0	0	0	-	-	0
ALT FUELS	Y	.25	0	0	1	-	-	1
SSTS	Y	.25	0	0	0	-	-	0
PCB	Y	.5	0	0	0	0	-	0
State								
INSP COMP ENF	Y	1	0	0	0	0	0	0
CDL	Y	.125	0	0	-	-	-	0
SCH	Y	1	0	0	0	0	0	0
CHMIRS	Y	PO	0	-	-	-	-	0
HAZNET	Y	PO	0	2	-	-	-	2
HWSS CLEANUP	Y	.5	0	0	0	0	-	0
DTSC HWF	Y	.5	0	0	0	0	-	0
HIST MANIFEST	Y	PO	0	-	-	-	-	0
HIST CHMIRS	Y	PO	0	-	-	-	-	0
HIST CORTESE	Y	.5	0	0	0	0	-	0
DELISTED HAZ	Y	.5	0	0	0	0	-	0
CDO/CAO	Y	.5	0	0	0	0	-	0
DRYCLEANERS	Y	.25	0	0	0	-	-	0
DELISTED DRYC	Y	.25	0	0	0	-	-	0
WASTE DISCHG	Y	.25	0	0	0	-	-	0
EMISSIONS	Y	.25	0	1	3	-	-	4
CERS HAZ	Y	.125	0	0	-	-	-	0
Tribal	***No Tribal additional environmental record sources available for this State.***							
County	***No County additional environmental databases were selected to be included in the search.***							
Total:			0	8	10	0	1	19

**** PO – Property Only***
**** 'Property and adjoining properties' database search radii are set at 0.25 miles.***

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number

No records found in the selected databases for the project property.

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
1	FINDS/FRS	MOORE FIELDNA TULARE	??? WITHIN TULARE MUNICIPAL AIRPORT TULARE CA 93274	SSE	0.01 / 56.57	0	19
1	CLEANUP SITES	MOORE AVIATION	596 E CARTMILL AVE TULARE CA 93274-9389	SSE	0.01 / 56.57	0	19
1	LUST	Moore Field, Tulare	??? Within Tulare Municipal Airport TULARE CA 93274 ***Global ID | Status | Status Date:*** SLT5FT434518 | Completed - Case Closed | 1980-03-28 00:00:00	SSE	0.01 / 56.57	0	20
2	FINDS/FRS	MOORE AVIATION INC	596 E CARTMILL AV TULARE CA 93274-9389	SSE	0.01 / 62.56	1	21
2	HAZNET	MOORE AVIATION INC	596 E CARTMILL AV TULARE CA 932740000	SSE	0.01 / 62.56	1	21
2	HAZNET	CW BOWLES	596 E CARTMILL TULARE CA 932740000	SSE	0.01 / 62.56	1	22
2	RCRA SQG	MOORE AVIATION INC	596 E CARTMILL AV TULARE CA 93274	SSE	0.01 / 62.56	1	22
3	EMISSIONS	FARM CREDIT WEST	200 E CARTMILL AVE TULARE CA	SW	0.09 / 500.91	-2	23
4	UST	JGSS FOOD SERVICE INC	3002 N M ST TULARE CA 93274 ***Facility ID:*** FA1347718	SW	0.14 / 750.73	-3	24
5	EMISSIONS	AM PM ARCO	3002 M ST TULARE CA 93274	SW	0.15 / 787.67	-3	25
6	CERS TANK	JGSS FOOD SERVICE INC	3002 N M ST TULARE CA 93274	SW	0.19 / 986.30	-3	28
6	TULARE CUPA	JGSS FOOD SERVICE INC	3002 N M ST TULARE CA 93274	SW	0.19 / 986.30	-3	36

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
7	ALT FUELS	Chevron	2959 N M St Tulare CA 93274	SW	0.22 / 1,149.74	-3	36
7	CERS TANK	FAST N ESY #13	2959 N M ST TULARE CA 93274	SW	0.22 / 1,149.74	-3	37
7	TULARE CUPA	FAST N ESY #13	2959 N M ST TULARE CA 93274	SW	0.22 / 1,149.74	-3	41
7	EMISSIONS	STANLEY'S FOOD MART #1	2959 NORTH M STREET TULARE CA 93274	SW	0.22 / 1,149.74	-3	41
8	EMISSIONS	CITY OF TULARE	2900 NORTH M ST TULARE CA 93274	SW	0.23 / 1,217.06	-3	44
9	DELISTED TNK	AM-PM MINI MART	3042 M STREET TULARE CA 93274	SSW	0.24 / 1,251.58	-3	48
10	ENVIROSTOR	MOORE AVIATION	596 CARTMILL AVENUE TULARE CA 93274	WSW	0.74 / 3,928.48	-4	49

Estor/EPA ID | Cleanup Status: 60000853 | NO FURTHER ACTION AS OF 7/19/2010

Executive Summary: Summary by Data Source

Standard

Federal

RCRA SQG - RCRA Small Quantity Generators List

A search of the RCRA SQG database, dated Aug 2, 2018 has found that there are 1 RCRA SQG site(s) within approximately 0.25 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
MOORE AVIATION INC	596 E CARTMILL AV TULARE CA 93274	SSE	0.01 / 62.56	2

State

ENVIROSTOR - EnviroStor Database

A search of the ENVIROSTOR database, dated Jul 18, 2018 has found that there are 1 ENVIROSTOR site(s) within approximately 1.00 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
MOORE AVIATION	596 CARTMILL AVENUE TULARE CA 93274	WSW	0.74 / 3,928.48	10

***Estor/EPA ID** | **Cleanup Status**: 60000853 | NO FURTHER ACTION AS OF 7/19/2010*

LUST - Leaking Underground Fuel Tank Reports

A search of the LUST database, dated Jul 6, 2018 has found that there are 1 LUST site(s) within approximately 0.50 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
Moore Field, Tulare	??? Within Tulare Municipal Airport TULARE CA 93274	SSE	0.01 / 56.57	1

***Global ID** | **Status** | **Status Date**: SLT5FT434518 | Completed - Case Closed | 1980-03-28 00:00:00*

UST - Permitted Underground Storage Tank (UST) in GeoTracker

A search of the UST database, dated Jul 1, 2018 has found that there are 1 UST site(s) within approximately 0.25 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
JGSS FOOD SERVICE INC	3002 N M ST TULARE CA 93274	SW	0.14 / 750.73	4

***Facility ID**: FA1347718*

DELISTED TNK - Delisted Storage Tanks

A search of the DELISTED TNK database, dated Jul 01, 2018 has found that there are 1 DELISTED TNK site(s) within approximately

0.25 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
AM-PM MINI MART	3042 M STREET TULARE CA 93274	SSW	0.24 / 1,251.58	9

CERS TANK - California Environmental Reporting System (CERS) Tanks

A search of the CERS TANK database, dated Jul 9, 2018 has found that there are 2 CERS TANK site(s) within approximately 0.25 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
JGSS FOOD SERVICE INC	3002 N M ST TULARE CA 93274	SW	0.19 / 986.30	6
FAST N ESY #13	2959 N M ST TULARE CA 93274	SW	0.22 / 1,149.74	7

CLEANUP SITES - GeoTracker Cleanup Sites Data

A search of the CLEANUP SITES database, dated Jul 6, 2018 has found that there are 1 CLEANUP SITES site(s) within approximately 0.50 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
MOORE AVIATION	596 E CARTMILL AVE TULARE CA 93274-9389	SSE	0.01 / 56.57	1

County

TULARE CUPA - Tulare County CUPA List

A search of the TULARE CUPA database, dated May 25, 2018 has found that there are 2 TULARE CUPA site(s) within approximately 0.25 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
JGSS FOOD SERVICE INC	3002 N M ST TULARE CA 93274	SW	0.19 / 986.30	6
FAST N ESY #13	2959 N M ST TULARE CA 93274	SW	0.22 / 1,149.74	7

Non Standard

Federal

FINDS/FRS - Facility Registry Service/Facility Index

A search of the FINDS/FRS database, dated Apr 17, 2018 has found that there are 2 FINDS/FRS site(s) within approximately 0.02 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
MOORE FIELDNA TULARE	??? WITHIN TULARE MUNICIPAL AIRPORT TULARE CA 93274	SSE	0.01 / 56.57	1
MOORE AVIATION INC	596 E CARTMILL AV TULARE CA 93274-9389	SSE	0.01 / 62.56	2

ALT FUELS - Alternative Fueling Stations

A search of the ALT FUELS database, dated Jul 24, 2018 has found that there are 1 ALT FUELS site(s) within approximately 0.25 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
Chevron	2959 N M St Tulare CA 93274	SW	0.22 / 1,149.74	7

State

HAZNET - Hazardous Waste Manifest Data

A search of the HAZNET database, dated Oct 24, 2016 has found that there are 2 HAZNET site(s) within approximately 0.02 miles of the project property.

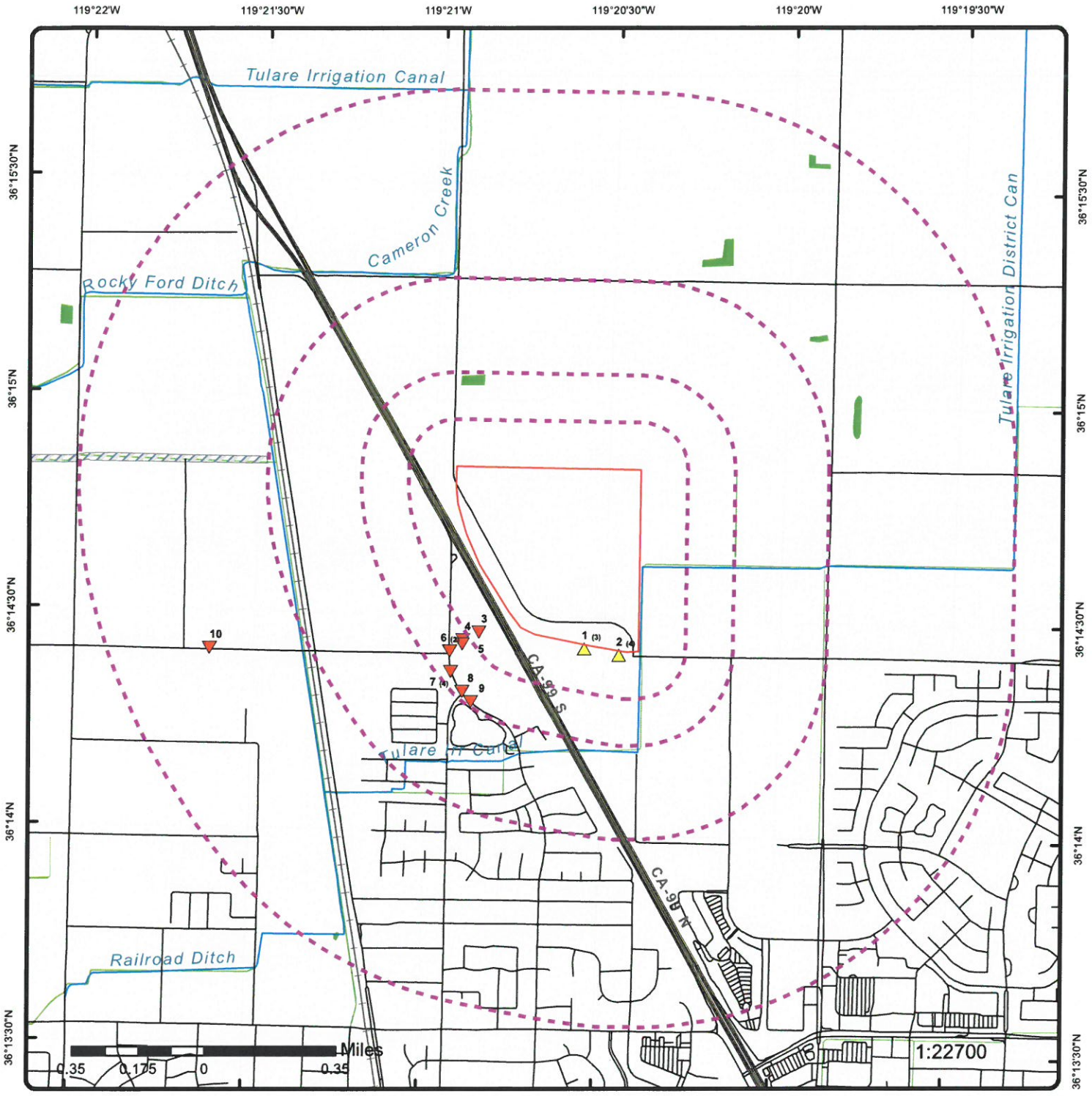
Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
MOORE AVIATION INC	596 E CARTMILL AV TULARE CA 932740000	SSE	0.01 / 62.56	2
CW BOWLES	596 E CARTMILL TULARE CA 932740000	SSE	0.01 / 62.56	2

EMISSIONS - Toxic Pollutant Emissions Facilities

A search of the EMISSIONS database, dated Dec 31, 2016 has found that there are 4 EMISSIONS site(s) within approximately 0.25 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
FARM CREDIT WEST	200 E CARTMILL AVE TULARE CA	SW	0.09 / 500.91	3
AM PM ARCO	3002 M ST TULARE CA 93274	SW	0.15 / 787.67	5

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
STANLEY'S FOOD MART #1	2959 NORTH M STREET TULARE CA 93274	SW	0.22 / 1,149.74	7
CITY OF TULARE	2900 NORTH M ST TULARE CA 93274	SW	0.23 / 1,217.06	8



Map : 1 Mile Radius

Order No: 20180926226

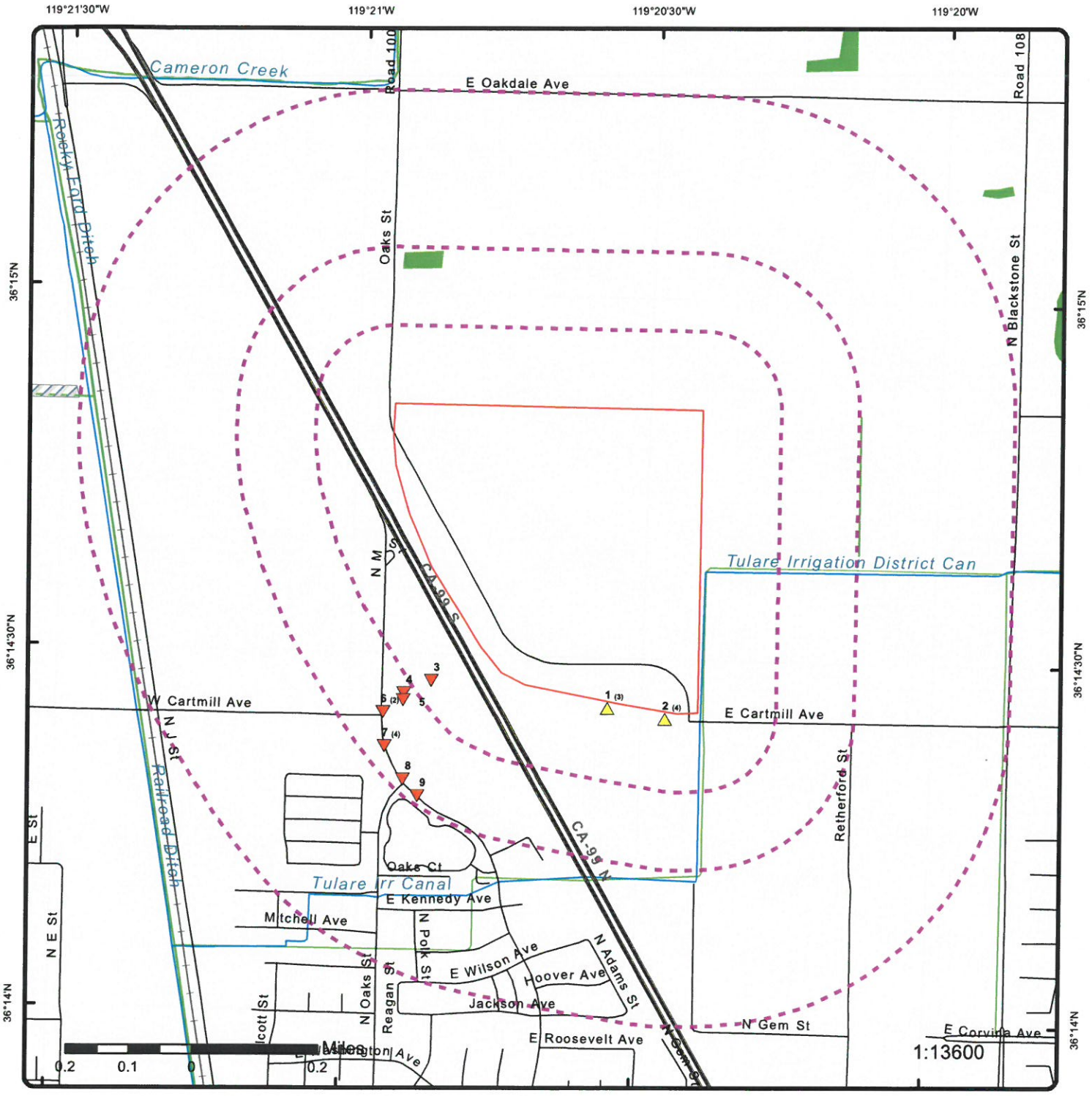
Address: Cartmill Avenue, Tulare, CA, 93274

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	Historic Fill	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	100 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	500 Year Flood Zone	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI

© ERIS Information Inc.



Map : 0.5 Mile Radius

Order No: 20180926226

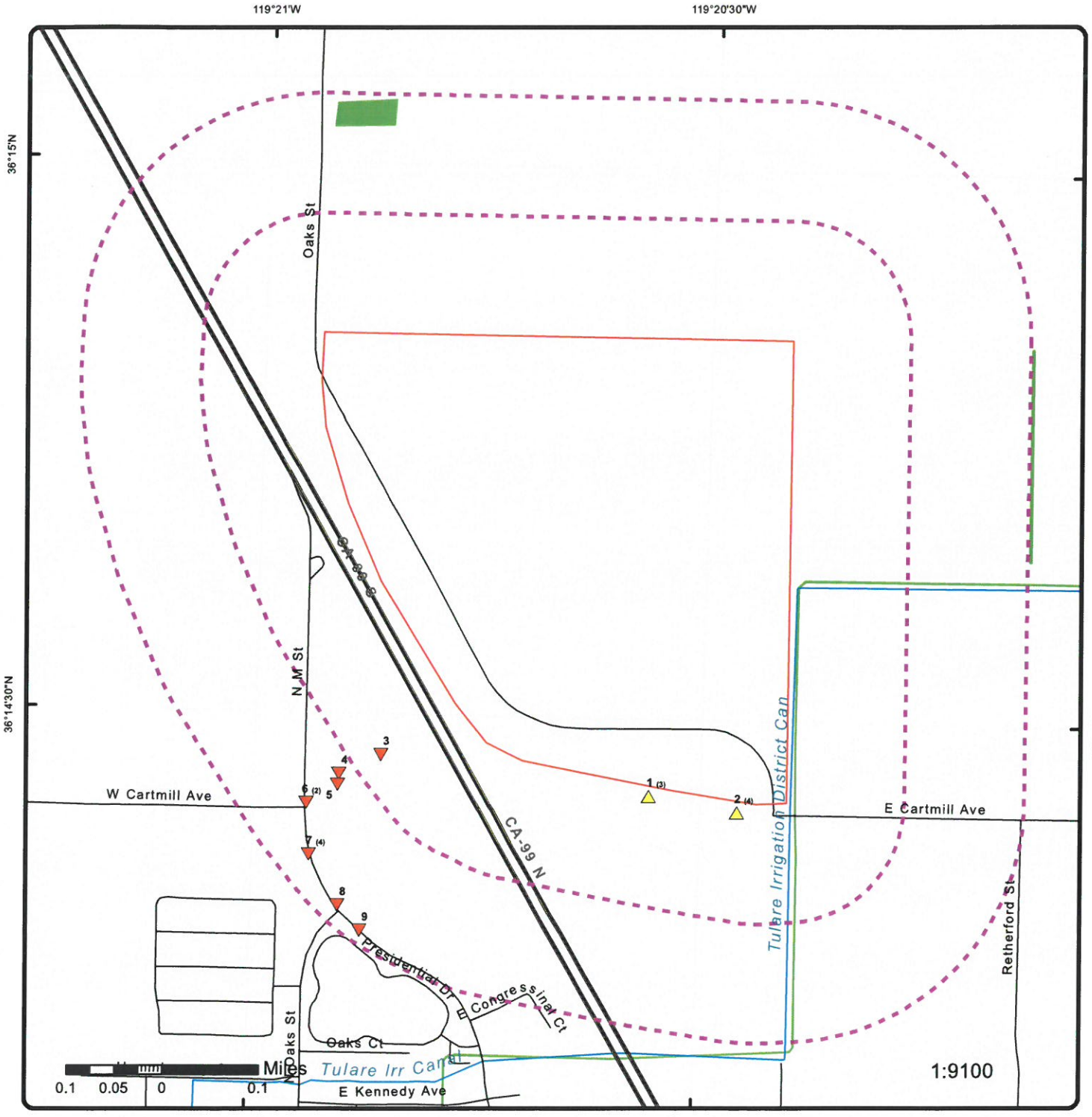
Address: Cartmill Avenue, Tulare, CA, 93274

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	Historic Fill	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	100 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	500 Year Flood Zone	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI

© ERIS Information Inc.



Map : 0.25 Mile Radius

Order No: 20180926226

Address: Cartmill Avenue, Tulare, CA, 93274

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	Historic Fill	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	100 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	500 Year Flood Zone	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI

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Aerial (2017)

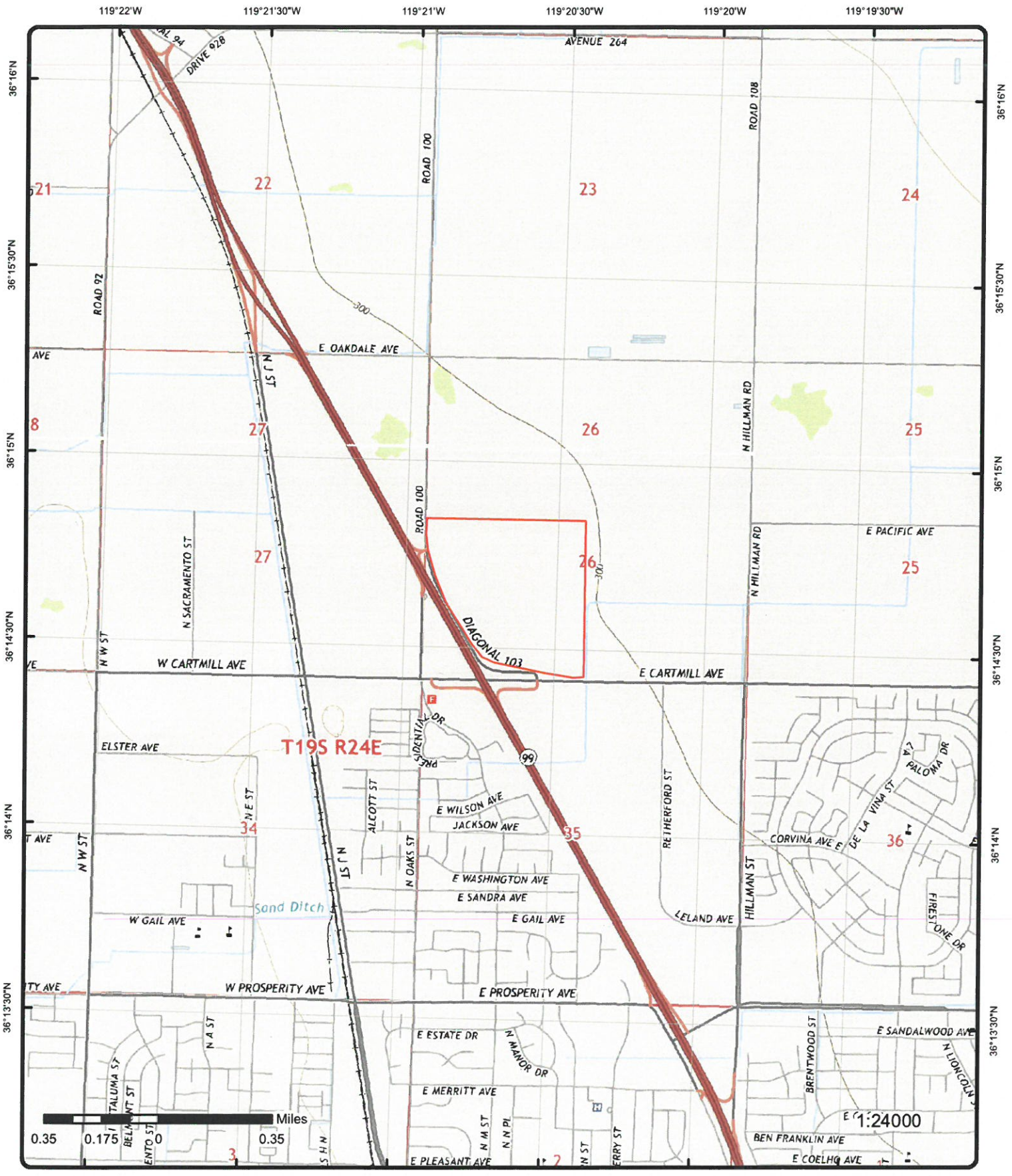
Order No: 20180926226

Address: Cartmill Avenue, Tulare, CA, 93274

Source: ESRI World Imagery

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

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Topographic Map (2015)

Address: Cartmill Avenue, Tulare, CA, 93274

Quadrangle(s): Visalia, CA; Tulare, CA;

Source: USGS Topographic Map

Order No: 20180926226

ERIS ENVIRONMENTAL RISK INFORMATION SERVICES

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Detail Report

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
1	1 of 3	SSE	0.01 / 56.57	297.09 / 0	MOORE FIELDNA TULARE ??? WITHIN TULARE MUNICIPAL AIRPORT TULARE CA 93274	FINDS/FRS

Registry ID: 110065907567
FIPS Code:
Program Acronyms: CA-ENVIROVIEW
HUC Code: 18030012
Site Type Name: STATIONARY
Location Description:
Supplemental Location:
Create Date: 13-OCT-2015 16:16:55
Update Date:
Interest Types: STATE MASTER
SIC Codes:
SIC Code Descriptions:
NAICS Codes:
NAICS Code Descriptions:
Conveyor: CALEPA
Federal Facility Code:
Federal Agency Name:
Tribal Land Code:
Tribal Land Name:
Congressional Dist No.: 21
Census Block Code: 061070024005018
EPA Region Code: 09
County Name: TULARE
US/Mexico Border Ind:
Latitude: 36.2405
Longitude: -119.3426
Reference Point:
Coord Collection Method: UNKNOWN
Accuracy Value:
Datum: NAD83
Source:
Facility Detail Rprt URL: http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110065907567

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
1	2 of 3	SSE	0.01 / 56.57	297.09 / 0	MOORE AVIATION 596 E CARTMILL AVE TULARE CA 93274-9389	CLEANUP SITES

Global ID: SLT5FT424517
Case Type: Cleanup Program Site
Status: Open - Site Assessment
Status Date: 1987-01-22 00:00:00
RB Case No: SLT5FT042
LOC Case No: 60000853
Lead Agency: DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Case Worker:
Local Agency:
CUF Case: NO
Begin Date: 1987-01-22 00:00:00
How Discovered:
Stop Method:
County: Tulare
Latitude: 36.2405
Longitude: -119.3426
File Location: DTSC
Potential Cntm of Concrn: * Pesticides/Herbicides
Potential Media Affected: Under Investigation
How Discovered Description:
Stop Description:
Cal Water Watershed Name: South Valley Floor - Kaweah Delta (558.10)
DWR Groundwater Subbasin San Joaquin Valley - Kaweah (5-022.11)

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Name:
Site History:

Status History

Status:	Open - Site Assessment	**Status Date:**	1987-01-22 00:00:00
Status:	Open - Case Begin Date	**Status Date:**	1987-01-22 00:00:00

Activities

Action Type: Other
Action: Leak Reported
Date: 1965-01-02 00:00:00

Contacts

Contact Type:	Regional Board Caseworker	**City:**	Fresno
Contact Name:	JONG HAN	**Email:**	jhan@waterboards.ca.gov
Organization Name:	CENTRAL VALLEY RWQCB (REGION 5F)	**Phone No:**	
Address:	1685 E. Street		
Contact Type:	Local Agency Caseworker	**City:**	TULARE
Contact Name:	JOSEPH DONABED	**Email:**	
Organization Name:	CITY OF TULARE	**Phone No:**	
Address:	411 EAST KERN AVENUE		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
1	3 of 3	SSE	0.01 / 56.57	297.09 / 0	Moore Field, Tulare ??? Within Tulare Municipal Airport TULARE CA 93274	LUST

Global ID:	SLT5FT434518	**CUF Case:**	NO
Case Type:	LUST Cleanup Site	**Begin Date:**	1980-03-28 00:00:00
Status:	Completed - Case Closed	**How Discovered:**	
Status Date:	1980-03-28 00:00:00	**Stop Method:**	
RB Case No:	SLT5FT043	**County:**	Tulare
LOC Case No:		**Latitude:**	36.2405
Lead Agency:	CENTRAL VALLEY RWQCB (REGION 5F)	**Longitude:**	-119.3426
Case Worker:	JYH	**File Location:**	

Local Agency:
Potential Media Of Concern:
Potential Media Affected: Under Investigation
How Discovered Description:
Stop Description:
Cal Water Watershed Name: South Valley Floor - Kaweah Delta (558.10)
DWR Groundwater Subbasin Name: San Joaquin Valley - Kaweah (5-022.11)
Site History:

Status History

Status:	Open - Case Begin Date	**Status Date:**	1980-03-28 00:00:00
Status:	Completed - Case Closed	**Status Date:**	1980-03-28 00:00:00

Activities

Action Type: Other
Action: Leak Reported
Date: 1965-01-02 00:00:00

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Contacts

Contact Type:	Regional Board Caseworker	***City:***	Fresno
Contact Name:	JONG HAN	***Email:***	jhan@waterboards.ca.gov
Organization Name:	CENTRAL VALLEY RWQCB (REGION 5F)	***Phone No:***	
Address:	1685 E. Street		

2	*1 of 4*	***SSE***	***0.01 / 62.56***	***297.94 / 1***	***MOORE AVIATION INC 596 E CARTMILL AV TULARE CA 93274-9389***	***FINDS/FRS***

Registry ID:	110002642383
FIPS Code:	06107
Program Acronyms:	ACRES, CA-ENVIROVIEW, RCRAINFO
HUC Code:	18030012
Site Type Name:	STATIONARY
Location Description:	
Supplemental Location:	
Create Date:	01-MAR-2000 00:00:00
Update Date:	14-OCT-2015 12:31:49
Interest Types:	BROWNFIELDS PROPERTY, SQG, STATE MASTER
SIC Codes:	
SIC Code Descriptions:	
NAICS Codes:	
NAICS Code Descriptions:	
Conveyor:	FRS-GEOCODE
Federal Facility Code:	
Federal Agency Name:	
Tribal Land Code:	
Tribal Land Name:	
Congressional Dist No.:	21
Census Block Code:	061070024002019
EPA Region Code:	09
County Name:	TULARE
US/Mexico Border Ind:	
Latitude:	36.24024
Longitude:	-119.34061
Reference Point:	CENTER OF A FACILITY OR STATION
Coord Collection Method:	ADDRESS MATCHING-HOUSE NUMBER
Accuracy Value:	30
Datum:	NAD83
Source:	
Facility Detail Rprt URL:	http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002642383

2	*2 of 4*	***SSE***	***0.01 / 62.56***	***297.94 / 1***	***MOORE AVIATION INC 596 E CARTMILL AV TULARE CA 932740000***	***HAZNET***

SIC Code:		***Mailing City:***	TULARE
NAICS Code:		***Mailing State:***	CA
EPA ID:	CAD029554755	***Mailing Zip:***	932740000
Create Date:	4/10/1987	***Region Code:***	1
Fac Act Ind:	No	***Owner Name:***	--
Inact Date:	6/30/1995	***Owner Addr 1:***	--
County Code:	54	***Owner Addr 2:***	
County Name:	Tulare	***Owner City:***	--
Mail Name:		***Owner State:***	99
Mailing Addr 1:	PO BOX 868	***Owner Zip:***	--
Mailing Addr 2:		***Owner Phone:***	0000000000
Owner Fax:			

Contact Information

--	--
Contact Name:	INACTIVE PER VF95 FORM LC

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Street Address 1:	--
Street Address 2:	
City:	--
State:	99
Zip:	--
Phone:	--
--	--

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
2	3 of 4	SSE	0.01 / 62.56	297.94 / 1	**CW BOWLES** **596 E CARTMILL** **TULARE CA 932740000**	HAZNET

SIC Code:		**Mailing City:**	TULARE
NAICS Code:		**Mailing State:**	CA
EPA ID:	CAL000078247	**Mailing Zip:**	932749389
Create Date:	7/15/1993	**Region Code:**	1
Fac Act Ind:	No	**Owner Name:**	--
Inact Date:	6/30/2001	**Owner Addr 1:**	--
County Code:	54	**Owner Addr 2:**	
County Name:	Tulare	**Owner City:**	--
Mail Name:		**Owner State:**	99
Mailing Addr 1:	596 E CARTMILL AVE	**Owner Zip:**	--
Mailing Addr 2:		**Owner Phone:**	0000000000
Owner Fax:			

Contact Information

--	--
Contact Name:	C W BOWLES - OWNER
Street Address 1:	INACTIVE PER VQ01 - BMI
Street Address 2:	
City:	TULARE
State:	CA
Zip:	932740000
Phone:	5596851629
--	--

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
2	4 of 4	SSE	0.01 / 62.56	297.94 / 1	**MOORE AVIATION INC** **596 E CARTMILL AV** **TULARE CA 93274**	RCRA SQG

EPA Handler ID:	CAD029554755
Gen Status Universe:	Small Quantity Generator
Contact Name:	
Contact Address:	US
Contact Phone No and Ext:	
Contact Email:	
Contact Country:	US
County Name:	TULARE
EPA Region:	09
Land Type:	
Receive Date:	19960901

Violation/Evaluation Summary

Note: NO RECORDS: As of Aug 2018, there are no Compliance Monitoring and Enforcement (violation) records associated with this facility (EPA ID).

Handler Summary

Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility:	No
Onsite Burner Exemption:	No
Furnace Exemption:	No

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Underground Injection Activity:	No
Commercial TSD:	No
Used Oil Transporter:	No
Used Oil Transfer Facility:	No
Used Oil Processor:	No
Used Oil Refiner:	No
Used Oil Burner:	No
Used Oil Market Burner:	No
Used Oil Spec Marketer:	No

Hazardous Waste Handler Details

Sequence No:	1
Receive Date:	19960901
Handler Name:	MOORE AVIATION INC
Generator Status Universe:	Small Quantity Generator
Source Type:	I

Sequence No:	1
Receive Date:	19850118
Handler Name:	MOORE AVIATION INC
Generator Status Universe:	Small Quantity Generator
Source Type:	N

Owner/Operator Details

Owner/Operator Ind:	Current Owner	**Street No:**	
Type:	Private	**Street 1:**	NOT REQUIRED
Name:	NOT REQUIRED	**Street 2:**	
Date Became Current:		**City:**	NOT REQUIRED
Date Ended Current:		**State:**	ME
Phone:	415-555-1212	**Country:**	
Source Type:	N	**Zip Code:**	99999

Owner/Operator Ind:	Current Operator	**Street No:**	
Type:	Private	**Street 1:**	NOT REQUIRED
Name:	NOT REQUIRED	**Street 2:**	
Date Became Current:		**City:**	NOT REQUIRED
Date Ended Current:		**State:**	ME
Phone:	415-555-1212	**Country:**	
Source Type:	I	**Zip Code:**	99999

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
3	1 of 1	SW	0.09 / 500.91	294.68 / -2	FARM CREDIT WEST 200 E CARTMILL AVE TULARE CA	EMISSIONS

2014 Criteria Data

Facility ID:	8388	**CERR Code:**	
Facility SIC Code:	5083	**TOGT:**	.0018311653571504962406015037593984962 40601
CO:	54	**ROGT:**	.0001704814947507112
Air Basin:	SJV	**COT:**	.002940806720699763
District:	SJU	**NOXT:**	.000588152249139966
COID:	TUL	**SOXT:**	.000000762374998885207
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	.000001353646879308338028169014084507042225353
CHAPIS:		**PM10T:**	.000001345524998032488

2014 Toxic Data

Facility ID:	8388	**COID:**	TUL
Facility SIC Code:	5083	**DISN:**	SAN JOAQUIN VALLEY APCD

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2015 Criteria Data

Facility ID:	8388	**CERR Code:**	
Facility SIC Code:	5083	**TOGT:**	.013555316863587540279269602577873254565
CO:	54	**ROGT:**	.001262
Air Basin:	SJV	**COT:**	.02176
District:	SJU	**NOXT:**	.004342
COID:	TUL	**SOXT:**	.000005627
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	.000009995975855130784708249496981891348088 54
CHAPIS:		**PM10T:**	.000009936

2015 Toxic Data

Facility ID:	8388	**COID:**	TUL
Facility SIC Code:	5083	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2016 Criteria Data

Facility ID:	8388	**CERR CODE:**	
Facility SIC Code:	5083	**TOGT:**	.013555316863587540279269602577873254565
CO:	54	**ROGT:**	.001262
Air Basin:	SJV	**COT:**	.02176
District:	SJU	**NOXT:**	.004342
COID:	TUL	**SOXT:**	.000005627
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	.000009995975855130784708249496981891348088 54
CHAPIS:		**PM10T:**	.000009936

2016 Toxic Data

Facility ID:	8388	**TS:**	
Facility SIC Code:	5083	**HRA:**	
CERR CODE:		**CH Index:**	
COID:	TUL	**AH Index:**	
CO:	54	**Air Basin:**	SJV
DISN:	SAN JOAQUIN VALLEY APCD	**District:**	SJU
CHAPIS:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
4	1 of 1	SW	0.14 / 750.73	294.18 / -3	**JGSS FOOD SERVICE INC** **3002 N M ST** **TULARE CA 93274**	UST

Facility ID:	FA1347718	**Latitude:**	36.2407369
Permitting Agency:	Tulare County Environmental Health	**Longitude:**	-119.3484049
County:	Tulare		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
5	1 of 1	SW	0.15 / 787.67	294.15 / -3	AM PM ARCO 3002 M ST TULARE CA 93274	EMISSIONS

2007 Criteria Data

Facility ID:	6749	**CERR Code:**	
Facility SIC Code:	5541	**TOGT:**	1.753778325434018201080394072336083654 63
CO:	54	**ROGT:**	1.7445019521484375
Air Basin:	SJV	**COT:**	
District:	SJU	**NOXT:**	
COID:	TUL	**SOXT:**	
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	
CHAPIS:		**PM10T:**	

2007 Toxic Data

Facility ID:	6749	**COID:**	TUL
Facility SIC Code:	5541	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2008 Criteria Data

Facility ID:	6749	**CERR Code:**	
Facility SIC Code:	5541	**TOGT:**	1.717525824996258829980480377153630464 16
CO:	54	**ROGT:**	1.7082
Air Basin:	SJV	**COT:**	
District:	SJU	**NOXT:**	
COID:	TUL	**SOXT:**	
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	
CHAPIS:		**PM10T:**	

2008 Toxic Data

Facility ID:	6749	**COID:**	TUL
Facility SIC Code:	5541	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2009 Criteria Data

Facility ID:	6749	**CERR Code:**	
Facility SIC Code:	5541	**TOGT:**	1.717525824996258829980480377153630464 16
CO:	54	**ROGT:**	1.7082
Air Basin:	SJV	**COT:**	
District:	SJU	**NOXT:**	

COID:	TUL	**SOXT:**	
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	
CHAPIS:		**PM10T:**	

2009 Toxic Data

Facility ID:	6749	**COID:**	TUL
Facility SIC Code:	5541	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2010 Toxic Data

Facility ID:	6749	**COID:**	TUL
Facility SIC Code:	5541	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2011 Criteria Data

Facility ID:	6749	**CERR Code:**	
Facility SIC Code:	5541	**TOGT:**	1.71752582499625882998048037715363046416
CO:	54	**ROGT:**	1.7082
Air Basin:	SJV	**COT:**	
District:	SJU	**NOXT:**	
COID:	TUL	**SOXT:**	
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	
CHAPIS:		**PM10T:**	

2011 Toxic Data

Facility ID:	6749	**COID:**	TUL
Facility SIC Code:	5541	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2012 Criteria Data

Facility ID:	6749	**CERR Code:**	
Facility SIC Code:	5541	**TOGT:**	1.631649533746445888481456358295948940 95
CO:	54	**ROGT:**	1.62279
Air Basin:	SJV	**COT:**	
District:	SJU	**NOXT:**	
COID:	TUL	**SOXT:**	
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	
CHAPIS:		**PM10T:**	

2012 Toxic Data

Facility ID:	6749	***COID:***	TUL
Facility SIC Code:	5541	***DISN:***	SAN JOAQUIN VALLEY APCD
CO:	54	***CHAPIS:***	
Air Basin:	SJV	***CERR Code:***	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2013 Criteria Data

Facility ID:	6749	***CERR Code:***	
Facility SIC Code:	5541	***TOGT:***	1.782222
CO:	54	***ROGT:***	1.782222
Air Basin:	SJV	***COT:***	
District:	SJU	***NOXT:***	
COID:	TUL	***SOXT:***	
DISN:	SAN JOAQUIN VALLEY APCD	***PMT:***	
CHAPIS:		***PM10T:***	

2013 Toxic Data

Facility ID:	6749	***COID:***	TUL
Facility SIC Code:	5541	***DISN:***	SAN JOAQUIN VALLEY APCD
CO:	54	***CHAPIS:***	
Air Basin:	SJV	***CERR Code:***	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2014 Criteria Data

Facility ID:	6749	***CERR Code:***	
Facility SIC Code:	5541	***TOGT:***	1.782222
CO:	54	***ROGT:***	1.782222
Air Basin:	SJV	***COT:***	
District:	SJU	***NOXT:***	
COID:	TUL	***SOXT:***	
DISN:	SAN JOAQUIN VALLEY APCD	***PMT:***	
CHAPIS:		***PM10T:***	

2014 Toxic Data

Facility ID:	6749	***COID:***	TUL
Facility SIC Code:	5541	***DISN:***	SAN JOAQUIN VALLEY APCD
CO:	54	***CHAPIS:***	
Air Basin:	SJV	***CERR Code:***	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2015 Criteria Data

Facility ID:	6749	***CERR Code:***	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Facility SIC Code:	5541	**TOGT:**	.973674
CO:	54	**ROGT:**	.973674
Air Basin:	SJV	**COT:**	
District:	SJU	**NOXT:**	
COID:	TUL	**SOXT:**	
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	
CHAPIS:		**PM10T:**	

2015 Toxic Data

Facility ID:	6749	**COID:**	TUL
Facility SIC Code:	5541	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2016 Criteria Data

Facility ID:	6749	**CERR CODE:**	
Facility SIC Code:	5541	**TOGT:**	.973674
CO:	54	**ROGT:**	.973674
Air Basin:	SJV	**COT:**	
District:	SJU	**NOXT:**	
COID:	TUL	**SOXT:**	
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	
CHAPIS:		**PM10T:**	

2016 Toxic Data

Facility ID:	6749	**TS:**	
Facility SIC Code:	5541	**HRA:**	
CERR CODE:		**CH Index:**	
COID:	TUL	**AH Index:**	
CO:	54	**Air Basin:**	SJV
DISN:	SAN JOAQUIN VALLEY APCD	**District:**	SJU
CHAPIS:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
6	1 of 2	SW	0.19 / 986.30	293.41 / -3	**JGSS FOOD SERVICE INC** **3002 N M ST** **TULARE CA 93274**	CERS TANK

Site ID:	358224
Latitude:	36.240730
Longitude:	-119.348389

Regulated Programs

EI ID:	10610497
EI Description:	Chemical Storage Facilities
EI ID:	10610497
EI Description:	Underground Storage Tank

Affiliations

Affil Type Desc:	Environmental Contact
Entity Name:	JGSS FOOD SERVICE INC
Entity Title:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Address:	2702 VINEYARD PLAZA
City:	FOWLER
State:	
Country:	
Zip Code:	
Phone:	(559) 834-4773
Affil Type Desc:	Operator
Entity Name:	JASDEEP WARAICH
Entity Title:	
Address:	
City:	
State:	
Country:	
Zip Code:	
Phone:	(559) 834-4773
Affil Type Desc:	Primary Emergency Contact
Entity Name:	JGSS FOOD SERVICE INC
Entity Title:	Tank Operator
Address:	
City:	
State:	
Country:	
Zip Code:	
Phone:	(559) 834-4773
Affil Type Desc:	UST Property Owner Name
Entity Name:	JGSS FOOD SERVICE INC
Entity Title:	
Address:	2702 VINEYARD PLAZA
City:	FOWLER
State:	CA
Country:	USA
Zip Code:	93625
Phone:	(559) 834-4773
Affil Type Desc:	Legal Owner
Entity Name:	MANJIT BAINES
Entity Title:	
Address:	3002 NORTH M STREET
City:	TULARE
State:	CA
Country:	United States
Zip Code:	93274
Phone:	(559) 393-9059
Affil Type Desc:	CUPA District
Entity Name:	Tulare County Environmental Health
Entity Title:	
Address:	5957 South Mooney Boulevard
City:	Visalia
State:	CA
Country:	
Zip Code:	93277
Phone:	(559) 624-7400
Affil Type Desc:	UST Tank Operator
Entity Name:	JGSS FOOD SERVICE INC
Entity Title:	
Address:	2702 VINEYARD PLAZA
City:	FOWLER
State:	CA
Country:	
Zip Code:	93625-
Phone:	(559) 834-4773
Affil Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address

Entity Title:
Address: 3002 NORTH M STREET
City: TULARE
State: CA
Country:
Zip Code: 93274
Phone:

Affil Type Desc: Parent Corporation
Entity Name: JGSS FOOD SERVICE INC
Entity Title:
Address:
City:
State:
Country:
Zip Code:
Phone:

Affil Type Desc: UST Permit Applicant
Entity Name: MANJIT S BAINES
Entity Title: TANK OWNER & OPERATOR
Address:
City:
State:
Country:
Zip Code:
Phone: (559) 834-4773

Affil Type Desc: UST Tank Owner
Entity Name: JGSS FOOD SERVICE INC
Entity Title:
Address: 2702 VINEYARD PLAZA
City: FOWLER
State: CA
Country: USA
Zip Code: 93625
Phone: (559) 834-4773

Coordinates

Env Int Type Code: HMBP
Program ID: 10610497
Latitude: 36.240737
Longitude: -119.348400
Coord Name:
Ref Point Type Desc: Entrance point of a facility or station

Evaluations

Eval Date: 3/18/2015
Violations Found: No
Eval General Type: Compliance Evaluation Inspection
Eval Type: Routine done by local agency
Eval Division: Tulare County Environmental Health
Eval Program: UST
Eval Source: CERS
Eval Notes:

Eval Date: 4/26/2016
Violations Found: Yes
Eval General Type: Compliance Evaluation Inspection
Eval Type: Routine done by local agency
Eval Division: Tulare County Environmental Health
Eval Program: UST
Eval Source: CERS
Eval Notes:

Eval Date: 9/26/2016

Violations Found: No
Eval General Type: Other/Unknown
Eval Type: Other, not routine, done by local agency
Eval Division: Tulare County Environmental Health
Eval Program: UST
Eval Source: CERS
Eval Notes:

Eval Date: 10/31/2017
Violations Found: Yes
Eval General Type: Compliance Evaluation Inspection
Eval Type: Routine done by local agency
Eval Division: Tulare County Environmental Health
Eval Program: UST
Eval Source: CERS
Eval Notes:

Jasdeep Waraich Owner

Eval Date: 12/19/2013
Violations Found: Yes
Eval General Type: Compliance Evaluation Inspection
Eval Type: Routine done by local agency
Eval Division: Tulare County Environmental Health
Eval Program: UST
Eval Source: CERS
Eval Notes:

Violations

Violation Date: 10/31/2017 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: 23 CCR 16 2715(a) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2715(a)
Violation Notes:

Returned to compliance on 11/06/2017.

Violation Description:

Failure to notify the CUPA of the designated operator (DO) identification and/or change of the DO within 30 days.

Violations

Violation Date: 4/26/2016 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: 23 CCR 16 2715(f) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2715(f)
Violation Notes:

Returned to compliance on 09/26/2016.

Violation Description:

Failure to comply with one or more of the following: provide training to facility employee(s) responsible for proper operation and maintenance every 12 months

and/or

train new employee(s) who are responsible for proper operation and maintenance within 30-days of hire

and/or

to have at least one employee present during operating hours that has been trained in the proper operation and maintenance of the UST system.

Violations

Violation Date: 12/19/2013 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: HSC 6.7 25290.2(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.2(d)
Violation Notes:

Returned to compliance on 12/19/2013.

Violation Description:

Failure of the UST system installed on or after July 1, 2003 and before July 1, 2004 to comply with one or more of the following: be designed and constructed with a monitoring system capable of detecting the entry of the hazardous substance stored in the primary containment into the secondary containment and/or capable of detecting water intrusion into the secondary containment.

Violations

Violation Date: 4/26/2016 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: 23 CCR 16 2715(a) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2715(a)
Violation Notes:

Returned to compliance on 08/29/2016.

Violation Description:

The owner/operator has failed to designate an UST operator or to inform the CUPA or any change in the designated UST operator(s) within 30 days after a change.

Violations

Violation Date: 4/26/2016 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: 23 CCR 16 2638 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2638
Violation Notes:

Returned to compliance on 04/26/2016.

Violation Description:

Failure to test leak detection equipment as required every 12 months (VPH, sensor, LLD, ATG, etc.) and/or submit monitoring system certification to the CUPA within 30 days of completion of the test

Violations

Violation Date: 10/31/2017 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: 23 CCR 16 2638(a) & (b), 2641(j), 2715(i) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2638(a) & (b), 2641(j), 2715(i)
Violation Notes:

Returned to compliance on 10/31/2017.

Violation Description:

Failure to have a properly qualified service technician test leak detection equipment as required every 12 months (vapor, pressure, hydrostatic (VPH) system, sensors, line-leak detectors (LLD), automatic tank gauge (ATG), etc.).

Violations

Violation Date: 10/31/2017 ***Violation Program:***

Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: 23 CCR 16 2715(c) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2715(c)
Violation Notes:

Returned to compliance on 11/06/2017. Terry Hodson's UST Designated Operator ICC is expired. Terry Hodson conducted a UST DO inspection (10-3-17) on an expired certification. Obtain a new UST Designated Operator with a current certification.

Violation Description:

Failure to comply with one or more of the following designated operator (DO) monthly inspection requirements:
Be performed by an ICC certified DO.
Inspect monthly alarm history report, check that alarms are documented and responded to appropriately, and attach a copy. Inspect for the presence of liquid/debris in spill containers.
Inspect for the presence of liquid/debris in under dispenser containment (UDC) and ensure that the monitoring equipment is positioned correctly. Inspect for liquid or debris in containment sumps where an alarm occurred with no service visit. Check that all testing and maintenance has been completed and documented.
Verify that all facility employees have been properly trained.

Violations

Violation Date: 12/19/2013 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Notes:

Violation Description:

Failure to install leak detection equipment correct for the type of system.

Violations

Violation Date: 4/26/2016 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: 23 CCR 16 2632, 2634, 2636, 2666 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2632, 2634, 2636, 2666
Violation Notes:

Returned to compliance on 04/26/2016.

Violation Description:

Failure of the leak detection equipment to have an audible and visual alarm as required.

Violations

Violation Date: 4/26/2016 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: 23 CCR 16 2715 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2715
Violation Notes:

Returned to compliance on 09/26/2016.

Violation Description:

The owner/operator has failed to comply with one or more of the following: to maintain a copy of the designated operator monthly inspections for the last 12 months

and/or

maintain a list of trained employees on-site or off-site at a readily available location, if approved by the CUPA.

Violations

Violation Date: 4/26/2016 **Violation Program:**
Violation Division: Tulare County Environmental Health **Violation Source:**
Citation: 23 CCR 16 2715(a) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2715(a)
Violation Notes:

Returned to compliance on 08/29/2016.

Violation Description:

Failure to submit statement of UST compliance and/or Designated Operator certification.

Violations

Violation Date: 10/31/2017 **Violation Program:**
Violation Division: Tulare County Environmental Health **Violation Source:**
Citation: 23 CCR 16 2715(f)(3) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2715(f)(3)
Violation Notes:

Returned to compliance on 11/06/2017.

Violation Description:

Failure to maintain a list of employees trained by the designated operator on-site or off-site at a readily available location, if approved by the UPA.

Violations

Violation Date: 12/19/2013 **Violation Program:**
Violation Division: Tulare County Environmental Health **Violation Source:**
Citation: HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Notes:

Returned to compliance on 12/19/2013.

Violation Description:

Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.

Violations

Violation Date: 10/31/2017 **Violation Program:**
Violation Division: Tulare County Environmental Health **Violation Source:**
Citation: HSC 6.7 25284.2 - California Health and Safety Code, Chapter 6.7, Section(s) 25284.2
Violation Notes:

Returned to compliance on 10/31/2017.

Violation Description:

Failure to test the spill bucket annually.

Violations

Violation Date: 12/19/2013 **Violation Program:**
Violation Division: Tulare County Environmental Health **Violation Source:**
Citation: 23 CCR 16 2638 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2638
Violation Notes:

Returned to compliance on 12/19/2013.

Violation Description:

Failure to test leak detection equipment as required every 12 months (VPH, sensor, LLD, ATG, etc.) and/or submit monitoring system certification to the CUPA within 30 days of completion of the test

Violations

Violation Date: 4/26/2016 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: 23 CCR 16 2632, 2634, 2636, 2666 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2632, 2634, 2636, 2666
Violation Notes:

Returned to compliance on 04/26/2016.

Violation Description:

Failure of the leak detection equipment to be properly programmed or properly operated.

Violations

Violation Date: 4/26/2016 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: 23 CCR 16 2636(f) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)
Violation Notes:

Returned to compliance on 04/26/2016.

Violation Description:

Failure to continuously monitor the interstitial space of the tank, piping and/or sumps sump such that the leak detection activates an audible/visual alarm when a leak is detected.

Violations

Violation Date: 4/26/2016 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: 23 CCR 16 2715(d) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2715(d)
Violation Notes:

Returned to compliance on 09/26/2016.

Violation Description:

Failure to notify the owner or operator of any condition discovered during the monthly visual inspection that may require follow-up actions.

Violations

Violation Date: 4/26/2016 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: HSC 6.7 25284.2 - California Health and Safety Code, Chapter 6.7, Section(s) 25284.2
Violation Notes:

Returned to compliance on 04/26/2016.

Violation Description:

Failure to test the spill bucket annually.

Violations

Violation Date: 4/26/2016 ***Violation Program:***

Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: HSC 6.7 25299(a)(9) - California Health and Safety Code, Chapter 6.7, Section(s) 25299(a)(9)
Violation Notes:

Returned to compliance on 04/26/2016.

Violation Description:

Leak detection equipment disabled or tampered with in a manner that would prevent the monitoring system from detecting and/or alerting the owner/operator of a leak.

Enforcements

Enf Action Date: 04-26-2016 ***Enf Action Program:*** UST
Enf Action Type: Notice of Violation (Unified Program) ***Enf Action Source:*** CERS
Enf Action Division: Tulare County Environmental Health
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:

Enf Action Date: 12-19-2013 ***Enf Action Program:*** UST
Enf Action Type: Notice of Violation (Unified Program) ***Enf Action Source:*** CERS
Enf Action Division: Tulare County Environmental Health
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:

Enf Action Date: 10-31-2017 ***Enf Action Program:*** UST
Enf Action Type: Notice of Violation (Unified Program) ***Enf Action Source:*** CERS
Enf Action Division: Tulare County Environmental Health
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:

6	2 of 2	SW	0.19 / 986.30	293.41 / -3	JGSS FOOD SERVICE INC 3002 N M ST TULARE CA 93274	TULARE CUPA

Facility ID: FA1347718
CERS ID: 10610497

--Details--
PE: 2280
Tb Core General Prog Record: PR1349713
Description: UST FACILITY
Current Status: 4
Status Description: Active, exempt from billing

PE: 2223
Tb Core General Prog Record: PR1357997
Description: HM - SMALL FACILITY - < 5 CHEMICALS
Current Status: 1
Status Description: Active, billable

7	1 of 4	SW	0.22 / 1,149.74	293.39 / -3	Chevron 2959 N M St Tulare CA 93274	ALT FUELS

ID: 33028 ***Plus4:***
Federal Agency ID: ***NG PSI:***
Fed Agency Name: ***Owner Type Code:*** P
Status Code: E ***Owner Type Desc:*** Privately owned
Status Desc: Open: The station is open. ***Station Phone:*** 559-684-7881
Fuel Type Code: E85: E85 Ethanol ***EV Lvl1 EVSE No:***

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Dt Last Confirmed:	2017-04-06	**EV Lvl2 EVSE No:**	
Open Date:	2012-06-12	**EV DC Fast Count:**	
Expected Date:		**EV Other Info:**	
Updated at:	2018-03-06 01:16:25 UTC	**EV Network:**	
NG Fill Type Code:		**EV Network Web:**	
NG Fill Type Desc:		**Latitude:**	36.239781
BD Blends:		**Longitude:**	-119.349578
NG Vehicle Class:			
NG V Class Desc:			
Access Code:	public		
Access Detail Code:			
Federal Agency Code:			
Groups with Access Code:	Public		
Group with Access Desc:	Publicly available to all customers.		
Hydrogen is Retail:			
Cards Accepted:	A Cash D M V		
Cards Accepted Desc:	A-American Express; Cash-Cash; D-Discover; M-MasterCard; V-VISA		
Access Days Time:	24 hours daily		
LPG Primary:			
LPG Primary Desc:			
E85 Blender Pump:	false		
E85 Blender Pump Desc:	The station does not have a blender pump.		
EV Connector Types:			
EV Connector Type Desc:			
Intersection Directions:			
Geocode Status:	200-9		
Geocode Status Desc:	Premise (building name, property name, shopping center, etc.) level accuracy.		
Hydrogen Status Link:			

7	2 of 4	SW	0.22 / 1,149.74	293.39 / -3	FAST N ESY #13 2959 N M ST TULARE CA 93274	CERS TANK

Site ID:	30704
Latitude:	36.239780
Longitude:	-119.349579

Regulated Programs

EI ID:	10134724
EI Description:	Hazardous Waste Generator
EI ID:	10134724
EI Description:	Aboveground Petroleum Storage
EI ID:	10134724
EI Description:	Chemical Storage Facilities

Affiliations

Affil Type Desc:	Document Preparer
Entity Name:	vikram vohra
Entity Title:	
Address:	
City:	
State:	
Country:	
Zip Code:	
Phone:	
Affil Type Desc:	Operator
Entity Name:	vinay vohra
Entity Title:	
Address:	
City:	

State:
Country:
Zip Code:
Phone: (559) 213-0459

Affil Type Desc: Parent Corporation
Entity Name: Fast N Esy
Entity Title:
Address:
City:
State:
Country:
Zip Code:
Phone:

Affil Type Desc: Primary Emergency Contact
Entity Name: INDERJIT SINGH
Entity Title: MANAGER
Address:
City:
State:
Country:
Zip Code:
Phone: (559) 936-7081

Affil Type Desc: Legal Owner
Entity Name: VIKRAM VOHRA
Entity Title:
Address: 5955 W ATHENS AVE
City: FRESNO
State: CA
Country: United States
Zip Code: 93722
Phone: (559) 213-0459

Affil Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title:
Address: 2959 N M ST
City: TULARE
State: CA
Country:
Zip Code: 93274
Phone:

Affil Type Desc: Identification Signer
Entity Name: vikram vohra
Entity Title: owner
Address:
City:
State:
Country:
Zip Code:
Phone:

Affil Type Desc: Secondary Emergency Contact
Entity Name: VINAY VOHRA
Entity Title: OWNER
Address:
City:
State:
Country:
Zip Code:
Phone: (559) 213-0462

Affil Type Desc: Environmental Contact
Entity Name: INDERJIT SINGH
Entity Title:
Address: 2959 N "M" ST

City: TULARE
State: CA
Country:
Zip Code: 93274
Phone: (559) 936-7081

Affil Type Desc: CUPA District
Entity Name: Tulare County Environmental Health
Entity Title:
Address: 5957 South Mooney Boulevard
City: Visalia
State: CA
Country:
Zip Code: 93277
Phone: (559) 624-7400

Evaluations

Eval Date: 9/14/2015
Violations Found: Yes
Eval General Type: Compliance Evaluation Inspection
Eval Type: Routine done by local agency
Eval Division: Tulare County Environmental Health
Eval Program: APSA
Eval Source: CERS
Eval Notes:

Eval Date: 9/14/2015
Violations Found: Yes
Eval General Type: Compliance Evaluation Inspection
Eval Type: Routine done by local agency
Eval Division: Tulare County Environmental Health
Eval Program: HMRRP
Eval Source: CERS
Eval Notes:

Violations

Violation Date: 9/14/2015 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Notes:

Violation Description:

Failure to prepare and implement a Spill Prevention Control and Countermeasure (SPCC) Plan .

Violations

Violation Date: 9/14/2015 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Notes:

Violation Description:

Failure to discuss conformance with SPCC requirements within the SPCC plan.

Violations

Violation Date: 9/14/2015 ***Violation Program:***

Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Notes:

Violation Description:

Failure to establish and electronically submit an adequate emergency response plan and procedures for a release or threatened release of a hazardous material.

Violations

Violation Date: 9/14/2015 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: HSC 6.95 25508(d) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(d)
Violation Notes:

Violation Description:

Failure to complete and/or electronically submit a business plan when storing/handling a hazardous material at or above reportable quantities.

Violations

Violation Date: 9/14/2015 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: HSC 6.95 25507 - California Health and Safety Code, Chapter 6.95, Section(s) 25507
Violation Notes:

Violation Description:

Failure to adequately establish and implement a business plan when storing/handling a hazardous material at or above reportable quantities.

Violations

Violation Date: 9/14/2015 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: HSC 6.95 25508.2 - California Health and Safety Code, Chapter 6.95, Section(s) 25508.2
Violation Notes:

Violation Description:

Failure to annually review and electronically certify that the business plan is complete, accurate, and up-to-date.

Violations

Violation Date: 9/14/2015 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: 19 CCR 6.95 25508(a)(1) - California Code of Regulations, Title 19, Chapter 6.95, Section(s) 25508(a)(1)
Violation Notes:

Violation Description:

Failure to complete and electronically submit the Business Activities Page and/or Business Owner Operator Identification Page.

Violations

Violation Date: 9/14/2015 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Notes:

Violation Description:

Failure to complete and electronically submit a site map with all required content.

Violations

Violation Date: 9/14/2015 ***Violation Program:***
Violation Division: Tulare County Environmental Health ***Violation Source:***
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Notes:

Violation Description:

Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.

Enforcements

Enf Action Date: 09-14-2015 ***Enf Action Program:*** APSA
Enf Action Type: Notice of Violation (Unified Program) ***Enf Action Source:*** CERS
Enf Action Division: Tulare County Environmental Health
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:

Enf Action Date: 09-14-2015 ***Enf Action Program:*** HMRRP
Enf Action Type: Notice of Violation (Unified Program) ***Enf Action Source:*** CERS
Enf Action Division: Tulare County Environmental Health
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:

7	3 of 4	SW	0.22 / 1,149.74	293.39 / -3	FAST N ESY #13 2959 N M ST TULARE CA 93274	TULARE CUPA

Facility ID: FA1346961
CERS ID: 10134724

--Details--
PE: 2223
Tb Core General Prog Record: PR1349018
Description: HM - SMALL FACILITY - < 5 CHEMICALS
Current Status: 1
Status Description: Active, billable

PE: 2314
Tb Core General Prog Record: PR1354617
Description: TANK FA >10,001 AND <100,000 GAL
Current Status: 1
Status Description: Active, billable

7	4 of 4	SW	0.22 / 1,149.74	293.39 / -3	STANLEY'S FOOD MART #1 2959 NORTH M STREET TULARE CA 93274	EMISSIONS

2007 Criteria Data

Facility ID: 5418 ***CERR Code:***

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Facility SIC Code:	5541	**TOGT:**	.732642246497955373212203168652672688 2209
CO:	54	**ROGT:**	.729015041015625
Air Basin:	SJV	**COT:**	
District:	SJU	**NOXT:**	
COID:	TUL	**SOXT:**	
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	
CHAPIS:		**PM10T:**	

2007 Toxic Data

Facility ID:	5418	**COID:**	TUL
Facility SIC Code:	5541	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2008 Criteria Data

Facility ID:	5418	**CERR Code:**	
Facility SIC Code:	5541	**TOGT:**	.732642246497955373212203168652672688 2209
CO:	54	**ROGT:**	.729015041015625
Air Basin:	SJV	**COT:**	
District:	SJU	**NOXT:**	
COID:	TUL	**SOXT:**	
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	
CHAPIS:		**PM10T:**	

2008 Toxic Data

Facility ID:	5418	**COID:**	TUL
Facility SIC Code:	5541	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2009 Criteria Data

Facility ID:	5418	**CERR Code:**	
Facility SIC Code:	5541	**TOGT:**	.732642246497955373212203168652672688 2209
CO:	54	**ROGT:**	.729015041015625
Air Basin:	SJV	**COT:**	
District:	SJU	**NOXT:**	
COID:	TUL	**SOXT:**	
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	
CHAPIS:		**PM10T:**	

2009 Toxic Data

Facility ID:	5418	**COID:**	TUL
Facility SIC Code:	5541	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	

District: SJU
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:

2010 Toxic Data

Facility ID: 5418
Facility SIC Code: 5541
CO: 54
Air Basin: SJV
District: SJU
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:
COID: TUL
DISN: SAN JOAQUIN VALLEY APCD
CHAPIS:
CERR Code:

2011 Criteria Data

Facility ID: 5418
Facility SIC Code: 5541
CO: 54
Air Basin: SJV
District: SJU
COID: TUL
DISN: SAN JOAQUIN VALLEY APCD
CHAPIS:
CERR Code:
TOGT: .732642246497955373212203168652672688 2209
ROGT: .729015041015625
COT:
NOXT:
SOXT:
PMT:
PM10T:

2011 Toxic Data

Facility ID: 5418
Facility SIC Code: 5541
CO: 54
Air Basin: SJV
District: SJU
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:
COID: TUL
DISN: SAN JOAQUIN VALLEY APCD
CHAPIS:
CERR Code:

2012 Criteria Data

Facility ID: 5418
Facility SIC Code: 5541
CO: 54
Air Basin: SJV
District: SJU
COID: TUL
DISN: SAN JOAQUIN VALLEY APCD
CHAPIS:
CERR Code:
TOGT: 0
ROGT: 0
COT:
NOXT:
SOXT:
PMT:
PM10T:

2012 Toxic Data

Facility ID: 5418
Facility SIC Code: 5541
CO: 54
Air Basin: SJV
District: SJU
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
COID: TUL
DISN: SAN JOAQUIN VALLEY APCD
CHAPIS:
CERR Code:

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Non-Cancer Acute Haz Ind:

2013 Toxic Data

Facility ID:	5418	**COID:**	TUL
Facility SIC Code:	5541	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2014 Toxic Data

Facility ID:	5418	**COID:**	TUL
Facility SIC Code:	5541	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2015 Toxic Data

Facility ID:	5418	**COID:**	TUL
Facility SIC Code:	5541	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

8	1 of 1	SW	0.23 / 1,217.06	293.84 / -3	**CITY OF TULARE** **2900 NORTH M ST** **TULARE CA 93274**	EMISSIONS

2006 Criteria Data

Facility ID:	4261	**CERR Code:**	
Facility SIC Code:	9224	**TOGT:**	.001199892456331062507469821919445440 4207
CO:	54	**ROGT:**	.0010039500182122
Air Basin:	SJV	**COT:**	.00286925005204976
District:	SJU	**NOXT:**	.0234289504250139
COID:	TUL	**SOXT:**	.0000243800004422665
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	.000685758209161338114754098360655737704918
CHAPIS:		**PM10T:**	.000669300012141466

2006 Toxic Data

Facility ID:	4261	**COID:**	TUL
Facility SIC Code:	9224	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	

District: SJU
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:

2007 Criteria Data

Facility ID:	4261	**CERR Code:**	
Facility SIC Code:	9224	**TOGT:**	.00028202689619111748535914903788693675427
CO:	54	**ROGT:**	.000235971904043108
Air Basin:	SJV	**COT:**	.000674398511555046
District:	SJU	**NOXT:**	.00550682199435309
COID:	TUL	**SOXT:**	.00000573036009818315
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	.000161182994564964139344262295081967213115
CHAPIS:		**PM10T:**	.000157314602695405

2007 Toxic Data

Facility ID:	4261	**COID:**	TUL
Facility SIC Code:	9224	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2008 Criteria Data

Facility ID:	4261	**CERR Code:**	
Facility SIC Code:	9224	**TOGT:**	.00028202689619111748535914903788693675427
CO:	54	**ROGT:**	.000235971904043108
Air Basin:	SJV	**COT:**	.000674398511555046
District:	SJU	**NOXT:**	.00550682199435309
COID:	TUL	**SOXT:**	.00000573036009818315
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	.000161182994564964139344262295081967213115
CHAPIS:		**PM10T:**	.000157314602695405

2008 Toxic Data

Facility ID:	4261	**COID:**	TUL
Facility SIC Code:	9224	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2009 Criteria Data

Facility ID:	4261	**CERR Code:**	
Facility SIC Code:	9224	**TOGT:**	.00042257081515560774471136608103262818214
CO:	54	**ROGT:**	.000353565001040697
Air Basin:	SJV	**COT:**	.00101047500297427

District:	SJU	**NOXT:**	.00825106502428651
COID:	TUL	**SOXT:**	.00000858600002527237
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	.00024150614825184221311475409836065573705
CHAPIS:		**PM10T:**	.000235710000693798

2009 Toxic Data

Facility ID:	4261	**COID:**	TUL
Facility SIC Code:	9224	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2010 Toxic Data

Facility ID:	4261	**COID:**	TUL
Facility SIC Code:	9224	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2011 Criteria Data

Facility ID:	4261	**CERR Code:**	
Facility SIC Code:	9224	**TOGT:**	.000422570815155607744711366081032628182144
CO:	54	**ROGT:**	.000353565001040697
Air Basin:	SJV	**COT:**	.00101047500297427
District:	SJU	**NOXT:**	.00825106502428651
COID:	TUL	**SOXT:**	.00000858600002527237
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	.00024150614825184221311475409836065573705
CHAPIS:		**PM10T:**	.000235710000693798

2011 Toxic Data

Facility ID:	4261	**COID:**	TUL
Facility SIC Code:	9224	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2012 Criteria Data

Facility ID:	4261	**CERR Code:**	
Facility SIC Code:	9224	**TOGT:**	.000422570815155607744711366081032628182144
CO:	54	**ROGT:**	.000353565001040697
Air Basin:	SJV	**COT:**	.00101047500297427
District:	SJU	**NOXT:**	.00825106502428651

COID:	TUL	***SOXT:***	.00000858600002527237
DISN:	SAN JOAQUIN VALLEY APCD	***PMT:***	.0002415061482518422131147540983606557 37705
CHAPIS:		***PM10T:***	.000235710000693798

2012 Toxic Data

Facility ID:	4261	***COID:***	TUL
Facility SIC Code:	9224	***DISN:***	SAN JOAQUIN VALLEY APCD
CO:	54	***CHAPIS:***	
Air Basin:	SJV	***CERR Code:***	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2013 Criteria Data

Facility ID:	4261	***CERR Code:***	
Facility SIC Code:	9224	***TOGT:***	.000402959590210586226522481502561183836084
CO:	54	***ROGT:***	.000354
Air Basin:	SJV	***COT:***	.00101
District:	SJU	***NOXT:***	.00825
COID:	TUL	***SOXT:***	.00000859
DISN:	SAN JOAQUIN VALLEY APCD	***PMT:***	.000241803278688524590163934426229508196721
CHAPIS:		***PM10T:***	.000236

2013 Toxic Data

Facility ID:	4261	***COID:***	TUL
Facility SIC Code:	9224	***DISN:***	SAN JOAQUIN VALLEY APCD
CO:	54	***CHAPIS:***	
Air Basin:	SJV	***CERR Code:***	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2014 Criteria Data

Facility ID:	4261	***CERR Code:***	
Facility SIC Code:	9224	***TOGT:***	.000537457709870151394422310756972111553785
CO:	54	***ROGT:***	.000472156598120928
Air Basin:	SJV	***COT:***	.001349405168741941
District:	SJU	***NOXT:***	.01101860982075333
COID:	TUL	***SOXT:***	.00001146588760614395
DISN:	SAN JOAQUIN VALLEY APCD	***PMT:***	.000322511337514295081967213114754098360656
CHAPIS:		***PM10T:***	.000314771065413952

2014 Toxic Data

Facility ID:	4261	***COID:***	TUL
Facility SIC Code:	9224	***DISN:***	SAN JOAQUIN VALLEY APCD
CO:	54	***CHAPIS:***	
Air Basin:	SJV	***CERR Code:***	
District:	SJU		
TS:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:

2015 Criteria Data

Facility ID:	4261	**CERR Code:**	
Facility SIC Code:	9224	**TOGT:**	.000099373932840068298235628912919749573136 03
CO:	54	**ROGT:**	.0000873
Air Basin:	SJV	**COT:**	.000249
District:	SJU	**NOXT:**	.00204
COID:	TUL	**SOXT:**	.00000212
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	.000059631147540983606557377049180327868852 46
CHAPIS:		**PM10T:**	.0000582

2015 Toxic Data

Facility ID:	4261	**COID:**	TUL
Facility SIC Code:	9224	**DISN:**	SAN JOAQUIN VALLEY APCD
CO:	54	**CHAPIS:**	
Air Basin:	SJV	**CERR Code:**	
District:	SJU		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2016 Criteria Data

Facility ID:	4261	**CERR CODE:**	
Facility SIC Code:	9224	**TOGT:**	.000099373932840068298235628912919749573136 03
CO:	54	**ROGT:**	.0000873
Air Basin:	SJV	**COT:**	.000249
District:	SJU	**NOXT:**	.00204
COID:	TUL	**SOXT:**	.00000212
DISN:	SAN JOAQUIN VALLEY APCD	**PMT:**	.000059631147540983606557377049180327868852 46
CHAPIS:		**PM10T:**	.0000582

2016 Toxic Data

Facility ID:	4261	**TS:**	
Facility SIC Code:	9224	**HRA:**	
CERR CODE:		**CH Index:**	
COID:	TUL	**AH Index:**	
CO:	54	**Air Basin:**	SJV
DISN:	SAN JOAQUIN VALLEY APCD	**District:**	SJU
CHAPIS:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
9	1 of 1	SSW	0.24 / 1,251.58	294.17 / -3	AM-PM MINI MART 3042 M STREET TULARE CA 93274	DELISTED TNK

Facility ID:	FA1347718	**Latitude:**	36.23836
County:	Tulare	**Longitude:**	-119.34794
Permitting Agency:	TULARE COUNTY		
Original Source:	UST		
Record Date:	30-JAN-2017		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
10	1 of 1	WSW	0.74 / 3,928.48	292.37 / -4	MOORE AVIATION 596 CARTMILL AVENUE TULARE CA 93274	ENVIROSTOR

Estor/EPA ID:	60000853	**County:**	TULARE
Site Code:	101935	**Latitude:**	36.239756
Special Program:	VOLUNTARY CLEANUP PROGRAM	**Longitude:**	-119.340481
Census Tract:	6107002400	**Office:**	CLEANUP SAN JOAQUIN
Permit Renew Lead:		**Nat Priority List:**	NO
Project Manager:	JEFF GYMER	**Funding:**	CALMORTGAGE
Pub Particip Spec:		**Assembly District:**	26
Supervisor:	KEVIN SHADDY	**Senate District:**	16

Site Type: VOLUNTARY CLEANUP
Cleanup Status: NO FURTHER ACTION AS OF 7/19/2010
Clean Up Oversight Agency: DTSC - SITE CLEANUP PROGRAM - LEAD AGENCY;TULARE COUNTY
Cause of Contamination: PESTICIDE/INSECTIDE/RODENTICIDE STORAGE
Potential Media Affected: CONTAMINATED SURFACE / STRUCTURE, SOIL
School District:
APN: 166-010-05
Acres: 0.73 ACRES
Potential Contaminants:

ARSENIC
ORGANOCHLORINE PESTICIDES (8081 OCPS)
PETROLEUM

Site History:

The Moore Aviation site was used for 30 years, starting in 1952, to store agricultural products in support of a crop dusting operation which utilized an airstrip to the north of the site across Cartmill Ave. The site has been vacant since 1982. Contaminants stored at the site that have been detected in soil samples include DDT, DDE, chlordane, Dieldrin, and Endrin. Several metals have also been detected in site soil samples. Soil samples to date have been collected near the storage areas. There is currently one building located onsite. It is known to have been used for the storage of pesticides and other agriculture related products. A Phase II Site Assessment was completed in October of 2005. This previous work focused on storage areas at the site. Current plans call for DTSC to complete a Targeted Site Investigation (TSI), under a TSI Grant, that will more accurately define the extent of contamination across the site and identify and screen remedial alternatives. This work will be completed by LFR Inc., under contract with DTSC.

Program Type: VOLUNTARY CLEANUP
Status: NO FURTHER ACTION
Cal Enviro Score: 71-75%
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=60000853

Completed Activities

Date Completed: 5/12/2009
Area Name:
Sub Area:
Title: Targeted Site Investigation Report
Area Link:
Sub Area Link:
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000853&doc_id=6023313
Document Type: Site Characterization Report
Comments: DTSC approved the TSI Report effective 5/1/2009.

Date Completed: 4/28/2009
Area Name:
Sub Area:
Title: US EPA Property Profile Form
Area Link:
Sub Area Link:
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000853&doc_id=6023314
Document Type: Other Report
Comments: Form completed

Date Completed: 8/2/2010
Area Name:
Sub Area:
Title: Removal Action Completion Report
Area Link:

Sub Area Link:	
Title Link:	http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000853&doc_id=60251422
Document Type:	Site Characterization Report
Comments:	
Date Completed:	11/11/2008
Area Name:	
Sub Area:	
Title:	Targeted Site Investigation Work Plan
Area Link:	
Sub Area Link:	
Title Link:	http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000853&doc_id=6021455
Document Type:	Site Characterization Workplan
Comments:	TSI Work Plan Approved
Date Completed:	6/29/2010
Area Name:	
Sub Area:	
Title:	Voluntary Cleanup Agreement
Area Link:	
Sub Area Link:	
Title Link:	http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000853&enforcement_id=60199003
Document Type:	Voluntary Cleanup Agreement
Comments:	VCA Signed
Date Completed:	7/19/2010
Area Name:	
Sub Area:	
Title:	No Further Action
Area Link:	
Sub Area Link:	
Title Link:	http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000853&enforcement_id=60195741
Document Type:	No Further Action Letter
Comments:	finished
Date Completed:	12/4/2008
Area Name:	
Sub Area:	
Title:	Field Sampling
Area Link:	
Sub Area Link:	
Title Link:	
Document Type:	Fieldwork
Comments:	LFR staff conducted field sampling for pesticides, herbicides, and metals at the Moore Aviation site December 2008. Soil Probe, Inc. installed soil gas monitoring probes throughout the site. Two drums containing oils waste were also overpacked and labelled. Analytical results are pending.

Unplottable Summary

Total: 8 Unplottable sites

DB	Company Name/Site Name	Address	City	Zip	ERIS ID
CHMIRS	Cura Emergeny Service	SB 99 JNO 88	Tulare CA		821848189
ENVIROSTOR	PURE GRO (3)	AVE 256 & SANTA FE TRACKS ***Estor/EPA ID	Cleanup Status:*** 54280060 | REFER: OTHER AGENCY AS OF 6/13/1995	TULARE CA	93274	820361099
ERNS		CART MILL AVE DOT# 756975E	TULARE CA		807205816
FINDS/FRS	PETER DRAGT FEED LOT	ROAD 100	VISALIA CA	93274	840078479
HAZNET	DONCO CARRIERS	SOUTH OF RAMP ON HWY 99 ON	TULARE CA	932740000	826162816
HAZNET	SLOVER BROS TRUCKING INC AVE	AVENUE 248	TULARE CA	932740000	826118440
HIST CHMIRS	MB TRUCHLINE INC.	SR 99 N/B	UNINC CA		826019967
TULARE CUPA	SFPP LP	HWY 99	TULARE COUNTY CA	93274	827590110

Unplottable Report

Site: ***Cura Emergeny Service***
SB 99 JNO 88 Tulare CA

CHMIRS

ID:	06-6203	***Notified Date:***	10/19/2006 11:29
Control No:	'06-6203	***Notified Date Time:***	
Year:	2006	***County:***	Tulare County

California Hazardous Material Incident Report System

Contained:	Yes	***3 Vessel >= 300 Tons:***	
1 Substance:	Diesel	***Incident Date:***	10/19/2006
1 Measure:	Gal(s)	***Incident Time:***	900
1 Other:		***Spill Site:***	Road
1 Quantity:	75	***Injuries?:***	
1 Type:	PETROLEUM	***No of Injuries:***	0
1 Pipeline:		***Fatals?:***	
1 Vessel >= 300 Tons:		***No of Fatals:***	0
2 Substance:		***Evacs?:***	
2 Quantity:		***No of Evacs:***	0
2 Measure:		***Cleanup:***	Parc Environmental
2 Type:		***Site:***	
2 Other:		***Cause:***	
2 Pipeline:		***Cause Other:***	
2 Vessel >= 300 Tons:		***Dog No:***	
3 Substance:		***Water:***	No
3 Quantity:		***Water Way:***	
3 Measure:		***City:***	Tulare
3 Type:		***County:***	Tulare County
3 Other:		***Zip:***	
3 Pipeline:			

Admin Agency:	Tulare County Health Department
Notification Area:	AA/CUPA,DFG-OSPR,DTSC,RWQCB,US EPA,USFWS
Location:	SB 99 JNO 88
Description:	Design transportation tractor trailer struck debris puncturing the side of the saddle fuel tank.

Main Page Information

On Scene:	
Other on Scene:	
Other Notified:	
Admin Agency:	Tulare County Health Department
Admin Agency 2:	
Additional County:	
Document Title:	SPILL Report
Creation Date:	10/19/2006 11:29 AM
Received By:	
Person Notifying Cal OES:	
Phone No:	
Ext:	
Pag Cell:	
Water:	PETROLEUM
Cause Description for Other:	
Amount 1:	75
Amount 2:	
Amount 3:	
Doc URL:	https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/af8a5cb22472ee778825720c00659f68?OpenDocument
Spill Site:	
Type:	

Site: ***PURE GRO (3)***
AVE 256 & SANTA FE TRACKS TULARE CA 93274

ENVIROSTOR

Estor/EPA ID:	54280060	***County:***	TULARE
Site Code:		***Latitude:***	0
Special Program:		***Longitude:***	0
Census Tract:		***Office:***	CLEANUP SACRAMENTO
Permit Renew Lead:		***Nat Priority List:***	NO
Project Manager:		***Funding:***	
Pub Particip Spec:		***Assembly District:***	
Supervisor:		***Senate District:***	

Site Type: * HISTORICAL
Cleanup Status: REFER: OTHER AGENCY AS OF 6/13/1995
Clean Up Oversight Agency: NONE SPECIFIED
Cause of Contamination: NONE SPECIFIED
Potential Media Affected: NONE SPECIFIED
School District:
APN: NONE SPECIFIED
Acres: NONE SPECIFIED
Potential Contaminants:

NONE SPECIFIED

Site History:

Program Type: HISTORICAL
Status: REFER: OTHER AGENCY
Cal Enviro Score:
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=54280060

Completed Activities

Date Completed: 4/8/1983
Area Name:
Sub Area:
Title: Discovery
Area Link:
Sub Area Link:
Title Link:
Document Type: * Discovery
Comments: FACILITY IDENTIFIED FROM PHONE BOOK. QUESTIONNAIRE SENT.

Date Completed: 6/13/1995
Area Name:
Sub Area:
Title: Site Screening
Area Link:
Sub Area Link:
Title Link:
Document Type: Site Screening
Comments: Site Screening completed. County Health overseeing diesel fuel contamination cleanup. No other known problems. Refer to County.

Site:
CART MILL AVE DOT# 756975E TULARE CA

ERNS

NRC Report No:	370424	***Latitude Degrees:***	
Type of Incident:	RAILROAD NON-RELEASE	***Latitude Minutes:***	
Incident Cause:	UNKNOWN	***Latitude Seconds:***	
Incident Date:	12/13/1996 11:50:00 PM	***Longitude Degrees:***	
Incident Location:		***Longitude Minutes:***	
Incident Dtg:	OCCURRED	***Longitude Seconds:***	
Distance from City:		***Lat Quad:***	
Distance Units:		***Long Quad:***	
Potential Flag:		***Location Section:***	
Year:	Year 1996 Reports	***Location Township:***	
Direction from City:		***Location Range:***	
Location County:	TULARE		

Description of Incident: TRAIN TRAVELING WEST AT UNKNOWN SPEED STRUCK VEHICLE AT CROSSING

Calls Information

Date Time Received:	12/14/1996 4:58:59 AM	***Responsible City:***	
Date Time Complete:	12/14/1996 5:03:15 AM	***Responsible State:***	XX
Call Type:	INC	***Responsible Zip:***	
Resp Company:		***Source:***	UNAVAILABLE
Resp Org Type:	UNKNOWN		

Incident Information

Tank ID:		***Building ID:***	
Tank Regulated:	U	***Location Area ID:***	
Tank Regulated By:		***Location Block ID:***	
Capacity of Tank:		***OCSG No:***	
Capacity Tank Units:		***OCSP No:***	
Description of Tank:		***State Lease No:***	
Actual Amount:		***Pier Dock No:***	
Actual Amount Units:		***Berth Slip No:***	
Tank Above Ground:	ABOVE	***Brake Failure:***	N
NPDES:		***Airbag Deployed:***	
NPDES Compliance:	U	***Transport Contain:***	U
Init Contin Rel No:		***Location Subdiv:***	
Contin Rel Permit:		***Platform Rig Name:***	
Contin Release Type:		***Platform Letter:***	
Aircraft ID:		***Allision:***	N
Aircraft Runway No:		***Type of Structure:***	
Aircraft Spot No:		***Structure Name:***	
Aircraft Type:	UNKNOWN	***Structure Oper:***	Y
Aircraft Model:		***Transit Bus Flag:***	
Aircraft Fuel Cap:		***Date Time Norm Serv:***	
Aircraft Fuel Cap U:		***Serv Disrupt Time:***	
Aircraft Fuel on Brd:		***Serv Disrupt Units:***	
Aircraft Fuel OB U:		***CR Begin Date:***	
Aircraft Hanger:		***CR End Date:***	
Road Mile Marker:		***CR Change Date:***	
Power Gen Facility:	U	***FBI Contact:***	
Generating Capacity:		***FBI Contact Dt Tm:***	
Type of Fixed Obj:	UNKNOWN	***Passenger Handling:***	
Type of Fuel:		***Passenger Route:***	XXX
DOT Crossing No:		***Passenger Delay:***	XXX
DOT Regulated:	U	***Sub Part C Test Req:***	XXX
Pipeline Type:	UNKNOWN	***Conductor Test:***	
Pipeline Abv Ground:	ABOVE	***Engineer Test:***	
Pipeline Covered:	U	***Trainman Test:***	
Exposed Underwater:	U	***Yard Foreman Test:***	
Railroad Hotline:	No	***RCL Operator Test:***	
Railroad Milepost:	247.9	***Brakeman Test:***	
Grade Crossing:	Y	***Train Dispat Test:***	
Crossing Device Ty:		***Signalman Test:***	
Ty Vehicle Involved:	UNKNOWN	***Oth Employee Test:***	
Device Operational:	Y	***Unknown Test:***	

Incident Details Information

Release Secured:	U	***State Agen Report No:***	
Release Rate:		***State Agen on Scene:***	
Release Rate Unit:		***State Agen Notified:***	
Release Rate Rate:		***Fed Agency Notified:***	
Est Duration of Rel:		***Oth Agency Notified:***	
Desc Remedial Act:	NONE	***Body of Water:***	
Fire Involved:	N	***Tributary of:***	
Fire Extinguished:	U	***Near River Mile Make:***	
Any Evacuations:	N	***Near River Mile Mark:***	
Number Evacuated:		***Offshore:***	N
Who Evacuated:		***Weather Conditions:***	
Radius Of Evacu:		***Air Temperature:***	

Any Injuries:	U	***Wind Direction:***	
No. Injured:		***Wind Speed:***	
No. Hospitalized:		***Wind Speed Unit:***	
No. Fatalities:	1	***Water Supp Contam:***	U
Any Fatalities:	Y	***Water Temperature:***	
Any Damages:	N	***Wave Condition:***	
Damage Amount:		***Current Speed:***	
Air Corridor Closed:	N	***Current Direction:***	
Air Corridor Desc:		***Current Speed Unit:***	
Air Closure Time:		***EMPL Fatality:***	
Waterway Closed:	N	***Pass Fatality:***	
Waterway Desc:		***Community Impact:***	N
Waterway Close Time:		***Passengers Transfer:***	UNK
Road Closed:	N	***Passenger Injuries:***	
Road Desc:		***Employee Injuries:***	
Road Closure Time:		***Occupant Fatality:***	
Road Closure Units:		***Sheen Size:***	
Closure Direction:		***Sheen Size Units:***	
Major Artery:	No	***Sheen Size Length:***	
Track Closed:	N	***Sheen Size Length U:***	
Track Desc:		***Sheen Size Width:***	
Track Closure Time:		***Sheen Size Width U:***	
Track Closure Units:		***Sheen Color:***	
Track Close Dir:		***Dir of Sheen Travel:***	
Media Interest:		***Sheen Odor Desc:***	
Medium Desc:	RAIL REPORT (N/A)	***Duration Unit:***	
Addl Medium Info:		***Additional Info:***	PERSON IN VEHICLE WAS KILLED

Site: ***PETER DRAGT FEED LOT***
ROAD 100 VISALIA CA 93274

FINDS/FRS

Registry ID:	110066427584
FIPS Code:	
Program Acronyms:	CA-ENVIROVIEW
HUC Code:	
Site Type Name:	STATIONARY
Location Description:	
Supplemental Location:	
Create Date:	14-OCT-2015 11:27:59
Update Date:	
Interest Types:	STATE MASTER
SIC Codes:	0241
SIC Code Descriptions:	DAIRY FARMS
NAICS Codes:	
NAICS Code Descriptions:	
Conveyor:	
Federal Facility Code:	
Federal Agency Name:	
Tribal Land Code:	
Tribal Land Name:	
Congressional Dist No.:	
Census Block Code:	
EPA Region Code:	09
County Name:	TULARE COUNTY
US/Mexico Border Ind:	
Latitude:	
Longitude:	
Reference Point:	
Coord Collection Method:	
Accuracy Value:	
Datum:	NAD83
Source:	
Facility Detail Rprt URL:	http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110066427584

Site: ***DONCO CARRIERS***
SOUTH OF RAMP ON HWY 99 ON TULARE CA 932740000

HAZNET

SIC Code:		***Mailing City:***	OKLAHOMA

NAICS Code:		***Mailing State:***	OK
EPA ID:	CAC001030144	***Mailing Zip:***	731470000
Create Date:	7/6/1995	***Region Code:***	1
Fac Act Ind:	No	***Owner Name:***	DONCO CARRIERS
Inact Date:	10/25/2000	***Owner Addr 1:***	PO BOX 75367
County Code:	54	***Owner Addr 2:***	
County Name:	Tulare	***Owner City:***	OKLAHOMA
Mail Name:		***Owner State:***	OK
Mailing Addr 1:	PO BOX 75367	***Owner Zip:***	731470000
Mailing Addr 2:		***Owner Phone:***	8006544705
Owner Fax:			

Contact Information

--	--
Contact Name:	CANDY JACOBSEN/CONTRACT COMPL
Street Address 1:	527 WEST BROWNING AVE
Street Address 2:	
City:	FRESNO
State:	CA
Zip:	937040000
Phone:	2094390604
--	--
--	--

Tanner Information

--	--
Generator EPA ID:	CAC001030144
Generator County Code:	54
Generator County:	Tulare
TSD EPA ID:	CAD980675276
TSD County Code:	15
TSD County:	Kern
State Waste Code:	352
State Waste Code Desc.:	Other organic solids
Method Code:	D80
Method Description:	Disposal, landfill
Tons:	8.428
Year:	1995
--	--

Site: ***SLOVER BROS TRUCKING INC AVE***
AVENUE 248 TULARE CA 932740000

HAZNET

SIC Code:		***Mailing City:***	TULARE
NAICS Code:		***Mailing State:***	CA
EPA ID:	CAL000055480	***Mailing Zip:***	932740000
Create Date:	12/23/1993	***Region Code:***	1
Fac Act Ind:	No	***Owner Name:***	--
Inact Date:	6/30/1994	***Owner Addr 1:***	--
County Code:	54	***Owner Addr 2:***	
County Name:	Tulare	***Owner City:***	--
Mail Name:		***Owner State:***	99
Mailing Addr 1:	AVENUE 248	***Owner Zip:***	--
Mailing Addr 2:		***Owner Phone:***	0000000000
Owner Fax:			

Contact Information

--	--
Contact Name:	INACTIVE PER FEE FORM 4-94
Street Address 1:	--
Street Address 2:	
City:	--
State:	99
Zip:	--
Phone:	--
--	--

Site: ***MB TRUCHLINE INC.***
SR 99 N/B UNINC CA

HIST CHMIRS

OES Control NO:	9100007	***Incident Date:***	1/30/1991
Release Factors:	Operational Deficiency	***Date Reported:***	1/31/1991
Release Text:		***Fatalities:***	0
Equipm Involved:	HazMat Transfer Equip	***Other Injury:***	0
Action Taken Text:		***Other Decon:***	0
Chemicals:	EPOXY	***Other Fatal:***	0
Case Number:		***Vehicle:***	FRIE 3AXTRUK,2AKPETRBLT SEH
HazMat Other:		***State:***	OR
HM Injury:	0	***CA DOT PUC ICC:***	YB79822/HP95898
Decon:	0	***Company Name:***	MB TRUCHLINE INC.
Agency Name:	CHP	***County:***	TULARE
HazMat Pers:	Shipping Papers, Placards/Signs,On-site Fire Services,Dot Manual		
Action Taken:	Investigate,Remove Hazard (Neutralize),Traffic Control		
More than three involved?:	2		

Site: ***SFPP LP***
HWY 99 TULARE COUNTY CA 93274

TULARE CUPA

Facility ID:	FA0000974
CERS ID:	

--Details--

PE:	2223
Tb Core General Prog Record:	PR0000528
Description:	HM - SMALL FACILITY - < 5 CHEMICALS
Current Status:	2
Status Description:	Inactive, non-billable

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ERIS updates databases as set out in ASTM Standard E1527-13, Section 8.1.8 Sources of Standard Source Information:

"Government information from nongovernmental sources may be considered current if the source updates the information at least every 90 days, or, for information that is updated less frequently than quarterly by the government agency, within 90 days of the date the government agency makes the information available to the public."

Standard Environmental Record Sources

Federal

National Priority List: NPL

National Priorities List (Superfund)-NPL: EPA's (United States Environmental Protection Agency) list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. The NPL, which EPA is required to update at least once a year, is based primarily on the score a site receives from EPA's Hazard Ranking System. A site must be on the NPL to receive money from the Superfund Trust Fund for remedial action.

Government Publication Date: Jul 3, 2018

National Priority List - Proposed: PROPOSED NPL

Includes sites proposed (by the EPA, the state, or concerned citizens) for addition to the NPL due to contamination by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

Government Publication Date: Jul 3, 2018

Deleted NPL: DELETED NPL

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Government Publication Date: Jul 3, 2018

SEMS List 8R Active Site Inventory: SEMS

The Superfund Program has deployed the Superfund Enterprise Management System (SEMS), which integrates multiple legacy systems into a comprehensive tracking and reporting tool. This inventory contains active sites evaluated by the Superfund program that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The Active Site Inventory Report displays site and location information at active SEMS sites. An active site is one at which site assessment, removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted.

Government Publication Date: Jun 8, 2018

Inventory of Open Dumps, June 1985: ODI

The Resource Conservation and Recovery Act (RCRA) provides for publication of an inventory of open dumps. The Act defines "open dumps" as facilities which do not comply with EPA's "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR 257).

Government Publication Date: Jun 1985

SEMS List 8R Archive Sites: SEMS ARCHIVE

The Superfund Enterprise Management System (SEMS) Archived Site Inventory displays site and location information at sites archived from SEMS. An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time.

Government Publication Date: Jun 8, 2018

Comprehensive Environmental Response, Compensation and Liability Information System - CERCLIS: CERCLIS

Superfund is a program administered by the United States Environmental Protection Agency (EPA) to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The EPA administers the Superfund program in cooperation with individual states and tribal governments; this database is made available by the EPA.

Government Publication Date: Oct 25, 2013

EPA Report on the Status of Open Dumps on Indian Lands: IODI

Public Law 103-399, The Indian Lands Open Dump Cleanup Act of 1994, enacted October 22, 1994, identified congressional concerns that solid waste open dump sites located on American Indian or Alaska Native (AI/AN) lands threaten the health and safety of residents of those lands and contiguous areas. The purpose of the Act is to identify the location of open dumps on Indian lands, assess the relative health and environment hazards posed by those sites, and provide financial and technical assistance to Indian tribal governments to close such dumps in compliance with Federal standards and regulations or standards promulgated by Indian Tribal governments or Alaska Native entities.

Government Publication Date: Dec 31, 1998

CERCLIS - No Further Remedial Action Planned: CERCLIS NFRAP

An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. The Archive designation means that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Government Publication Date: Oct 25, 2013

CERCLIS Liens: CERCLIS LIENS

A Federal Superfund lien exists at any property where EPA has incurred Superfund costs to address contamination ("Superfund site") and has provided notice of liability to the property owner. A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 30, 2014

RCRA CORRACTS-Corrective Action: RCRA CORRACTS

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. At these sites, the Corrective Action Program ensures that cleanups occur. EPA and state regulators work with facilities and communities to design remedies based on the contamination, geology, and anticipated use unique to each site.

Government Publication Date: Aug 2, 2018

RCRA non-CORRACTS TSD Facilities: RCRA TSD

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Government Publication Date: Aug 2, 2018

RCRA Generator List: RCRA LQG

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Government Publication Date: Aug 2, 2018

RCRA Small Quantity Generators List: RCRA SQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Small Quantity Generators (SQGs) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Government Publication Date: Aug 2, 2018

RCRA Conditionally Exempt Small Quantity Generators List: RCRA CESQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Conditionally Exempt Small Quantity Generators (CESQG) generate 100 kilograms or less per month of hazardous waste or one kilogram or less per month of acutely hazardous waste.

Government Publication Date: Aug 2, 2018

RCRA Non-Generators: RCRA NON GEN

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Non-Generators do not presently generate hazardous waste.

Government Publication Date: Aug 2, 2018

Federal Engineering Controls-ECs: FED ENG

Engineering controls (ECs) encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 20, 2016

Federal Institutional Controls- ICs: FED INST

Institutional controls are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Although it is EPA's (United States Environmental Protection Agency) expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable, ICs play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site.

Government Publication Date: Jan 20, 2016

Emergency Response Notification System: ERNS 1982 TO 1986

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1982-1986

Emergency Response Notification System: ERNS 1987 TO 1989

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1987-1989

Emergency Response Notification System: ERNS

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Feb 12, 2018

The Assessment, Cleanup and Redevelopment Exchange System (ACRES) Brownfield Database: FED BROWNFIELDS

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Feb 20, 2018

FEMA Underground Storage Tank Listing: FEMA UST

The Federal Emergency Management Agency (FEMA) of the Department of Homeland Security maintains a list of FEMA owned underground storage tanks.

Government Publication Date: Dec 31, 2017

LIEN on Property: SEMS LIEN

The EPA Superfund Enterprise Management System (SEMS) provides LIEN information on properties under the EPA Superfund Program.

Government Publication Date: Jun 8, 2018

Superfund Decision Documents: SUPERFUND ROD

This database contains a listing of decision documents for Superfund sites. Decision documents serve to provide the reasoning for the choice of (or) changes to a Superfund Site cleanup plan. The decision documents include Records of Decision (ROD), ROD Amendments, Explanations of Significant Differences (ESD), along with other associated memos and files. This information is maintained and made available by the US EPA (Environmental Protection Agency).

Government Publication Date: Jun 8, 2018

State

State Response Sites: RESPONSE

A list of identified confirmed release sites where the Department of Toxic Substances Control (DTSC) is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk. This database is state equivalent NPL.

Government Publication Date: Jul 18, 2018

EnviroStor Database: ENVIROSTOR

The EnviroStor Data Management System is made available by the Department of Toxic Substances Control (DTSC). Includes Corrective Action sites, Tiered Permit sites, Historical Sites and Evaluation/Investigation sites. This database is state equivalent CERCLIS.

Government Publication Date: Jul 18, 2018

Delisted State Response Sites: DELISTED ENVS

Sites removed from the list of State Response Sites made available by the EnviroStor Data Management System, Department of Toxic Substances Control (DTSC).

Government Publication Date: Jul 18, 2018

Solid Waste Information System (SWIS): SWF/LF

The Solid Waste Information System (SWIS) database made available by the Department of Resources Recycling and Recovery (CalRecycle) contains information on solid waste facilities, operations, and disposal sites throughout the State of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites.

Government Publication Date: Aug 15, 2018

EnviroStor Hazardous Waste Facilities: HWP

A list of hazardous waste facilities including permitted, post-closure and historical facilities found in the Department of Toxic Substances Control (DTSC) EnviroStor database.

Government Publication Date: Aug 23, 2018

Land Disposal Sites: LDS

Land Disposal Sites in GeoTracker, the State Water Resources Control Board (SWRCB)'s data management system. The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units. Waste management units include waste piles, surface impoundments, and landfills.

Government Publication Date: Jul 19, 2018

Sites Listed in the Solid Waste Assessment Test (SWAT) Program Report: SWAT

In a 1993 Memorandum of Understanding, the State Water Resources Control Board (SWRCB) agreed to submit a comprehensive report on the Solid Waste Assessment Test (SWAT) Program to the California Integrated Waste Management Board (CIWMB). This report summarizes the work completed to date on the SWAT Program, and addresses both the impacts that leakage from solid waste disposal sites (SWDS) may have upon waters of the State and the actions taken to address such leakage.

Government Publication Date: Dec 31, 1995

Leaking Underground Fuel Tank Reports: LUST

List of Leaking Underground Storage Tanks within the Cleanup Sites data in GeoTracker database. GeoTracker is the State Water Resources Control Board's (SWRCB) data management system for managing sites that impact groundwater, especially those that require groundwater cleanup (Underground Storage Tanks, Department of Defense and Site Cleanup Program) as well as permitted facilities such as operating Underground Storage Tanks. The Leak Prevention Program that overlooks LUST sites is the SWRCB in California's Environmental Protection Agency.

Government Publication Date: Jul 6, 2018

Delisted Leaking Storage Tanks: DELISTED LST

List of Leaking Underground Storage Tanks (LUST) cleanup sites removed from GeoTracker, the State Water Resources Control Board (SWRCB)'s database system, as well as sites removed from the SWRCB's list of UST Case closures.

Government Publication Date: Jul 19, 2018

Permitted Underground Storage Tank (UST) in GeoTracker: UST

List of Permitted Underground Storage Tank (UST) sites made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA).

Government Publication Date: Jul 1, 2018

Solid Waste Disposal Sites with Waste Constituents Above Hazardous Waste Levels: SWRCB SWF

This is a list of solid waste disposal sites identified by California State Water Resources Control Board with waste constituents above hazardous waste levels outside the waste management unit.

Government Publication Date: Sep 20, 2006

Proposed Closure of Underground Storage Tank Cases: UST CLOSURE

List of UST cases that are being considered for closure by either the California Environmental Protection Agency, State Water Resources Control Board or the Executive Director that have been posted for a 60-day public comment period.

Government Publication Date: Jul 19, 2018

Historical Hazardous Substance Storage Information Database: HHSS

The Historical Hazardous Substance Storage database contains information collected in the 1980s from facilities that stored hazardous substances. The information was originally collected on paper forms, was later transferred to microfiche, and recently indexed as a searchable database. When using this database, please be aware that it is based upon self-reported information submitted by facilities which has not been independently verified. It is unlikely that every facility responded to the survey and the database should not be expected to be a complete inventory of all facilities that were operating at that time. This database is maintained by the California State Water Resources Control Board's (SWRCB) Geotracker.

Government Publication Date: Aug 27, 2015

Aboveground Storage Tanks: AST

A statewide list from 2009 of aboveground storage tanks (ASTs) made available by the Cal FIRE Office of the State Fire Marshal (OSFM). This list is no longer maintained or updated by the Cal FIRE OSFM.

Government Publication Date: Aug 31, 2009

Delisted Storage Tanks: DELISTED TNK

This database contains a list of storage tank sites that were removed by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA) and the Cal FIRE Office of State Fire Marshal (OSFM).

Government Publication Date: Jul 01, 2018

California Environmental Reporting System (CERS) Tanks: CERS TANK

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs. The CalEPA oversees the statewide implementation of the Unified Program which applies regulatory standards to protect Californians from hazardous waste and materials.

Government Publication Date: Jul 9, 2018

Site Mitigation and Brownfields Reuse Program Facility Sites with Land Use Restrictions: LUR

The Department of Toxic Substances Control (DTSC) Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents land use restrictions that are active. Some sites have multiple land use restrictions.

Government Publication Date: Jul 18, 2018

Hazardous Waste Management Program Facility Sites with Deed / Land Use Restrictions: HLUR

The Department of Toxic Substances Control (DTSC) Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Government Publication Date: Aug 8, 2018

Deed Restrictions and Land Use Restrictions: DEED

List of Deed Restrictions, Land Use Restrictions and Covenants in GeoTracker made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency. A deed restriction (land use covenant) may be required to facilitate the remediation of past environmental contamination and to protect human health and the environment by reducing the risk of exposure to residual hazardous materials.

Government Publication Date: Jul 27, 2018

Voluntary Cleanup Program: VCP

List of sites in the Voluntary Cleanup Program made available by the Department of Toxic Substances and Control (DTSC). The Voluntary Cleanup Program was designed to respond to lower priority sites. Under the Voluntary Cleanup Program, DTSC enters site-specific agreements with project proponents for DTSC oversight of site assessment, investigation, and/or removal or remediation activities, and the project proponents agree to pay DTSC's reasonable costs for those services.

Government Publication Date: Jul 18, 2018

GeoTracker Cleanup Sites Data: CLEANUP SITES

A list of cleanup sites in the state of California made available by The State Water Resources Control Board (SWRCB) of the California Environmental Protection Agency (EPA). SWRCB tracks leaking underground storage tank cleanups as well as other water board cleanups.

Government Publication Date: Jul 6, 2018

Delisted California Environmental Reporting System (CERS) Tanks: DELISTED CTNK

This database contains a list of Aboveground Petroleum Storage and Underground Storage Tank sites that were removed from in the California Environmental Protection Agency (CalEPA) Regulated Site Portal.

Government Publication Date: Jul 9, 2018

Historical Hazardous Substance Storage Container Information - Facility Summary: HIST TANK

The State Water Resources Control Board maintained the Hazardous Substance Storage Containers listing and inventory in th 1980s. This facility summary lists historic tank sites where the following container types were present: farm motor vehicle fuel tanks; waste tanks; sumps; pits, ponds, lagoons, and others; and all other product tanks. This set, published in May 1988, lists facility and owner information, as well as the number of containers. This data is historic and will not be updated.

Government Publication Date: May 27, 1988

Tribal

Leaking Underground Storage Tanks (LUSTs) on Indian Lands: INDIAN LUST

LUSTs on Tribal/Indian Lands in Region 9, which includes California.

Government Publication Date: Dec 31, 2017

Underground Storage Tanks (USTs) on Indian Lands: INDIAN UST

USTs on Tribal/Indian Lands in Region 9, which includes California.

Government Publication Date: Dec 31, 2017

Delisted Tribal Leaking Storage Tanks: DELISTED ILST

Leaking Underground Storage Tank facilities which have been removed from the Regional Tribal LUST lists made available by the EPA.

Government Publication Date: Oct 14, 2017

Delisted Tribal Underground Storage Tanks: DELISTED IUST

Underground Storage Tank facilities which have been removed from the Regional Tribal UST lists made available by the EPA.

Government Publication Date: Oct 14, 2017

County

Delisted County Records: DELISTED COUNTY

Records removed from county or CUPA databases. Records may be removed from the county lists made available by the respective county departments because they are inactive, or because they have been deemed to be below reportable thresholds.

Government Publication Date: Sep 4, 2018

Tulare County CUPA List: TULARE CUPA

The Certified Unified Program Agency (CUPA) unifies and consolidates under one roof the various requirements for businesses handling hazardous materials, generating or treating hazardous wastes, or operating aboveground or underground storage tanks. CUPA thereby enhances consistency, reduces duplication, and simplifies compliance for the regulated public. The Tulare County Environmental Health Division was certified as a CUPA in December, 1996.

Government Publication Date: May 25, 2018

Additional Environmental Record Sources

Federal

Facility Registry Service/Facility Index: FINDS/FRS

The US Environmental Protection Agency (EPA)'s Facility Registry System (FRS) is a centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. FRS creates high-quality, accurate, and authoritative facility identification records through rigorous verification and management procedures that incorporate information from program national systems, state master facility records, data collected from EPA's Central Data Exchange registrations and data management personnel.

Government Publication Date: Apr 17, 2018

Toxics Release Inventory (TRI) Program: TRIS

The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U.S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment. One of TRI's primary purposes is to inform communities about toxic chemical releases to the environment.

Government Publication Date: Dec 31, 2016

Hazardous Materials Information Reporting System: HMIRS

US DOT - Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) Incidents Reports Database taken from Hazmat Intelligence Portal, U.S. Department of Transportation.

Government Publication Date: May 23, 2018

National Clandestine Drug Labs: NCDL

The U.S. Department of Justice ("the Department") provides this data as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy.

Government Publication Date: Jul 18, 2018

Toxic Substances Control Act: TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The CDR enables EPA to collect and publish information on the manufacturing, processing, and use of commercial chemical substances and mixtures (referred to hereafter as chemical substances) on the TSCA Chemical Substance Inventory (TSCA Inventory). This includes current information on chemical substance production volumes, manufacturing sites, and how the chemical substances are used. This information helps the Agency determine whether people or the environment are potentially exposed to reported chemical substances. EPA publishes submitted CDR data that is not Confidential Business Information (CBI).

Government Publication Date: Jun 30, 2017

Hist TSCA: HIST TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The 2006 IUR data summary report includes information about chemicals manufactured or imported in quantities of 25,000 pounds or more at a single site during calendar year 2005. In addition to the basic manufacturing information collected in previous reporting cycles, the 2006 cycle is the first time EPA collected information to characterize exposure during manufacturing, processing and use of organic chemicals. The 2006 cycle also is the first time manufacturers of inorganic chemicals were required to report basic manufacturing information.

Government Publication Date: Dec 31, 2006

FTTS Administrative Case Listing: FTTS ADMIN

An administrative case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

FTTS Inspection Case Listing: FTTS INSP

An inspection case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

Potentially Responsible Parties List: PRP

Early in the cleanup process, the Environmental Protection Agency (EPA) conducts a search to find the potentially responsible parties (PRPs). EPA looks for evidence to determine liability by matching wastes found at the site with parties that may have contributed wastes to the site.

Government Publication Date: Jul 17, 2018

State Coalition for Remediation of Drycleaners Listing: SCRD DRYCLEANER

The State Coalition for Remediation of Drycleaners (SCRD) was established in 1998, with support from the U.S. Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation. Coalition members are states with mandated programs and funding for drycleaner site remediation. Current members are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Government Publication Date: Nov 08, 2017

Integrated Compliance Information System (ICIS): ICIS

The Integrated Compliance Information System (ICIS) is a system that provides information for the Federal Enforcement and Compliance (FE&C) and the National Pollutant Discharge Elimination System (NPDES) programs. The FE&C component supports the Environmental Protection Agency's (EPA) Civil Enforcement and Compliance program activities. These activities include Compliance Assistance, Compliance Monitoring and Enforcement. The NPDES program supports tracking of NPDES permits, limits, discharge monitoring data and other program reports.

Government Publication Date: Nov 18, 2016

Drycleaner Facilities: FED DRYCLEANERS

A list of drycleaner facilities from the Integrated Compliance Information System (ICIS). The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

Government Publication Date: May 29, 2018

Delisted Drycleaner Facilities: DELISTED FED DRY

List of sites removed from the list of Drycleaner Facilities (sites in the EPA's Integrated Compliance Information System (ICIS) with NAIC or SIC codes identifying the business as a drycleaner establishment).

Government Publication Date: May 29, 2018

Formerly Used Defense Sites: FUDS

Formerly Used Defense Sites (FUDS) are properties that were formerly owned by, leased to, or otherwise possessed by and under the jurisdiction of the Secretary of Defense prior to October 1986, where the Department of Defense (DoD) is responsible for an environmental restoration. This list is published by the U.S. Army Corps of Engineers.

Government Publication Date: Nov 22, 2016

Material Licensing Tracking System (MLTS): MLTS

A list of sites that store radioactive material subject to the Nuclear Regulatory Commission (NRC) licensing requirements. This list is maintained by the NRC. As of September 2016, the NRC no longer releases location information for sites. Site locations were last received in July 2016.

Government Publication Date: Jun 30, 2017

Historic Material Licensing Tracking System (MLTS) sites: HIST MLTS

A historic list of sites that have inactive licenses and/or removed from the Material Licensing Tracking System (MLTS). In some cases, a site is removed from the MLTS when the state becomes an "Agreement State". An Agreement State is a State that has signed an agreement with the Nuclear Regulatory Commission (NRC) authorizing the State to regulate certain uses of radioactive materials within the State.

Government Publication Date: Jan 31, 2010

Mines Master Index File: MINES

The Master Index File (MIF) contains mine identification numbers issued by the Department of Labor Mine Safety and Health Administration (MSHA) for mines active or opened since 1971. Note that addresses may or may not correspond with the physical location of the mine itself.

Government Publication Date: Jan 30, 2018

Alternative Fueling Stations: ALT FUELS

List of alternative fueling stations made available by the US Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Biodiesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE). The National Renewable Energy Laboratory (NREL) obtains information about new stations from trade media, Clean Cities coordinators, a Submit New Station form on the Station Locator website, and through collaborating with infrastructure equipment and fuel providers, original equipment manufacturers (OEMs), and industry groups.

Government Publication Date: Jul 24, 2018

Registered Pesticide Establishments: SSTS

List of active EPA-registered foreign and domestic pesticide-producing and device-producing establishments based on data from the Section Seven Tracking System (SSTS). The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 7 requires that facilities producing pesticides, active ingredients, or devices be registered. The list of establishments is made available by the EPA.

Government Publication Date: Mar 1, 2018

Polychlorinated Biphenyl (PCB) Notifiers: PCB

Facilities included in the national list of facilities that have notified the United States Environmental Protection Agency (EPA) of Polychlorinated Biphenyl (PCB) activities. Any company or person storing, transporting or disposing of PCBs or conducting PCB research and development must notify the EPA and receive an identification number.

Government Publication Date: Nov 30, 2017

State

EnviroStor Inspection, Compliance, and Enforcement: INSP COMP ENF

A list of permitted facilities with inspections and enforcements tracked in the Department of Toxic Substance Control (DTSC) EnviroStor.

Government Publication Date: May 28, 2018

Clandestine Drug Lab Sites: CDL

The Department of Toxic Substances Control (DTSC) maintains a listing of drug lab sites. DTSC is responsible for removal and disposal of hazardous substances discovered by law enforcement officials while investigating illegal/clandestine drug laboratories.

Government Publication Date: Dec 31, 2017

School Property Evaluation Program Sites: SCH

A list of sites registered with The Department of Toxic Substances Control (DTSC) School Property Evaluation and Cleanup (SPEC) Division. SPEC is responsible for assessing, investigating and cleaning up proposed school sites. The Division ensures that selected properties are free of contamination or, if the properties were previously contaminated, that they have been cleaned up to a level that protects the students and staff who will occupy the new school.

Government Publication Date: Jul 18, 2018

California Hazardous Material Incident Report System (CHMIRS): CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS). This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Jun 19, 2018

Hazardous Waste Manifest Data: HAZNET

A list of hazardous waste manifests received each year by Department of Toxic Substances Control (DTSC). The volume of manifests is typically 900,000 - 1,000,000 annually, representing approximately 450,000 - 500,000 shipments.

Government Publication Date: Oct 24, 2016

Hazardous Waste and Substances Site List - Site Cleanup: HWSS CLEANUP

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. This list is published by California Department of Toxic Substance Control.

Government Publication Date: Aug 14, 2018

List of Hazardous Waste Facilities Subject to Corrective Action: DTSC HWF

This is a list of hazardous waste facilities identified in Health and Safety Code (HSC) § 25187.5. These facilities are those where Department of Toxic Substances Control (DTSC) has taken or contracted for corrective action because a facility owner/operator has failed to comply with a date for taking corrective action in an order issued under HSC § 25187, or because DTSC determined that immediate corrective action was necessary to abate an imminent or substantial endangerment.

Government Publication Date: Jul 18, 2016

Historical Hazardous Waste Manifest Data: HIST MANIFEST

A list of historic hazardous waste manifests received by the Department of Toxic Substances Control (DTSC) from year the 1980 to 1992. The volume of manifests is typically 900,000 - 1,000,000 annually, representing approximately 450,000 - 500,000 shipments.

Government Publication Date: Dec 31, 1992

Historical California Hazardous Material Incident Report System (CHMIRS): HIST CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS) prior to 1993. This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Jan 1, 1993

Historical Cortese List: HIST CORTESE

List of sites which were once included on the Cortese list. The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements for providing information about the location of hazardous sites.

Government Publication Date: Nov 13, 2008

Delisted Environmental Reporting System (CERS) Hazardous Waste Sites: DELISTED HAZ

This database contains a list of sites that were removed from the California Environmental Protection Agency (CalEPA) in the following regulatory programs: Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, RCRA LQ HW Generator.

Government Publication Date: Jul 9, 2018

Cease and Desist Orders and Cleanup and Abatement Orders: CDO/CAO

The California Environment Protection Agency "Cortese List" of active Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO). This list contains many CDOs and CAOs that do NOT concern the discharge of wastes that are hazardous materials. Many of the listed orders concern, as examples, discharges of domestic sewage, food processing wastes, or sediment that do not contain hazardous materials, but the Water Boards' database does not distinguish between these types of orders.

Government Publication Date: Feb 16, 2012

Drycleaner Facilities: DRYCLEANERS

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial, linen supply, commercial laundry, dry cleaning and pressing machines - Coin Operated Laundry and Dry Cleaning. This is provided by the Department of Toxic Substance Control.

Government Publication Date: Jun 21, 2018

Delisted Drycleaners: DELISTED DRYC

Sites removed from the list of drycleaner related facilities that have EPA ID numbers, made available by the California Department of Toxic Substance Control.

Government Publication Date: Jun 21, 2018

Waste Discharge Requirements: WASTE DISCHG

List of sites in California State Water Resources Control Board (SWRCB) Waste Discharge Requirements (WDRs) Program in California, made available by the SWRCB via GeoTracker. The WDR program regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Government Publication Date: May 30, 2018

Toxic Pollutant Emissions Facilities: EMISSIONS

A list of criteria and toxic pollutant emissions data for facilities in California made available by the California Environmental Protection Agency - Air Resources Board (ARB). Risk data may be based on previous inventory submittals. The toxics data are submitted to the ARB by the local air districts as requirement of the Air Toxics "Hot Spots" Program. This program requires emission inventory updates every four years.
Government Publication Date: Dec 31, 2016

California Environmental Reporting System (CERS) Hazardous Waste Sites: CERS HAZ
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the following regulatory programs: Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, RCRA LQ HW Generator. The CalEPA oversees the statewide implementation of the Unified Program which applies regulatory standards to protect Californians from hazardous waste and materials.
Government Publication Date: Jul 9, 2018

Tribal

No Tribal additional environmental record sources available for this State.

County

No County additional environmental databases were selected to be included in the search.

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

EXHIBIT C-2

GENERAL PUBLIC RECORDS

Department of Toxic Substances Control

Linda S. Adams
Secretary for
Environmental Protection

Maureen F. Gorsen, Director
1515 Tollhouse Road
Clovis, California 93611

Arnold Schwarzenegger
Governor

August 5, 2008

Mr. John Henry
1030 County Club Drive, Suite E
Moraga, California 94556

ACCEPTANCE OF "RISK ASSESSMENT" REPORT DATED MAY 14, 2008;
CARTMILL AND HIGHWAY 99 SITE, TULARE, CALIFORNIA

Dear Mr. Henry:

This letter is to inform you that the Department of Toxic Substances Control (DTSC) has completed the review of the removal action at the site located at Cartmill Ave. and Highway 99, Tulare County.

In accordance with the October 28, 2007 Remedial Action Workplan (RAW), remedial actions were conducted and completed. The remedial actions completed in November and December 2007 included the excavation and removal of approximately 1937 cubic yards of primarily organochloride pesticide (OCP: DDE, DDT, TDE, Dieldrin and Toxaphene) contaminated soils from six hot spots. The remedial actions were conducted and completed by Ennis-Henry Tulare LLC's (EHA) contractor, PARC Environmental, Inc. Confirmation soil sampling for the site indicates that soil OCP contaminants have been reduced to very near or below residential Preliminary Remediation Goals established by the Environmental Protection Agency. Using the California Human Health Screening Level Calculator and 95% upper confidence limits, all areas of concern (Area 2 Elevated Surface Area and Tire Disposal Area, Area 3 Aircraft Fueling Area, Area 3 Burnt Metal Area, Area 4 Hangar Area, and Area6 Non-excavated Area) resulted in screening risks below 1×10^{-6}. The exception was Area 5 Out-Building Area (which resulted in a screening risk of marginally over 1×10^{-6}.) This screening level risk evaluation indicates that unrestricted use of the excavated areas on the property will not result in an unacceptable risk to human health or the environment.

Based on DTSC's evaluation of the information/reports submitted, the Site does not appear to pose a threat to human health or the environment under a residential land use. Therefore, DTSC has made a Determination of No Further Action with respect to investigation and remediation of hazardous substances at the Site. As with any real property, if previously unidentified hazardous substances are discovered at the Site, additional assessment, investigation and/or cleanup maybe required.

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The $15,000 deposited with the department at the inception of the VCA was to cover activities through the review of the PEA (Preliminary Endangerment Assessment.) By EHA electing to step outside the VCA and proceed directly with remediation, the scope of DTSC's involvement has been changed. Should DTSC's efforts exceed the level anticipated in developing the deposit amount, the balance will be billed to you as agreed in the VCA (revised). If you have any questions, please call Mr. Joseph Ernest, Hazardous Substances Engineer, Fresno Responsible Party Unit, Northern California – Central Cleanup Operations Branch at (559) 297-3942.

Sincerely,

Thomas W. Kovac, P.E., Chief
Fresno Responsible Party Unit

cc: Mr. Mark Magargee
Project Manager
VEIR
4560 California Avenue
Bakersfield, California 93309

Mr. Russell Walls, P.E.
Central Valley Regional Water Quality Control Board
1685 E Street
Fresno, California 93706

Mr. James L. Tjosvold, P.E., Chief
Northern California - Central Cleanup Operations Branch
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, California 95826-3200

APPENDIX D

INTERVIEW RECORDS

RECORD OF COMMUNICATION						
Site Name: Agricultural Land			Location (city): Tulare, California			
Communication with: Mr. Johnny Starling						
Of: Nicholson Farms						
Location: Tulare, CA			Phone: 559-737-1722			
Communication via	X	Telephone		Email		In Person
Recorded By: Paul Humphrey			Of: CTL			
At: (time): 0900			On (date): November 28, 2017			
Re: Property Use						
Summary of Communication: Mr. Starling was not aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products. Mr. Starling is the Ranch Manager of the Property and stated that the Property included one inactive irrigation well and one active irrigation well. Mr. Starling indicated that the on-site pond is for flushing out the water filtration system and the site included one pump on the east portion of the property which is for pumping district canal water from the east adjoining irrigation ditch						
Conclusions/Required Action/Follow-up: None						
ROC 1 of 4						

RECORD OF COMMUNICATION						
Site Name: Agricultural Land			Location (city): Tulare, California			
Communication with: Joel Martins						
Of: Tulare County Env. Health Dept.						
Location: Visalia, CA			Phone: 559 733-6441			
Communication via		Telephone		Letter	X	In Person
Recorded By: Paul Humphrey			Of: CTL			
At: (time): 1000			On (date): September 22, 2018			
Re: Records						
Summary of Communication: No records were identified						
Conclusions/Required Action/Follow-up: None						
ROC 2 of 4						

RECORD OF COMMUNICATION						
Site Name: Agricultural Land				Location (city): Tulare, California		
Communication with: Clerk						
Of: County of Tulare Planning Department						
Location: Visalia, CA				Phone: 559		
Communication via	X	Telephone		Letter		In Person
Recorded By: Paul Humphrey				Of: CTL		
At: (time): 1340				On (date): September 22, 2018		
Re: Site use						
Summary of Communication: No record of the Property.						
Conclusions/Required Action/Follow-up: None						
ROC 3 of 4						

RECORD OF COMMUNICATION						
Site Name: Agricultural Land				Location (city): Tulare, California		
Communication with: Clerk						
Of: City of Tulare Fire						
Location: Tulare, CA				Phone: 559		
Communication via	X	Telephone		Letter		In Person
Recorded By: Paul Humphrey				Of: CTL		
At: (time): 1350				On (date): September 22, 2018		
Re: Records						
Summary of Communication: No records of the Property						
Conclusions/Required Action/Follow-up: None						
ROC 4 of 4						

APPENDIX E
CLIENT PROVIDED DOCUMENTATION

RISK ASSESSMENT REPORT

PROPOSED TULARE NORTH SHOPPING CENTER
ASSESSOR'S PARCEL NUMBER 149-230-002
NORTHEAST CORNER OF CARTMILL AVENUE AND DRIVE 103
TULARE, CALIFORNIA

MAY 14, 2008

Client:	Ennis-Henry Tulare, LLC 1030 Country Club Drive, Suite E Moraga, California 94556
Client Contact:	Mr. John Henry (925) 376-7800
Agency:	California Environmental Protection Agency Department of Toxic Substances Control 1515 Tollhouse Road Clovis, California 93611
Agency Contact:	Mr. Joseph Ernest (559) 297-3942
Consultant:	VEIR 4560 California Avenue, Suite 110 Bakersfield, California, 93309
Project Manager:	Mr. Mark R. Magargee, PG, CHg (661) 631-8347

Mark R Magargee

Mark R. Magargee, PG, Chg
Consulting Hydrogeologist



Vestech Environmental, Infrastructure and Restoration
4560 California Avenue, Suite 110, Bakersfield, California 93309
(661) 631-VEIR (8347) ▪ Fax (661) 631-8007

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1. INTRODUCTION

VEIR is pleased to present Ennis-Henry Tulare, LLC with this Risk Assessment Report for Assessor's Parcel Number (APN) 149-230-002, which is the location of the Proposed Tulare North Shopping Center. The southern 7 acres of the 127.74-acre property was the former location of the Moore Aviation crop dusting facility. Ennis-Henry Tulare, LLC intends to develop the entire property, including the entire Moore Aviation facility, for commercial uses. This risk assessment has been prepared in response to the California Environmental Protection Agency (Cal EPA) Department of Toxic Substances Control (DTSC) letter, dated August 29, 2007, requesting submittal of a risk assessment upon completion of the Preliminary Endangerment Assessment (PEA) and remedial actions for the site (see Attachment 1 for copies of the Cal EPA DTSC Correspondence).

Consolidated Testing Laboratories, Inc. (CTL) performed several phases of site assessment activities at the site which were presented in the PEA Report, dated September 12, 2007 (see Attachment 2 for a Summary of Previous Work). The investigation activities were performed in accordance with a Voluntary Cleanup Agreement (VCA), dated February 10, 2000, between EHA-Tulare, LLC and Cal EPA DTSC. The Cal EPA DTSC, in its letter dated October 15, 2007, accepted the submittal of the PEA Report (see Attachment 1).

Most of the site is agricultural land that currently is being farmed with row crops such as alfalfa, oat hay, and corn. A 3.5-acre portion of the site that is located in the southeast corner of the property has been cleared and is currently vacant with scattered dense vegetative cover on the ground surface. This 3.5-acres was formerly part of a 7-acre site portion that was used by Moore Aviation as an aerial crop dusting facility. This facility and any structures associated with it are no longer in existence. The structures associated with the Moore Aviation facility included a residence, a hangar, and an airplane landing strip. Ennis-Henry Tulare, LLC intends to redevelop the entire property, including these portions of the site, for commercial uses.

Central Sierra Environmental, LLC's (CSE) Remedial Action Report (RAR), dated February 1, 2008, documented the excavation and disposal of 1,937 cubic yards (2,518.32 tons) of agricultural related chemical impacted soils which exceeded the most restrictive screening levels derived from California Human Health Screening Levels (CHHSLs) and USEPA Region 9 proposed remediation goals (PRGs) for residential uses, and the California CHHSLs and USEPA Region 9 PRGs for industrial and commercial uses. The agricultural related chemicals detected in the near surface soils at the site include petroleum hydrocarbons, chlorinated herbicides, organophosphorus pesticides, organochlorine pesticides, dioxins, and inorganic compounds.

The following discussions of the site description, hydrogeologic setting, project background, contaminant exposure pathways, and human health and ecology screening evaluation are excerpted from the PEA. The PEA and RAR included a detailed discussion of the location of all contaminants which exceeded either the residential or industrial CHHSLs and PRGs with the depth and aerial extent of the soil removal in each of these locations. Because there were only minor differences in the volumes of soils requiring excavation using the residential or industrial CHHSLs and PRGs, the excavation was performed to the most conservative screening level. The CHHSLs and PRGs were used as the cleanup goals because they are conservative enough that the enclosed post-cleanup risk assessment using fate and transport, dose and response models for the residual concentrations at the site indicates an acceptable residual risk for the intended uses of the property. The mitigation activities were performed outside of the VCA. However, the RAR was submitted to Cal EPA DTSC for review and preparation of a No Further Action (NFA) determination. This report includes the risk assessment for the entire property of the individual and cumulative risks using the methodology presented in the USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual using fate and transport models, and dose and response calculations in accordance with ASTM Designation: E-1739 for Risk Based Corrective Action (RBCA).

2. SITE DESCRIPTION

The site is a rectangular parcel located within the Section 26, Township 19 South, Range 24 East, Mount Diablo Base Line and Meridian (see Figure 1 - Site Location Map). The site is located at the northeast corner of Cartmill Avenue and Drive 103, which serves as an access road to State Highway 99 (see Figure 2 – Site Vicinity Aerial Photograph). The site is identified as APN 149-230-002 which comprises 127.74 acres (see Figure 3 – Assessor's Parcel Map). The site is immediately north of the city limits of Tulare, Tulare County, California. Current land use of the site is agricultural and includes the farming of row crops such as alfalfa, oat hay, and corn (see Figure 4 – Plot Plan). There is an agricultural water supply well located in the northeast corner of the site. The site is currently zoned AE-20, which is for intensive agricultural use by the Tulare County Planning Department. The City of Tulare is planning on annexing the site area and changing the zoning to Regional Commercial. The site is currently owned by Ennis Commercial Properties, who acquired the property on December 4, 2004. The previous site owner for the last 100 years was the family of Mrs. Betty J. Goins. Mrs. Goins is the executor of the Estate of Lewis Goins.

The properties surrounding the site consist primarily of agricultural land. Regionally, farmland extends for a minimum of three-miles to the north, east, and west of the site. The nearest residential neighborhoods are approximately 2,000 feet from the south border of the site within the City of Tulare. The City of Tulare is situated in the Central San Joaquin Valley along State Highway 99, 45 miles south of Fresno and

60 miles north of Bakersfield. The town of Tulare was founded in 1872 by the Southern Pacific Railroad to serve as its San Joaquin Valley headquarters. The city was incorporated in 1888 and since 1891 agriculture has been the primary source of income for the community.

The name of the project site is the "Proposed Tulare North Shopping Center". There are currently no businesses occupying the site. The site is currently being used for agricultural purposes that include the farming of row crops such as alfalfa, oat hay, and corn, as is the land to the north, east, and south of the site (see Figure 2). There was a former on-site facility that occupied approximately 7 acres of the southeast portion of the site that was called Moore Aviation, an agricultural crop dusting facility which operated from 1947 through 1987. This facility and any structures associated with it are no longer in existence. The structures associated with the Moore Aviation facility included a residence, a hangar, and an airplane landing strip.

A list of agricultural chemicals used on-site by Moore Aviation was obtained by CTL from files available at the Tulare County Department of Environmental Health Services (TCDEHS). According to Mr. Bob Moore the agricultural chemicals for the crop dusting operation where stored off of the subject property within a warehouse building on a one acre parcel located on the south side of Cartmill Avenue from the subject site. This list contains numerous agricultural chemicals classified as hazardous materials and includes pesticides, herbicides, and petroleum products such as waste oil and gasoline. This list is presented in the following table.

HAZARDOUS MATERIALS USED ON-SITE

Trade Name	Chemical Name	Quantity	Location
Banvel	Dicamba	<2.5-gallons	Office/hangar
Fusilade	Propanoate	1-gallon	Office/hangar
Gramoxone	Paraquat	<2.5-gallons	Office/hangar
Hoelon	Diclofop-methyl	1-gallon	Office/Hangar
Karmex	Diuron	<50-pounds	Office/Hangar
Leaf Act 80	Polythoxyethanol	1-gallon	Office/Hangar
Treflan 5	Trifluralin	<30-gallons	Office/Hangar
Roundup	Glyphosphate	<2.5-gallons	Office/Hangar
Triton B 1956	Glycerol Alkyl Resins	1-gallon	Office/Hangar
Ammonia	NH3	1,000-gallons	Southwest Corner
Waste Oil	Waste Oil	100-gallons	Office/Hangar
Motor Oil	Motor Oil	55-gallon	Office/Hangar
Aviation Gasoline	Aviation gasoline	500-gallon	West of Hangar

Reportedly, two aboveground fuel storage tanks (ASTs) were used on-site for storing aviation fuel (100 octane) and automotive fuel. A 1,000-gallon AST was used to store the aviation fuel and a 500-gallon AST was used to store the automotive fuel. In accordance with the CTL's Phase I Environmental Site Assessment (ESA), dated December 16, 2005, the ASTs were removed 10 to 15 years ago. The following table presents the five areas of concern at the site that are the main potential sources of soil contamination. These areas are described in detail on the figures presented in Attachment 2.

AREAS OF CONCERN

Area	Location	Chemicals
1	Former Runway	chlorinated herbicides, OCL pesticides, and polynuclear aromatic hydrocarbons (PAH)
2	Former Airplane Storage	chlorinated herbicides, OCL pesticides, and PAH
3	Former Airplane Refueling and AST	chlorinated herbicides OCL pesticides, PAH, dioxins, and furans.
4	Former Hangar (around slab areas)	agricultural chemicals, chlorinated herbicides OCL pesticides, and PAH
5	Former Outbildings	agricultural chemicals, chlorinated herbicides OCL pesticides, and PAH

Bordering the north and east portions of the site is agricultural land that is planted in row crops and orchards. The west portion of the site is bordered by Drive 103, which serves as a frontage road to State Highway 99. The south portion of the site is bordered by Cartmill Avenue. There is an abandoned warehouse located to the south at 596 East Cartmill Avenue, which was previously used by Moore Aviation to store agricultural chemicals. Records reviewed by CTL at TCDEHS indicate that various chemicals have impacted soil surrounding the warehouse. Investigation and mitigation of these off-site impacts is not covered by the VCA. A commercial recreational vehicle sales yard is located near the northwest corner of the site. Regionally, farmland extends for a minimum of three miles to the north, east, and west. The nearest residential neighborhoods are located approximately 2,000-feet southwest of the southern site boundary (see Figure 2).

3. HYDROGEOLOGIC SETTING

The climate of Tulare County is Mediterranean with an average yearly temperature of 62.9 degrees Fahrenheit. The average low and high temperature ranges from 50.3 degrees Fahrenheit to 75.5 degrees Fahrenheit. The record low in Tulare County was recorded at 20 degrees Fahrenheit and the record high was recorded at 115 degrees Fahrenheit. The average annual rainfall is 10.2-inches per year.

The site is located at an elevation of approximately 300 feet above MSL, and the topography slopes slightly to the southwest toward the center of the San Joaquin Valley (see Figure 1). The site is situated near the eastern boundary of the San Joaquin Valley along a gently western sloping alluvial plain bound by the Sierra Nevada Mountain Range to the east and the Coast Ranges to the west. The Tehachapi and San Emigdio Mountains bound the southern edge of the San Joaquin Valley. The Sacramento Valley joins the north end of the San Joaquin Valley.

The center of the San Joaquin Valley is a flood-basin consisting of lacustrine and marine deposits that interfinger with alluvial fan deposits formed along the east and west sides of the valley. These deposits are composed of unconsolidated Pleistocene and Holocene Age sand, silt and clay. These sediments were carried to the center of the San Joaquin Valley and deposited by a network of river systems draining into the basin (Norris and Webb, 1990).

The Sierra Nevada Complex, east of the San Joaquin Valley, is composed of crystalline igneous and metamorphic rocks, which include granite, gneiss, schist and quartzite. Valley fill sediments unconformably overlie the crystalline basement rocks in a westward thickening wedge. These sediments exceed 20,000-feet in thickness near the valley axis. In ascending order, the valley fill deposits reveal a basin filling history first of marine origin followed and overlain by sediments of continental origin (Norris and Webb, 1990). The two soil types existing at the site are described by the United States Department of Agriculture Soil Conservation Service (USDA, 1982). The "Colpien" loam comprises most of the site with the exception of the northwest quarter. The northwest quarter of the site is comprised of the "Nord" fine sandy loam. Subsurface soils encountered during the site investigations consist of interbedded layers of silt, silty sand, and well graded sand from ground surface to approximately 10 feet below grade (fbg), which is the greatest depth penetrated during the investigations (see Attachment 2).

A California Department of Water Resources (DWR) Historical Data Map Interface indicates that on February 22, 2005, the depth to groundwater four-miles northwest of the site was 112.0 feet below grade (fbg). The groundwater depth information was collected from state well number 19S24E22POO1M. On December 15, 2006, groundwater in the agricultural water supply well located at the northeast corner of the site was sounded at 107.8 fbg. Groundwater flow direction in the site area is generally west-southwest based on the Spring 2004 Kaweah Groundwater Basin potentiometric map (DWR, 2004).

The only surface water at the site is a Tulare Irrigation District Canal, which borders the east side of the site (see Figure 2). This canal has earth banks that are situated approximately 3 to 4-feet above the site grade.

4. PROJECT BACKGROUND

During the 2005 Phase I ESA, CTL observed two patches of well-cemented, black-stained surface soil that were one to five feet in diameter. The first noted stains were in an area of freshly plowed and ripped soil near the southeast corner of the site at the location of the former hangar building of Moore Aviation and the second stained location was southwest of the former hangar within the area of the former equipment storage area (Figure 4 and Attachment 2). The cemented soil was partially covered by loose topsoil. The cementation extended a maximum of approximately 3-inches below the surface. Soil fragments were broken into pieces of 1-inch to 6-inches in diameter. The soil fragments contained a strong petroleum odor, similar to that found in motor oil.

From 2005 through 2007 CTL has performed multiple phase of surface and subsurface soil sampling at and around the site, which has detected various agricultural related chemicals and petroleum hydrocarbon compounds. On February 22, 2006, CTL collected soil samples from 13 borings (B-1 through B-13). Laboratory analysis indicated the presence of fertilizer and pesticides, including 4,4'-DDE, 4,4'-DDT, and Toxaphene at concentrations in excess of the residential and industrial CHHSLs and PRGs. The detected fertilizer compounds (nitrogen, phosphorus, and potassium) at concentrations greater than the naturally occurring concentrations for these inorganic elements in the near surface soils in the site area. On May 24, 25, and 26, 2006, CTL collected soil samples from 17 additional soil borings (B-14 through B-30). The organochlorine pesticides were detected at concentrations less than the residential and industrial CHHSLs and PRGs in all samples analyzed from the 17 soil borings. During April of 2007, CTL collected sol samples from 20 additional soil borings (B-31 to B-50). Analytical results did not indicate the presence of Polynuclear Aromatic Hydrocarbons (PAH) compounds and chlorinated herbicides. However, 4,4'-DDE, 4,4'- DDT, Endrin and Toxaphene were detected at concentrations in excess of the residential and industrial CHHSLs and PRGs in various samples analyzed (see Attachment 2).

During the Phase I site visit, CTL had observed traces of burnt metal debris on the ground near Area 3, Former Airplane Refueling and AST Area, Soil boring B-39 was drilled in this area with soil samples analyzed for chlorinated herbicides, organochlorine pesticides, PAHs, and for dibenzodioxins and dibenzofurans (dioxins and furans). Dioxins and furans were detected in the 6-inch deep sample, but were not detected in 2.0-feet deep sample. On October 2, 2007, CTL collected soil samples from 26 additional soil borings (B-51 through B-76) in order to further refine the vertical and lateral limits of organochlorine pesticides, dioxins, and furans (see Attachment 2). Based upon the analytical results of

soil samples collected during the multiple phases of site investigation, the PEA concluded that the vertical and lateral limits of organochlorine pesticides, dioxins, furans, and petroleum hydrocarbons had been adequately delineated to permit the development of a Remedial Action Work Plan (RAW) for the appropriate mitigation of the contaminants at the site. CSE's RAW, dated October 28, 2007, recommended the excavation and disposal of all soils containing concentrations in excess of the most restrictive of the residential and industrial CHHSLs and PRGs and preparation of a RAR documenting the mitigation activities performed at the site to include a risk assessment for the residual concentrations remaining in the soils at the site.

5. CONTAMINANT EXPOSURE PATHWAYS

To determine whether the levels of constituents of concern present at the site may pose a risk to human populations, it is necessary to identify both the populations that may be present at the site and the pathways through which potential exposures may occur. The population, which could potentially be exposed to on-site chemicals of concern are based on the human activities and land use patterns at and around the site. The site is the proposed location of a commercial shopping center. As such, the populations that will be present at the site, and who may become exposed to constituents of concern that are present in soil include current farm workers tilling or working the on-site soil, site-cleanup personnel, future construction workers, and other individuals who may subsequently use the site.

The chemicals of concern were principally located in the southeast corner of the site that was formerly used by a crop dusting facility. These areas include: 1 Former Runway Area; 2 Former Airplane Storage Area; 3 Former Airplane Refueling and AST Area; 4 Former Hangar Area; and 5 Former Outbuilding Area. The chemicals found at the site that are of primary concern are: 4,4'-DDE, 4,4'-DDT, 4,4'-TDE/DDD, Endrin, Toxaphene, dioxins and furans. Petroleum hydrocarbons consisting of TPH as oil and grease and TPH as diesel were also detected at the site.

Once released (e.g. spill), chemicals of concern can migrate and pose a secondary source of release. The mechanisms listed below represent the theoretical potential secondary release mechanisms through which chemicals can be transported from one environmental medium to another: volatilization of chemicals in soil into ambient air; wind erosion of surface soils and atmospheric dispersion of dust (fugitive dust); migration of constituents from soils down into the groundwater; and offsite transport of chemicals in soil through surface water runoff.

Factors related to contaminant transport via soil pathways are the site topography, which controls surface water run-on and run-off, and geologic soil types, which control subsurface infiltration within the unsaturated zone. Natural and man-made barriers can minimize or prevent contaminant movement into

the soil column. In some instances, they can also provide protection against direct contact with hazardous substances that might be present at the site. Currently, there are no man-made barriers at the site, which could impede the downward movement of contaminants of concern. There are some silt lenses that occur at depths of 5 to 10 fbg, which could assist in impeding the downward motion of contaminants of concern (see Attachment 2).

The exposure pathways by which individuals may be exposed to constituents of concern requires four elements: chemical sources, migration routes (environmental transport), an exposure point for contact (soil, air, or water), and human exposure routes (oral, dermal, or inhalation). A pathway is not considered to be complete unless all four elements are present. The following paragraphs discuss each of the exposure pathways through which individuals could be exposed to constituents of concern from the site.

Access to the site is unrestricted. However, because the site is not located adjacent to a residential area and because of its use as farmland, it is not likely that individuals not directly associated with the use of the site would become exposed to potentially hazardous materials which may be located on-site. The presence of a ground surface cover can reduce the exposure of individuals to constituents of concern. The ground surface at the site is covered by agricultural crops or by weeds. Some areas in the southeast corner of the site are not covered by vegetation. While this is the area with the greatest concentrations of agricultural chemicals and petroleum hydrocarbons in the near surface soils, this is also the area where the excavation and disposal of the soil has been performed and this area will be re-developed for commercial use which will result in the capping of this area with asphalt and concrete surfaces.

Site workers or visitors could be exposed at the site through the ingestion of contaminated soil. Soil ingestion suggests that only contaminants of concern that are located within the upper 6-inches of the soil column would be available for ingestion. It is unlikely that individuals will ingest soil below a depth of 6-inches. Individuals could be exposed to constituents of concern at the site through dermal contact with contaminated soil. Dermal absorption suggests that only contaminants of concern that are located within the upper 6-inches of the soil column would be available for absorption through dermal contact. The soil excavation and subsequent commercial development capping the impacted areas with asphalt and concrete surfaces will effectively mitigate the potential ingestion and dermal exposure pathways.

Factors commonly related to groundwater pathways include: 1) the presence of aquifer units directly beneath areas of concern; 2) the occurrence of shallow groundwater; 3) direction of groundwater flow; 4) the condition of underlying aquifers relative to chemicals which may have been found in soil beneath the site, and the climate of the site vicinity. Groundwater level soundings on December 15, 2006, in an agricultural water supply well located on the northeast corner of the site indicated that the depth to groundwater was 107.8 fbg. California Department of Water Resources (DWR) Historical Data Map

Interface indicates the depth to groundwater four-miles northwest of the site was 112.0 fbg on February 2, 2005. Since the contaminants of concern found at the site occur mostly at shallow depths of less than 3 fbg even after 20-years since Moore Aviation vacated the site, and given the depth to groundwater beneath the site, it is unlikely that groundwater beneath the site has been impacted by past site activities. In addition, a groundwater sample collected April 24, 2007, from the on-site agricultural water supply well did not indicate the presence of constituents of concern. Consequently, exposure to individuals from on-site contaminants of concern by absorption of groundwater or by ingestion of groundwater is unlikely. The soil excavation and subsequent commercial development capping the impacted areas with asphalt and concrete surfaces will effectively mitigate the potential groundwater exposure pathway.

Surface water pathways are not expected to be an issue at the site since the only surface water at the site is a Tulare Irrigation District Canal which runs on the east side of the site. The banks of this canal are raised approximately 3 to 4 feet above the site grade, which would prevent runoff from entering into the canal. Since surface runoff is toward the southwest, it is not likely that surface water would be impacted by site contaminants. Moreover, it is unlikely that individuals would become exposed to the surface water contained in the canal either by absorption or ingestion. The soil excavation and subsequent commercial development capping the impacted areas with asphalt and concrete surfaces will effectively mitigate the surface water exposure pathway.

There have been no documented releases of hazardous substances to the air. The site does not operate hazardous materials air emitting equipment. The agricultural chemicals found at the site are non-volatile; consequently the method of inhalation exposure will be by the inhalation of particulates from soil. The potential source of a release of hazardous substances to the air is limited to fugitive dust from surface soil. Since the principal area of concern is the southeast corner of the site, which is not used for farming purposes, the only foreseeable release of constituents of concern to the atmosphere are likely to occur during earth moving activities that might be related to remediation of the site or demolition of the area of concern. Mitigation measures necessary to control air emissions during potential future demolition or renovation of the site areas of concern are addressed later in this document in the discussion of the excavation and disposal activities. The soil excavation and subsequent commercial development capping the impacted areas with asphalt and concrete surfaces will effectively mitigate the potential inhalation exposure pathway.

6. HUMAN HEALTH AND ECOLOGY SCREENING EVALUATION

The purpose of the Human Health and Ecology Screening Evaluation (HHESE) is to provide an estimate of the health hazard from contamination found at the site. The health hazard estimate was performed by utilizing CHHSLs and PRGs that have established by Cal EPA and USEPA Region 9 for impacted soils for residential and industrial/commercial uses. The CHHSLs and PRGs are risk-based tools for evaluating the cleanup goals of contaminated sites and are based on risk assessment guidelines for particular chemicals. The CHHSLs and PRGs were derived by combining toxicity values with standard exposure factors to estimate contaminant concentrations in environmental media (soil, air, and water) that Cal EPA and USEPA considers protective of humans (including sensitive groups), over a lifetime. Site contaminant concentrations that were found above the CHHSLs and PRGs indicated that further evaluation was required to assess the potential risks that may be posed by such contaminants. The goal of the environmental work that has been performed at the site was to remove contaminants of concern that are above the CHHSLs and PRG values, and in many instances to nondetectable concentrations.

Within the framework of VCA a risk assessment would typically be performed during either the PEA or as part of the RAR. The risk assessment is a site specific determination of the appropriate cleanup level for each contaminant. In general the risk assessment is used to determine whether cleanup levels that are higher than either the residential or industrial CHHSLs and PRGs may be appropriate for the specific site conditions and proposed uses. However, the project proponent chose to perform the cleanup activities outside of the VCA in order to expedite the completion of the cleanup and to have the risk assessment prepared for the residual concentrations. It is VEIR's experience that performing cleanup to the residential and industrial CHHSLs and PRGs results in residual concentrations that are low enough to not present an excess risk when evaluated during the post-remediation risk assessment. While this approach may have resulted in the excavation and disposal of a greater volume of soil than may have been recommended by the risk assessment, the project proponent desired the expedited performance of the cleanup activities.

An ecological risk screening evaluation was not deemed necessary or conducted for the site because it is located in a semi-urban and farm setting and does not maintain natural resources required to support wildlife habitats. In addition, except for 7-acres located on the southeast corner of the site that were used by a crop dusting facility, the site has traditionally been used for farming of row crops, which require tilling of the soil at least twice per year and more commonly is done three times per year. As a consequence of the farming activities conducted at the site, and its proximity to the City of Tulare, there is no critical habitat for federally listed, threatened, or endangered species on the site. Consequently, an ecological evaluation of the site is not appropriate.

SUMMARY OF SOIL SAMPLE ANALYSES OF ORGANOCHLORINE PESTICIDES DETECTED IN EXCESS OF RESIDENTIAL AND INDUSTRIAL CHHSLS AND PRGS

Area	Sampling Point	Sampling Depth	4,4'-DDE	4,4'-DDT	4,4'-TDE/DDD	Dieldrin	Toxaphene
CHHSLs - Residential (mg/kg)			1.6	1.6	2.3	0.04	0.46
USEPA PRG - Residential (mg/kg)			1.7	1.7	2.4	0.03	0.44
CHHSLs - Industrial (mg/kg)			6.3	6.3	9.0	0.13	1.8
USEPA. PRG - Industrial (mg/kg)			7.0	7.0	10.0	0.11	1.6
2 (ESA)	B-43	0"-6"	4.1	2.7			
2 (ESA)	B-65	0"-6"	**6.3**	3.7			
2 (ESA)	B-66	0"-6"	3.1				
2 (ESA)	B-67	0"-6"	3.3	2.0			
2 (ESA)	B-68	0"-6"	1.7				
2 (ESA)	B-70	0"-6"	3.2			0.06	
2 (ESA)	B-43	1.5'-2'	3.4				
2 (ESA)	B-65	1.5'-2'	3.0			**0.16**	
2 (ESA)	B-66	1.5'-2'	4.0	2.6			
2 (ESA)	B-67	1.5'-2'				**5.2**	
2 (ESA)	B-69	1.5'-2'	5.4	**110**		**0.31**	
2 (ESA)	B-67	3.5'-4'	**62**	**78**		**17**	
2 (TDA)	B-44	0"-6"	1.8				
2 (TDA)	B-59	0"-6"					**3.40**
2 (TDA)	B-60	0"-6"	3.8	1.8		0.084	**4.80**
2 (TDA)	B-61	0"-6"	2.3				**5.50**
2 (TDA)	B-63	0"-6"	2.3				
2 (TDA)	B-64	0"-6"	3.7	3.8			**12**
3 (AFA)	B-35	0"-6"	**28**	**460**			**820**
3 (AFA)	B-36	0"-6"	2.1				
3 (AFA)	B-38	0"-6"	3.1	**10**			
3 (AFA)	B-48	0"-6"	**20**	**110**	**30**		
3 (AFA)	B-49	0"-6"		2.1			
3 (AFA)	B-51	0"-6"	**23**	**64**			
3 (AFA)	B-52	0"-6"	**52**	**670**			
3 (AFA)	B-54	0"-6"	4.3	**17**			
3 (AFA)	B-56	0"-6"	4.0	**7.1**			
3 (AFA)	B-58	0"-6"	**26**	**79**			
3 (AFA)	B-35	2'-2.5'	**29**	**180**			**140**
3 (AFA)	B-48	2'-2.5'	5.0	**16**	**16**		
3 (AFA)	B-49	2'-2.5'		3.8			
3 (AFA)	B-35	5'-5.5'	5.6	**30**			
3 (BMA)	B-39	0"-6"	3.6	2.7			
4 (HA)	B-31	0"-6"					0.44
4 (HA)	B-34	0"-6"					**1.8**
5 (OBA)	SB-8	0"-6"					1.0
5 (OBA)	B-15	0"-6"					0.82
5 (OBA)	B-16	0"-6"					0.53
5 (OBA)	B-17	0"-6"					0.63
5 (OBA)	B-8	6"-12"	6.1	3.8			**2.1**

2 (ESA) = Area 2 Elevated Surface Area. 2 (TDA) = Area 2 Tire Disposal Area.
3 (AFA) = Area 3 Airplane Fueling Area. 3 (BMA) = Area 3 Burnt Metal Area.
4 (HA) = Area 4 Hanger Area. 5 (OBA) = Area 5 Outbuilding Area.
3.6 = Exceeds Residential CHHSLs and PRGs. **7.1** = Exceeds Residential and Industrial CHHSLs and PRGs.

The previous table depicts only the samples that exceeded the residential and industrial CHHSLs and PRGs for the organochlorine pesticides. The concentrations that exceeded both the residential and industrial standards are underlined and those that exceeded only the residential standards are in plain text. The table is organized by the area and depth where the concentrations exceeded the screening levels. There are data points below the surface samples that exceeded both the residential and industrial CHHSLs and PRGs and because of these data points there were only minor differences in the volumes of soils requiring excavation using the two screening levels. Therefore, excavation was performed to the most conservative screening level.

Within the Former Airplane Refueling and AST Area (Area No. 3) is an area that was observed during the November 16, 2005, Phase I site visit to contain traces of burnt metal debris. This area was initially sampled in soil boring B-39. The shallow 6-inch deep sample, however, contained a broad range of dioxins and furans at varying concentrations. The results of this analysis did not indicate the presence of constituents of concern in the 2.0-feet deep sample. Soil borings B-71 through B-76 were drilled on October 2, 2007 to further delineate the vertical and lateral limits of dioxins and furans. Based on the sampling, dioxins and furans were limited to the upper 2.5-feet of the soil column (see Attachment 2).

Dioxins are a group of chemicals that are formed from by-products of industrial manufacturing and burning activities. The major sources of dioxins include chemical and pesticide manufacturing, burning of trash, forest fires, and burning of industrial and medical waste products. The primary concern from dioxins is their potential to cause ill effects in people who are exposed daily over a period of many years. Dioxins are generally found in mixtures containing several kinds of dioxins and dioxin isomers or congeners, each having varying degrees of toxicity. To express the overall toxicity of such a mixture as a single number, the concept of Toxic Equivalents (TEQ) has been developed. The World Health Organization (WHO) has developed toxic equivalency factors for "dioxin-like" compounds and for congeners (isomers) of Dioxin. The most recent TEF values established by WHO were published in 2006, for the year 2005 (WHO 2006). The TEQ concept is to weighs the toxicity of the less toxic compounds as fractions of the toxicity of the most toxic compound, 2,3,7,8-TCDD, (TCDD). Each isomer or congener compound is attributed a specific TEF. This factor indicates the degree of toxicity as compared to that of TCDD, which is given a reference value of 1. To calculate the total TCDD toxic equivalent (TEQ) of a dioxin mixture, the concentration amounts of each toxic compound are multiplied with their TEF and then added together. The total values for each sample are compared to the residential and industrial CHHSLs and PRGs. The TEF values are presented below:

TOXICITY EQUIVALENCY FACTORS
(World Health Organization 2005)

Compound	TEF
Chlorinated Dibenzo-p-dioxins	
2,3,7,8-TCDD	1
1,2,3,7,8-PeCDD	1
1,2,3,4,7,8-HxCDD	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,7,8,9-HxCDD	0.1
1,2,3,4,6,7,8-HpCDD	0.01
OCDD	0.0003
Chlorinated Dibenzofurans	
2,3,7,8-TCDF	0.1
1,2,3,7,8-PeCDF	0.03
2,3,4,7,8-PeCDF	0.3
1,2,3,4,7,8-HxCDF	0.1
1,2,3,6,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDF	0.1
2,3,4,6,7,8-HxCDF	0.1
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,7,8,9-HpCDF	0.01
OCDF	0.0003

Based on the analytical results obtained for dioxins and furans from the seven soil borings drilled through the burnt metal area (B-39, B-71 through B-76), CSE calculated the TCDD toxicity equivalent for each soil sample, which is presented below. Table 7 of the PEA has been revised to include the most recent analytical results for dioxins and furans and the revised table is included in Attachment 2. It is a common practice for analytical laboratories to provide results for some individual isomers, and total concentration values for a group of isomers. Consequently, where appropriate, the group isomer totals were used in preparing the TEQ values.

SUMMARY OF SOIL SAMPLE ANALYSES OF DIOXINS AND FURANS

Sampling Point	Sampling Depth	TCDD Toxic Equivalent
CHHSLs - Residential (ng/kg)		4.6
USEPA PRG - Residential (ng/kg)		3.9
CHHSLs - Industrial (ng/kg)		19
USEPA. PRG - Industrial (mg/kg)		16
B-39	0"-6"	**104.26**
B-39	1.5'-2'	0.000
B-71	0"-6"	**186.69**
B-71	1.5'-2'	0.004
B-72	0"-6"	2.163
B-72	1.5'-2'	0.0824
B-73	0"-6"	**146.142**
B-73	1.5'-2'	0.122
B-74	0"-6"	0.217
B-74	1.5'-2'	0.10343
B-75	0"-6"	**8.8398**
B-75	1.5'-2'	0.5833
B-76	0"-6"	**78.7998**
B-76	1.5'-2'	0.0036

0.004 = Less than CHHSLs and PRGs. **104.26** = Exceeds CHHSLs and PRGs.

Results of the TEQ calculations indicate that the total TEQ concentration of "dioxin-like" compounds in the surface samples collected in soil borings B-39, B-71, B-73, B-75, and B-76 were greater than the residential and industrial CHHSLs and PRGs. The TEQ concentrations in the surface samples collected in soil borings B-72 and B-74, as well as all of the soil samples collected from 1.5 fbg were less than the residential and industrial CHHSLs and PRGs.

Petroleum hydrocarbons in the form of TPH as oil and grease and TPH as diesel were detected in soil borings drilled within the airport fueling area. While there are no residential or industrial CHHSLs and PRGs for TPH as oil and grease and TPH as diesel, the California Regional Water Quality Control Board (CRWQCB) established a recommended screening level of 500 mg/kg for sites with significant vertical separation between the impacted soil and the depth of the groundwater aquifer. In addition the CRWQCB has also established the designated level methodology (DLM) to determine site specific screening levels. The methodology is to multiply the maximum contaminant level (MCL) for a compound in a potable water

supply by an attenuation factor (AF) determined by the molecular weight of the compound, site stratigraphy, vertical separation between the impacted soil and the groundwater aquifer, and the annual precipitation at the site. There is no established MCL for TPH as oil and grease. However, there is an MCL of 100 ug/l (ppb) for TPH as diesel. Multiplying by an AF of 1,000 yields a screening level of 100 mg/kg for TPH as diesel and multiplying by an addition factor of 10 to account for the heavier molecular weight of oils and grease yields a screening level of 1,000 mg/kg for TPH as oil and grease. CSE recommended using a conservative screening level for both TPH as diesel and TPH as oil and grease of 100 mg/kg. All four of the soil borings (B-6, B-18, B-19, and B-21) where TPH as diesel or TPH as oil and grease were detected at concentrations in excess of 100 mg/kg were within the limits of the airplane fueling area and were at depths that were excavated due to concentrations of organochlorine pesticides exceeding residential or industrial CHHSLs and PRGs.

7. REMEDIAL ACTION REPORT

The RAR, dated February 1, 2008, was prepared to document the excavation and disposal of all soils that were known to exceed the most stringent screening levels. The depth of excavation within the various quadrants of each individual plume was the depth of the soil sample collected below the deepest sample in a boring that exceeded a screening level. In other words if soil samples collected at depths of 1 and 2 fbg exceeded the screening levels, but the soil sample collected at a depth of 3 fbg and all deeper soil samples in that boring were less than the cleanup levels, then the excavation extended to a depth of 3 fbg in and around this location. If the vertical limits of excavation were not delineated using this criteria, which is the case in only one portion of one of the plumes (Area 2 elevated surface area soil boring B-67 at 4 fbg), then the excavation proceeded to a depth two feet deeper than the deepest sample exceeding the screening levels, and sampling was performed to verify adequate soil removal in the location. Similarly, the lateral limits were delineated by soil borings that have no samples that exceed the screening levels. If there was a direction in a specific plume that did not meet this criteria, then the excavation extended a distance of five feet outside of the furthest impacted boring and confirmation sampling was performed at the mid depth of the sidewall in that location to verify adequate soil removal.

On November 19 and 20, 2007 PARC Environmental (PARC) performed excavation activities under the direct supervision of a licensed geologist with CSE (see Attachment 3 for a Photographic Log documenting the excavation and disposal activities). All on-site workers within the exclusion zone were in level C personal protective equipment (PPE) including semipermeable clothing such as Tyvek™ suits, steel toed boots, hard hats, rubber gloves, goggles, and either half or full face respirators equipped with R53HE cartridges (combination organic vapor, acid gas, pesticide, radionuclide, HEPA filter). During excavation a light mist of water was applied to the excavated soil to limit potential fugitive emissions resulting form dust created as a result of the excavation and loading activities. The total

volume of excavated soils excavated is estimated to be 1937 cubic yards (2,518.32 tons) with the vast majority derived from the former airport fueling area. Confirmation sampling was performed of the base and sidewalls of each excavation area. Based upon the results of this additional soil sampling and laboratory analysis a second phase of soil removal was performed in five of the six areas on December 11, 2007. Additional excavation was performed to deepen the base of Area 2 – Tire Disposal Area (TDA) by two feet, deepen the base by two feet and expand the north and west sidewalls of Area 3 - Burnt Metal Area (BMA) by five feet, deepen the base by two feet and expand the north and east sidewalls of Area 3 – Airport Fueling Area (AFA) by five feet, expand the north sidewall of Area 4 – Hanger Area (HA) by five feet, and expand the north and south sidewalls of Area 5 – Outbuilding Area (OBA) by five feet. Based upon the results of this additional soil sampling and laboratory analysis a third phase of soil removal was performed in two of the six areas on December 20, 2007. Excavation was performed to expand the north sidewall of Area 3 – BMA by an additional five feet, and expand the north sidewall of Area 3 – AFA by an additional five feet. Following the completion of the soil removal activities, the excavation cavities were surveyed and this data has been displayed along with the soil boring locations to verify excavation in accordance with the depth and aerial extents presented in this discussion (see Figure 5 - Plot Plan Showing Limits of Excavation). The excavation cavities have been secured until the laboratory results have been reviewed by Cal EPA DTSC, and with Cal EPA DTSC concurrence, the excavations will be backfilled with import materials, compacted to greater than 90 percent relative compaction, and restored to surface grade.

Following each phase of excavation, CSE collected confirmation soil samples from the center of every 200 square feet of surface area on the base of each excavation as well as at the mid height in the middle of each sidewall. The confirmation soil samples were analyzed for organochlorine pesticides using EPA Method 8081. In addition the soil samples collected from the airplane fueling area (Area 3) were analyzed for TPH as gasoline, TPH as diesel, and TPH as oil and grease using EPA Method 8015 M and from the burnt metal area were analyzed for dioxins and furans using EPA Method 8290 (see Table 1 - Summary of Soil Sample Analytical Results). The soil samples were placed in brass sampling sleeves, with the ends covered with Teflon tape and plastic end caps. The samples were labeled, sealed, and recorded on a chain-of-custody record in accordance with the procedures outlined in the procedures details in USEPA SW-846. The samples were placed in a container filled with Blue-Ice™ for cooling purposes and transported to Moore Twining Laboratories, Inc., a California state-certified laboratory, for analysis.

The excavated soil from each area and subarea was stockpiled separately on plastic sheeting and covered with plastic sheeting to permit post excavation sampling and profiling to determine appropriate waste characterization and disposition (see Attachment 3). These covered stockpiles were secured by sand bags that also served as peripheral berms. Composite soil samples were collected from each stockpile representing no more than 100 cubic yards per composite sample. The composite samples

were analyzed in accordance with the disposal facility's requirements including organochlorine pesticides, dioxins, furans, volatile and semi-volatile organic compounds, and the CCR Title 22 metals in order to determine whether the wastes constitute a U. S. Resource Conservation and Recovery Act (RCRA) hazardous waste pursuant to 40 Code of Federal Regulations (CFR), a non-RCRA California hazardous waste pursuant to CCR Title 22, Division 4, Chapter 30, Section 66305, or a California designated waste. Upon completion of the profiling and receiving acceptance from the selected landfill, from December 20 through 26, 2007 the 1,932 cubic yards (2,518.32 tons) of wastes were loaded into covered roll off bins for transportation under non-RCRA California hazardous waste manifest to the Waste Management hazardous waste disposal facility in Kettleman Hills, California. The following discussion presents the limits of excavation for each area.

7.1 AREA 1 - RUNWAY AREA

The concentration of organochlorine pesticides, dioxins and furans, and petroleum hydrocarbons detected in the soil samples collected from the former runway area did not exceed the screening levels. Additional mitigation measures were not deemed to be warranted in this area.

7.2 AREA 2 - ELEVATED SURFACE AREA

The concentration of organochlorine pesticides detected in the soil samples collected from the elevated surface area exceeded the residential and industrial CHHSLs and PRGs to a depth in excess of 4 fbg in and around the area of soil boring B-67 which exceeded both the residential and industrial CHHSLs and PRGs at a depth of 4 fbg. Because of the vertical attenuation observed in the adjacent soil borings, excavation was performed to a depth of 6 fbg in this location and post-excavation confirmation sampling was performed to verify adequate soil removal. The area in and around soil borings B-43, B-65, B-66, and B-69 were excavated to a depth of 3.5 fbg, and in and around soil borings B-68 and B-70 to a depth of 1.5 fbg. The lateral limits are approximately 30 feet east to west, 20 feet north to south, and 84 cubic yards (109.28 tons) of soil was excavated in this plume (see Figure 5 and Attachment 3).

On October 20, 2007 CSE collected confirmation soil samples (Area 2 - ESA Base, North Wall, South Wall, East Wall, and West Wall) from the base and four sidewalls of the excavation cavity. The samples were analyzed for organochlorine pesticides using EPA Method 8081. The organochlorine pesticides 4,4'-DDE, 4,4'-DDT, 4,4'-TDE/DDD, Dieldrin, and Toxaphene were not detected in the samples collected from the base and four sidewalls of the excavation (see Table 1).

On October 20, 2007 CSE collected a composite sample (Area 2 – ESA Stockpile) from the 84 cubic yards of soil stockpile from the excavation at the elevated surface area. The samples was analyzed for organochlorine pesticides using EPA Method 8081, volatile and semi-volatile organic compounds using EPA Methods 8260 and 8270, and the CCR Title 22 metals. Based upon the laboratory analytical results, the waste was accepted by Waste Management as a non-RCRA hazardous waste.

On December 20, 2007, the 84 cubic yards were loaded into end dump trucks and transported by PARC under non-RCRA hazardous waste manifest to the Waste Management facility in Kettleman Hills, California for disposal.

7.3 AREA 2 – TIRE DISPOSAL AREA

The concentration of organochlorine pesticides detected in the soil samples collected from the tire disposal area exceeded the residential and industrial CHHSLs and PRGs to a depth less than 1.5 fbg. Because a dark discoloration was observed in soils near the proposed base of the excavation, the depth of the excavation was deepened to a depth of 6 fbg and the excavation was extended in a northwest to southeast direction until the limits of the dark discolored soils were removed. Based upon the analytical results, a second phase of excavation was performed to deepen the cavity to 8 fbg. The lateral limits are approximately 50 feet northwest to southeast, 25 feet northeast to southwest, and approximately 158 cubic yards (204.82 tons) of soil was excavated in this plume (see Figure 5 and Attachment 3).

On October 19, 2007 CSE collected confirmation soil samples (Area 2 - TDA Base, North Wall, South Wall, East Wall, and West Wall) from the base and four sidewalls of the excavation cavity. The samples were analyzed for organochlorine pesticides. Because the concentration of toxaphene in the sample collected from the base of the excavation exceeded the screening level, on December 10, 2007 the excavation was deepened by two feet and an additional confirmation sample was collected from the base of the excavation. The organochlorine pesticides 4,4'-DDE, 4,4'-DDT, 4,4'-TDE/DDD, Dieldrin, and Toxaphene were detected in the final samples collected from the base and sidewalls of the excavation at maximum concentrations of 0.047 mg/kg, 0.057 mg/kg, non detectable, non detectable, and 0.34 mg/kg, respectively (see Table 1). These concentrations are less than their residential and industrial CHHSLs and PRGs.

On October 19, 2007 CSE collected four composite samples (Area 2 – TDA North Pile, East Pile, South Pile, and West Pile) from the soil stockpiled from the initial phase of excavation at the tire disposal area, and on December 10, 2007 a fifth composite sample (Area 2 - TDA Stockpile 2) was collected from the soil stockpiled from the second phase of excavation at the tire disposal area. The samples were analyzed for organochlorine pesticides using, volatile and semi-volatile organic compounds, and the CCR Title 22 metals. Based upon the laboratory analytical results, the waste was accepted by Waste Management as a non-RCRA hazardous waste. On December 24, 2007, the 158 cubic yards were loaded into end dump trucks and transported by PARC under non-RCRA hazardous waste manifest to the Waste Management facility for disposal.

7.4 AREA 3 – BURNT METAL AREA

The concentration of organochlorine pesticides and dioxins and furans detected in the surface soil samples collected from the burnt metal area soil borings B-39, B-71, B-73, B-75, and B-76 exceeded the

residential and industrial CHHSLs and PRGs to a depth less than 2 fbg. However, based upon the analytical results of soil samples collected after the initial phase of excavation, a second phase of excavation was performed to deepen the cavity to 4 fbg as well as expanded the north and west sidewalls by five feet, and a third phase was performed to expand the north sidewall by an additional five feet. The lateral limits are approximately 45 feet north to south, 40 feet east to west, and approximately 274 cubic yards (356.53 tons) of soil was excavated in this plume (see Figure 5 and Attachment 3).

On October 19, 2007 CSE collected confirmation soil samples (Area 3 - BMA Base, North Wall, South Wall, East Wall, and West Wall) from the base and four sidewalls of the excavation cavity. The samples were analyzed for organochlorine pesticides, as well as TPH as gasoline, TPH as diesel, and TPH as oil and grease using EPA Method 8015 M and dioxins and furans using EPA Method 8290. Because the concentrations of organochlorine pesticides, dioxins, and furans in the samples collected from the base and north and west sidewalls of the excavation exceeded the screening level, on December 10, 2007 the excavation was deepened by two feet and the north and west sidewalls were expanded by five feet. Additional confirmation samples were collected from the base and north and west sidewalls of the excavation. Because the concentrations of organochlorine pesticides, dioxins, and furans in the sample collected from the north sidewall of the excavation exceeded the screening level, on December 20, 2007 the north sidewall of the excavation was expanded by five feet and an additional confirmation sample was collected from the north sidewall of the excavation. The organochlorine pesticides 4,4'-DDE, 4,4'-DDT, 4,4'-TDE/DDD, Dieldrin, and Toxaphene were detected in the final base and sidewalls of the excavation at maximum concentrations of 0.045 mg/kg, 0.61 mg/kg, 0.13 mg/kg, non detectable, and 0.088 mg/kg, respectively. The TCDD TEQ for the dioxins and furans was detected at a maximum concentration of 0.81 ng/kg (see Table 1). These concentrations are less than their residential and industrial CHHSLs and PRGs.

On October 19, 2007 CSE collected a composite sample (Area 3 – BMA Stockpile) from the soil removed during the initial phase of excavation at the burnt metal area that had been placed directly into roll off bins, and on December 10, 2007 CSE collected a composite sample (Area 3 – BMA Stockpile 2) from the soil removed during the second phase of excavation. The samples analyzed for organochlorine pesticides using, volatile and semi-volatile organic compounds, and the CCR Title 22 metals, as well as dioxins and furans. Based upon the laboratory analytical results, the waste was accepted by Waste Management as a non-RCRA hazardous waste. On December 26, 2007, the 274 cubic yards stored in the roll off bins was transported by PARC under non-RCRA hazardous waste manifest to the Waste Management facility for disposal.

7.5 AREA 3 – AIRPORT FUELING AREA

The concentration of organochlorine pesticides detected in the soil samples collected from the airplane fueling area exceeded the residential and industrial CHHSLs and PRGs to a depth less than 7 fbg.

The area in and around soil boring B-35 was excavated to a depth of 7 fbg, in and around borings B-48 and B-49 to a depth of 10 fbg, and in and around soil borings B-36, B-38, B-51, B-52, B-54, and B-58 to a depth of 4 fbg. However, based upon the analytical results of soil samples collected after the initial phase of excavation, a second phase of excavation was performed to deepen the northeast portion of the cavity to 12 fbg as well as expanded the north and east sidewalls by five feet, and a third phase was performed to expand the east half of the north sidewall by an additional five feet. The lateral limits are approximately 80 feet east to west, 80 feet north to south, and approximately 1,158 cubic yards (1,505.55 tons) of soil was excavated in this plume (see Figure 5 and Attachment 3).

On October 20, 2007 CSE collected five confirmation soil samples (Area 3 - AFA Northwest Base, Northeast Base, Center of Base, Southwest Base, and Southeast Base) from the base of the excavation cavity and eight confirmation soil samples (Area 3 - AFA West Half of North Wall, East Half of North Wall, West Half of South Wall, East Half of South Wall, North Half of East Wall, South Half of East Wall, North Half of West Wall, and South Half of West Wall) from the sidewalls of the excavation cavity. The samples were analyzed for organochlorine pesticides, as well as TPH as gasoline, TPH as diesel, and TPH as oil and grease. Because the concentrations of organochlorine pesticides and petroleum hydrocarbons in the samples collected from the base and north and east sidewalls of the excavation exceeded the screening level, on December 10, 2007 the excavation was deepened by two feet and the north and east sidewalls were expanded by five feet. Additional confirmation samples were collected from the base and north and east sidewalls of the excavation. Because the concentrations of organochlorine pesticides in the sample collected from the east half of the north sidewall of the excavation exceeded the screening level, on December 20, 2007 the east half of the north sidewall of the excavation was expanded by five feet and an additional confirmation sample was collected from the east half of the north sidewall of the excavation. The organochlorine pesticides 4,4'-DDE, 4,4'-DDT, 4,4'-TDE/DDD, Dieldrin, and Toxaphene were detected in the final base and sidewalls of the excavation at maximum concentrations of 0.28 mg/kg, 1 mg/kg, 0.1 mg/kg, non detectable, and 0.38 mg/kg, respectively. These concentrations are less than their residential and industrial CHHSLs and PRGs. TPH as gasoline, TPH as diesel, and TPH as oil and grease were detected in the final base and sidewalls of the excavation at maximum concentrations of non detectable, 23 mg/kg, and 24 mg/kg, respectively (see Table 1). These concentrations are less than the TPH action level using the CRWQCB DLM.

On October 20, 2007 CSE collected nine composite samples (Area 3 – AFA Northwest Pile, North Center Pile, Northeast Pile, Center West Pile, Center of Pile, Center East Pile, Southwest Pile, South Center Pile, and Southeast Pile) from the soil stockpiled from the initial phase of excavation at the airport fueling area, and on December 10, 2007 CSE collected four additional composite sample (Area 3 - AFA North Stockpile 2, South Stockpile 2, East Stockpile 2, and West Stockpile 2) from the soil removed during the second phase of excavation. The samples were analyzed for organochlorine pesticides using, volatile and semi-volatile organic compounds, and the CCR Title 22 metals. Based upon the laboratory analytical

results, the waste was accepted by Waste Management as a non-RCRA hazardous waste. On December 20, 21, and 24, 2007, the 1,158 cubic yards were loaded into end dump trucks and transported by PARC under non-RCRA hazardous waste manifest to the Waste Management facility for disposal.

7.6 AREA 4 – HANGER AREA

The concentration of organochlorine pesticides detected in the soil samples collected from the hanger area exceeded the residential and industrial CHHSLs and PRGs to a depth less than 2 fbg. The lateral limits are approximately 80 feet northeast to southwest, 20 feet southeast to northwest, and approximately 129 cubic yards (168.03 tons) of soil was excavated in this plume (see Figure 5 and Attachment 3).

On October 20, 2007 CSE collected confirmation soil samples (Area 4 - HA Base, North Wall, South Wall, East Wall, and West Wall) from the base and four sidewalls of the excavation cavity. The samples were analyzed for organochlorine pesticides. Because the concentration of toxaphene in the sample collected from the north sidewall of the excavation exceeded the screening level, on December 10, 2007 the excavation was expanded by five feet to the north and an additional confirmation sample was collected from the north sidewall of the excavation. The organochlorine pesticides 4,4'-DDE, 4,4'-DDT, 4,4'-TDE/DDD, Dieldrin, and Toxaphene were detected in the final base and sidewalls of the excavation at maximum concentrations of 0.21 mg/kg, 0.072 mg/kg, non detectable, non detectable, and 0.14 mg/kg, respectively (see Table 1). These concentrations are less than their residential and industrial CHHSLs and PRGs.

On October 20, 2007 CSE collected a composite sample (Area 4 – HA Stockpile) from the soil stockpiled from the initial phase of excavation at the hanger area and on December 10, 2007 a second composite sample (Area 4 - HA Stockpile 2) was collected from the soil stockpiled from the second phase of excavation at the hanger area. The samples were analyzed for organochlorine pesticides using, volatile and semi-volatile organic compounds, and the CCR Title 22 metals. Based upon the laboratory analytical results, the waste was accepted by Waste Management as a non-RCRA hazardous waste. On December 24, 2007, the 129 cubic yards were loaded into end dump trucks and transported by PARC under non-RCRA hazardous waste manifest to the Waste Management facility for disposal.

7.7 AREA 5 – OUTBUILDINGS AREA

The concentration of organochlorine pesticides detected in the soil samples collected from the outbuildings area exceeded the residential and industrial CHHSLs and PRGs to a depth less than 2 fbg. The area in and around soil boring B-8 was excavated to a depth of 2 fbg and in and around soil borings B-15, B-16, and B-17 to a depth of 1 fbg. The lateral limits are approximately 40 feet north to south, 30 feet east to west and approximately 111 cubic yards (144.44 tons) of soil was excavated in this plume (see Figure 5).

On October 19, 2007 CSE collected confirmation soil samples (Area 5 - OBA Base, North Wall, South Wall, East Wall, and West Wall) from the base and four sidewalls of the excavation cavity. The samples were analyzed for organochlorine pesticides. Because the concentration of organochlorine pesticides in the samples collected from the north and south sidewalls of the excavation exceeded the screening level, on December 10, 2007 the excavation was expanded by five feet to the north and south and an additional confirmation samples were collected from the north and south sidewalls of the excavation. The organochlorine pesticides 4,4'-DDE, 4,4'-DDT, 4,4'-TDE/DDD, Dieldrin, and Toxaphene were detected in the final base and sidewalls of the excavation at maximum concentrations of 0.98 mg/kg, 0.14 mg/kg, 0.012 mg/kg, non detectable, and 0.3 mg/kg, respectively (see Table 1). These concentrations are less than their residential and industrial CHHSLs and PRGs.

On October 19, 2007 CSE collected a composite sample (Area 5 – OBA Stockpile) from the soil stockpiled from the initial phase of excavation at the outbuilding area and on December 10, 2007 a second composite sample (Area 5 - OBA Stockpile 2) was collected from the soil stockpiled from the second phase of excavation at the outbuilding area. The samples were analyzed for organochlorine pesticides using, volatile and semi-volatile organic compounds, and the CCR Title 22 metals. Based upon the laboratory analytical results, the waste was accepted by Waste Management as a non-RCRA hazardous waste. On December 24, 2007, the 111 cubic yards were loaded into end dump trucks and transported by PARC under non-RCRA hazardous waste manifest to the Waste Management for disposal.

8. RISK ASSESSMENT

VEIR has prepared this RAR to document the mitigation measures for Cal EPA DTSC's review and preparation of a NFA determination. In order to document that performing the cleanup to the most stringent screening is adequately protective of human health and the environment, the RAR includes the following risk assessment of the individual and cumulative risks using the methodology presented in the USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual using fate and transport models, and dose and response calculations in accordance with ASTM Designation: E-1739 RBCA. The post-cleanup risk assessment has been prepared for the residual concentrations based upon the confirmation samples collected from the base and sidewalls of each of the excavation cavities in the area of the former Moore Aviation facility, as well as investigation soil samples collected from the remainder of the property (see Table 1 and Attachment 2). The potential exposure pathways include ingestion of impacted soil, breathing volatile vapors, or dermal exposure to impacted soil.

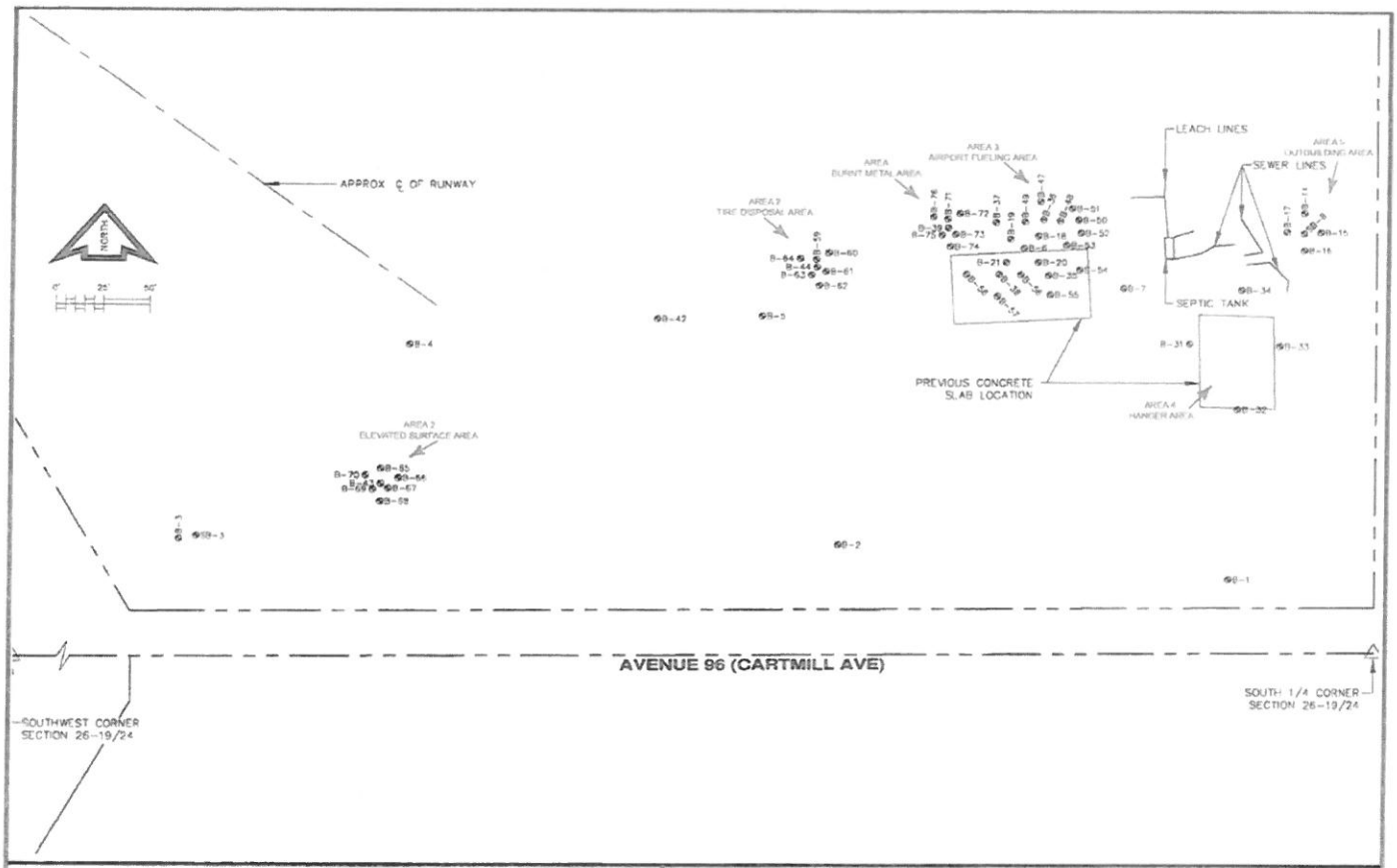
The routes of dermal and ingestion exposure to impacted soil remain since soils containing concentrations less than the residential or industrial CHHSLs and PRGs were not excavated and remain in near surface soils outside of the boundaries of the excavations and below the base of the excavation cavities. The routes of breathing volatile vapors include the current bare earth outdoor inhalation route for these

residual impacted soils and the indoor inhalation route for potential future buildings constructed above the residual impacted soils.

VEIR utilized the RBCA contaminant fate and transport modeling algorithms to assess the site-specific exposure levels at each receptor to determine whether the individual contaminant risks exceed permissible $1x10^{-6}$ exposure levels and the cumulative risk for all of the contaminants exceed permissible $1x10^{-5}$ exposure levels. The contaminant fate and transport modeling indicates that the residual concentrations of the organochlorine pesticides, dioxins, and furans, that were not excavated and remain in near surface soils outside of the boundaries of the excavations and below the base of the excavation cavities and are below the residential or industrial CHHSLs and PRGs, do not exceed the Risk Based Screening Levels (RBSLs) to ingestion, breathing volatile vapors, or dermal exposure to impacted soil (see Attachment 4 for the RBCA Tier 2 fate and transport modeling worksheets and dose/response calculations). The RBCA Tier 2 contaminant fate and transport modeling algorithms and dose/response calculations have verified that the soil removal activities successfully reduced the risk to below the permissible $1x10^{-6}$ exposure levels for individual contaminants and $1x10^{-5}$ exposure levels for the cumulative risk for all of the contaminants. The RBCA Tier 2 contaminant fate and transport modeling algorithms and dose/response calculations were prepared for the entire property including those areas where the site investigation activities did not indicated any soils exceeding the screening levels, as well as where excavation activities were performed to reduce the concentrations to less than the screening levels.

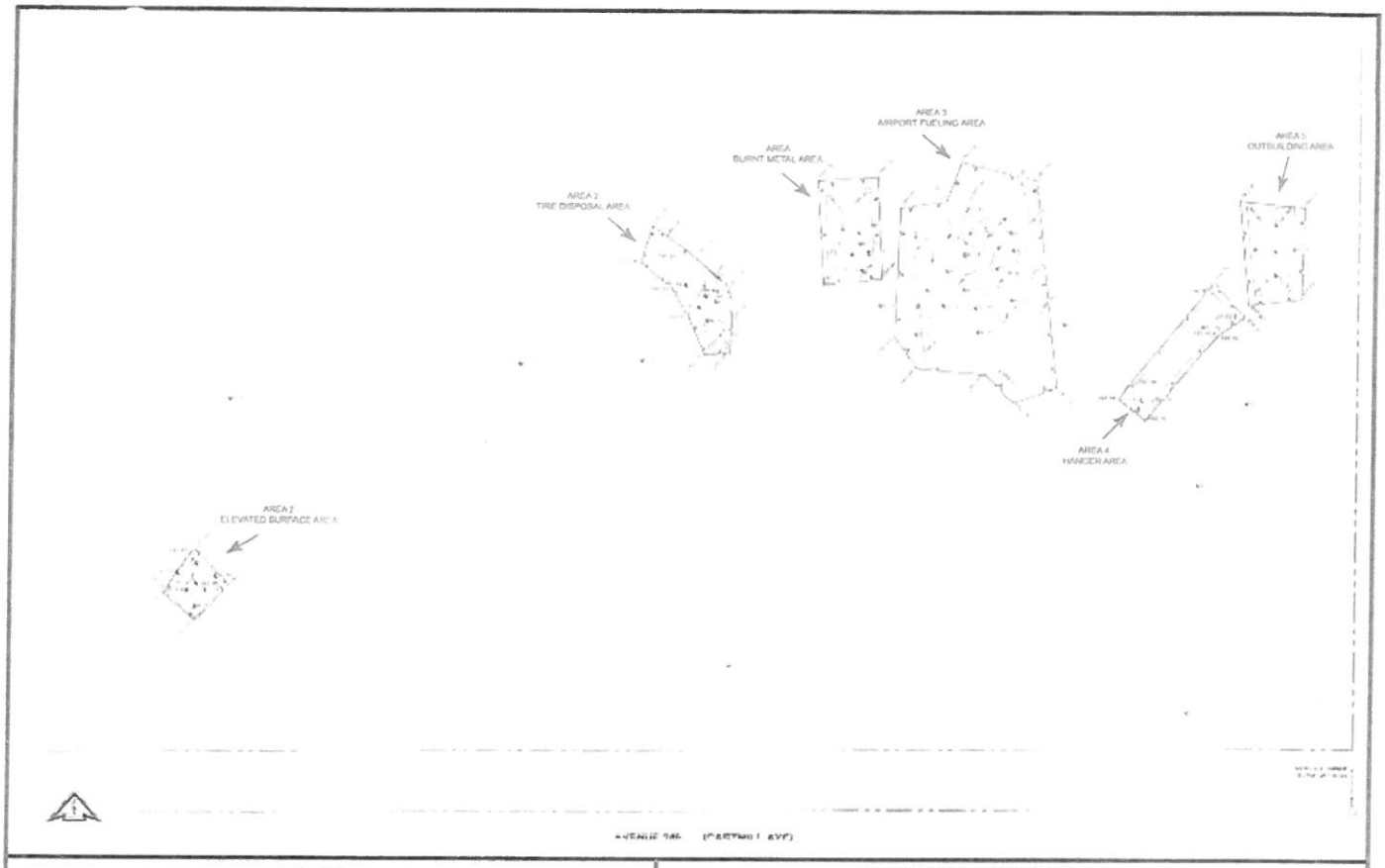
9. CONCLUSIONS AND RECOMMENDATIONS

The RAR was prepared to document the excavation and disposal of all soils that were known to exceed the most stringent cleanup levels. From November 19 through December 20, 2007, three phases of soil removal were performed to accomplish this goal, and from December 20 through 26, 2007 the 1,980 cubic yards (2,574.34 tons) of excavated soil was transported to the Waste Management hazardous waste disposal facility in Kettleman Hills, California for disposal. The excavation cavities have been secured until the laboratory results have been reviewed by Cal EPA DTSC, and with Cal EPA DTSC concurrence, the excavations will be backfilled with import materials, compacted to greater than 90 percent relative compaction, and restored to surface grade. Subsequently the project proponent intends to develop the entire property, including the former Moore Aviation facility, for commercial uses. The soil removal and disposal activities have reduced the residual concentrations of the chemicals of concern to less than their residential and industrial CHHSLs and PRGs, and the RBCA Tier 2 contaminant fate and transport modeling algorithms and dose/response calculations have verified that the soil removal activities successfully reduced the risk for the entire property to below the permissible $1x10^{-6}$ exposure levels for individual contaminants and $1x10^{-5}$ exposure levels for the cumulative risk for all of the contaminants Therefore, on behalf of the project proponent, Ennis-Henry Tulare, LLC, VEIR recommends that the Cal EPA DTSC consider the site for a NFA determination.



LEGEND	ENNIS-HENRY TULARE, LLC
N	PROPOSED TULARE NORTH SHOPPING CENTER NORTHEAST CORNER OF CARTMILL AVENUE AND HIGHWAY 99 TULARE , CALIFORNIA FIGURE 4 - PLOT PLAN
	CENTRAL SIERRA ENVIRONMENTAL, LLC

REVISED: OCTOBER 26, 2007; jlt



LEGEND	ENNIS-HENRY TULARE, LLC
N	PROPOSED TULARE NORTH SHOPPING CENTER NORTHEAST CORNER OF CARTMILL AVENUE AND HIGHWAY 99 TULARE , CALIFORNIA FIGURE 5 - PLOT PLAN SHOWING LIMITS OF EXCAVATION
	CENTRAL SIERRA ENVIRONMENTAL, LLC

REVISED: DECEMBER, 2007: clm

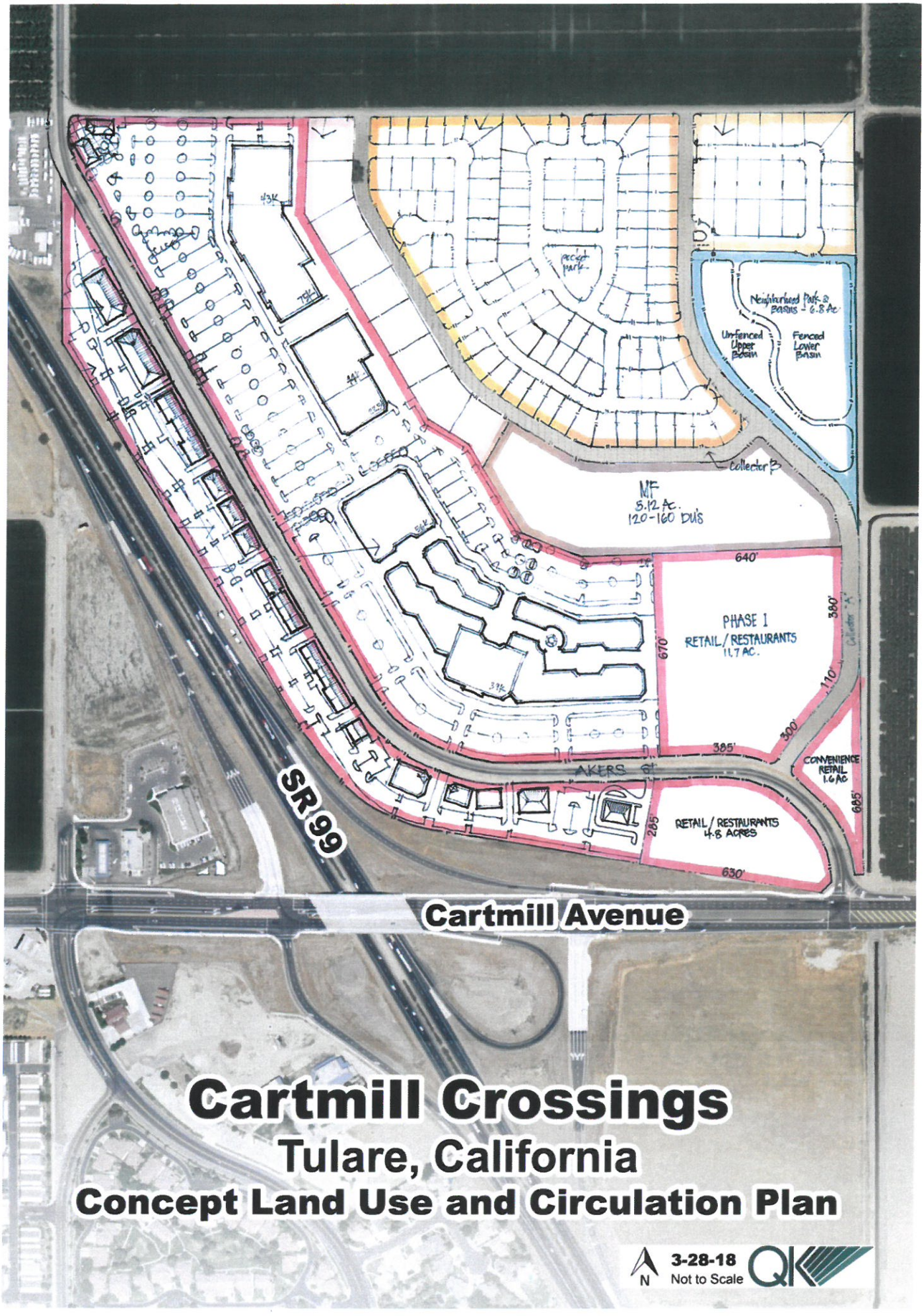
TABLE 1.
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
PROPOSED NORTH TULARE SHOPPING CENTER, TULARE, CALIFORNIA

SAMPLE SOURCE	DATE SAMPLED	SAMPLE DEPTH (fbg)	SAMPLE LOCATION	TPH AS GASOLINE (mg/kg)	TPH AS DIESEL (mg/kg)	TPH AS MOTOR OIL (mg/kg)	4,4'-DDD (mg/kg)	4,4'-DDE (mg/kg)	4,4'-DDT (mg/kg)	DIELDRIN (mg/kg)	ENDRIN (mg/kg)	TRIFLURALIN (mg/kg)	TOXAPHENE (mg/kg)	TCDD (TEQ) (ng/kg)	REF
EPA ANALYTICAL METHOD				8015 (M)			8081							8290	N/A
CLEANUP LEVEL (RESIDENTIAL CHHSL OR PRG)				100	100	100	2.3	1.6	1.6	0.03	18	63	0.44	3.9	N/A
AREA 2 - ESA	11-20-07	6	BASE	--	--	--	ND	ND	ND	ND	ND	ND	ND	--	A
	11-20-07	3	NORTH WALL	--	--	--	ND	ND	ND	ND	ND	ND	ND	--	A
	11-20-07	3	SOUTH WALL	--	--	--	ND	ND	ND	ND	ND	ND	ND	--	A
	11-20-07	3	EAST WALL	--	--	--	ND	ND	ND	ND	ND	ND	ND	--	A
	11-20-07	3	WEST WALL	--	--	--	ND	ND	ND	ND	ND	ND	ND	--	A
AREA 2 - TDA	11-19-07	6	BASE	--	--	--	0.061	0.39	0.36	ND	0.057	0.19	0.77	--	A
	12-10-07	8	BASE 2	--	--	--	ND	ND	ND	ND	ND	0.01	ND	--	A
	11-19-07	3	NORTH WALL	--	--	--	ND	ND	ND	ND	ND	ND	ND	--	A
	11-19-07	3	SOUTH WALL	--	--	--	ND	0.033	0.028	ND	ND	0.11	0.072	--	A
	11-19-07	3	EAST WALL	--	--	--	ND	0.047	0.057	ND	ND	0.14	0.34	--	A
	11-19-07	3	WEST WALL	--	--	--	ND	0.028	0.026	ND	ND	0.027	0.03	--	A
AREA 3 - BMA	11-19-07	2	BASE	ND	37	84	0.018	0.02	0.16	ND	0.021	0.052	0.26	6	A
	12-10-07	4	BASE 2	ND	ND	ND	ND	0.056	0.13	ND	ND	0.019	0.088	0.1	A
	11-19-07	1	NORTH WALL	ND	54	150	0.22	1.6	1.6	ND	0.14	0.068	3.1	230	A
	12-10-07	2	NORTH WALL 2	ND	ND	15	0.045	0.61	1.3	ND	0.029	0.29	0.89	67	A
	12-20-07	2	NORTH WALL 3	--	--	--	ND	0.0093	ND	ND	ND	ND	ND	0.13	A
	11-19-07	1	SOUTH WALL	ND	12	21	0.015	0.29	0.09	ND	0.038	0.04	0.35	0.17	A
	11-19-07	1	EAST WALL	ND	ND	ND	ND	0.35	0.064	ND	ND	ND	0.031	0.81	A
	11-19-07	1	WEST WALL	ND	ND	15	0.034	1	0.4	ND	0.03	0.14	0.78	20	A
	12-10-07	2	WEST WALL 2	ND	ND	12	ND	0.18	0.038	ND	ND	0.022	0.048	0.53	A
AREA 3 - AFA	11-20-07	4	NORTHWEST BASE	ND	210	170	0.06	0.069	0.41	ND	0.039	0.017	0.11	--	A
	12-10-07	6	NORTHWEST BASE 2	ND	23	24	0.1	0.28	1	ND	0.047	0.018	0.38	--	A
	11-20-07	10	NORTHEAST BASE	2.5	1,600	450	0.12	0.45	1.6	ND	0.1	0.083	0.6	--	A
	12-10-07	12	NORTHEAST BASE 2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	A
	11-20-07	6	CENTER BASE	ND	25	21	1	0.8	7.4	ND	0.39	0.03	3	--	A
	12-10-07	8	CENTER BASE 2	ND	ND	ND	0.025	0.13	0.25	ND	0.024	0.0085	0.2	--	A
	11-20-07	6	SOUTHWEST BASE	ND	ND	ND	ND	ND	0.013	ND	0.013	ND	0.04	--	A
	11-20-07	6	SOUTHEAST BASE	ND	ND	ND	0.012	0.039	0.34	ND	0.0085	ND	0.045	--	A
	11-20-07	2	WEST HALF OF NORTH WALL	ND	65	140	0.75	7	12	ND	0.56	0.51	5.8	--	A
	12-10-07	3	WEST HALF OF NORTH WALL 2	ND	ND	ND	0.023	0.15	0.21	ND	0.015	0.014	0.11	--	A
	11-20-07	5	EAST HALF OF NORTH WALL	5.4	16,000	5,700	0.68	0.15	0.16	ND	0.15	ND	0.074	--	A
	12-10-07	6	EAST HALF OF NORTH WALL 2	ND	24	39	0.45	3.2	7.8	ND	0.45	0.037	3	--	A
	12-20-07	6	EAST HALF OF NORTH WALL 3	--	--	--	ND	0.082	0.087	ND	ND	ND	ND	--	A
	11-20-07	3	WEST HALF OF SOUTH WALL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	A
	11-20-07	3	EAST HALF OF SOUTH WALL	ND	ND	ND	ND	0.023	0.056	ND	ND	ND	0.064	--	A
	11-20-07	4	NORTH HALF OF EAST WALL	ND	73	150	0.15	1.1	2.6	ND	0.095	0.012	0.77	--	A
	12-10-07	6	NORTH HALF OF EAST WALL 2	ND	ND	ND	ND	0.02	0.084	ND	ND	ND	0.023	--	A
	11-20-07	2	SOUTH HALF OF EAST WALL	ND	51	110	0.38	1.2	3.5	ND	0.25	0.082	1.4	--	A
	12-10-07	3	SOUTH HALF OF EAST WALL 2	ND	ND	ND	0.066	0.23	0.59	ND	0.069	0.017	0.16	--	A
	11-20-07	3	NORTH HALF OF WEST WALL	ND	ND	ND	ND	ND	0.012	ND	ND	ND	ND	--	A
	11-20-07	3	SOUTH HALF OF WEST WALL	ND	ND	ND	0.027	0.13	0.3	ND	0.044	0.12	0.3	--	A

TABLE 1.
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
PROPOSED NORTH TULARE SHOPPING CENTER, TULARE, CALIFORNIA

SAMPLE SOURCE	DATE SAMPLED	SAMPLE DEPTH (ft bg)	SAMPLE LOCATION	TPH AS GASOLINE (mg/kg)	TPH AS DIESEL (mg/kg)	TPH AS MOTOR OIL (mg/kg)	4,4'-DDD (mg/kg)	4,4'-DDE (mg/kg)	4,4'-DDT (mg/kg)	DIELDRIN (mg/kg)	ENDRIN (mg/kg)	TRIFLURALIN (mg/kg)	TOXAPHENE (mg/kg)	TCDD (TEQ) (ng/kg)	REF
EPA ANALYTICAL METHOD				8015 (M)						8081				8290	N/A
CLEANUP LEVEL (RESIDENTIAL CHHSL OR PRG)				100	100	100	2.3	1.6	1.6	0.03	18	63	0.44	3.9	N/A
AREA 4 - HA	11-20-07	2	BASE	--	--	--	ND	ND	ND	ND	ND	ND	ND	--	A
	11-20-07	1	NORTH WALL	--	--	--	0.1	1.1	0.73	ND	0.12	ND	4.5	--	A
	12-10-07	1	NORTH WALL 2	--	--	--	ND	0.029	ND	ND	ND	ND	0.11	--	A
	11-20-07	1	SOUTH WALL	--	--	--	ND	ND	ND	ND	ND	ND	ND	--	A
	11-20-07	1	EAST WALL	--	--	--	ND	0.21	0.068	ND	ND	ND	0.077	--	A
	11-20-07	1	WEST WALL	--	--	--	ND	0.2	0.072	ND	ND	ND	0.14	--	A
AREA 5 - OBA	11-19-07	2	BASE	--	--	--	ND	0.06	0.031	ND	ND	ND	0.092	--	A
	11-19-07	1	NORTH WALL	--	--	--	0.089	1.8	2.4	ND	0.056	ND	0.86	--	A
	12-10-07	1	NORTH WALL 2	--	--	--	ND	0.98	0.14	ND	ND	ND	0.3	--	A
	11-19-07	1	SOUTH WALL	--	--	--	0.017	0.56	0.16	ND	0.012	ND	0.61	--	A
	12-10-07	1	SOUTH WALL 2	--	--	--	ND	0.063	0.012	ND	ND	ND	0.083	--	A
	11-19-07	1	EAST WALL	--	--	--	0.011	0.28	0.13	ND	ND	0.014	0.23	--	A
	11-19-07	1	WEST WALL	--	--	--	0.012	0.72	0.13	ND	0.012	0.18	ND	--	A

REF = Report reference. N/A = Not applicable. ND = Not detected.
A = Central Sierra Environmental, LLC's current report.



Cartmill Crossings

Tulare, California

Concept Land Use and Circulation Plan

N

3-28-18

Not to Scale

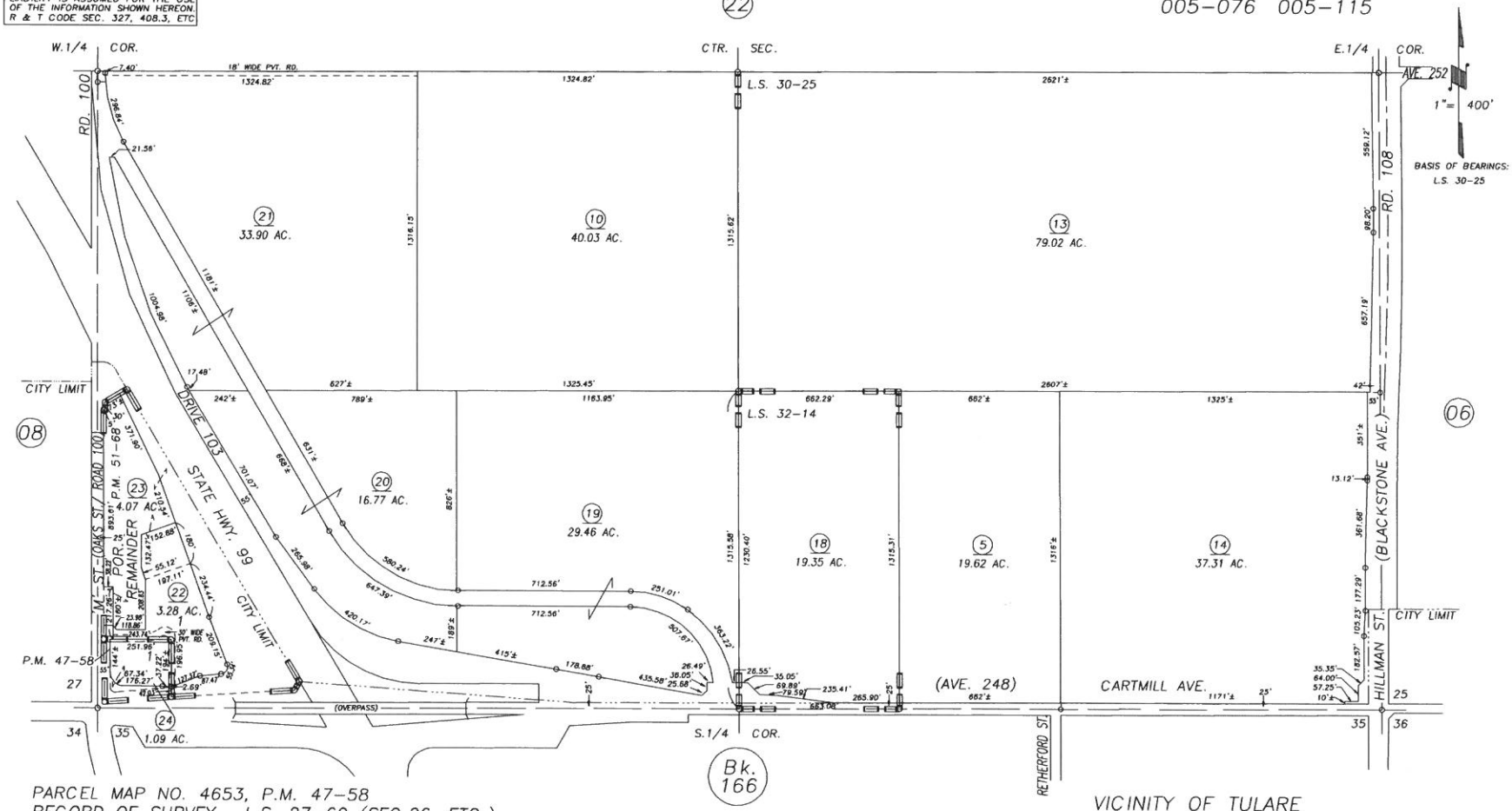
DISCLAIMER

THIS MAP WAS PREPARED FOR LOCAL PROPERTY ASSESSMENT PURPOSES ONLY AND THE PARCELS SHOWN HEREON MAY NOT COMPLY WITH STATE AND LOCAL SUBDIVISION ORDINANCES, AND NO LIABILITY IS ASSUMED FOR THE USE OF THE INFORMATION SHOWN HEREON. R & T CODE SEC. 327, 408.3, ETC

S1/2 SEC.26, T.19S., R.24E., M.D.B.&M.

Tax Area Codes 149-23

105-002 005-053
005-078 005-032
005-076 005-115



PARCEL MAP NO. 4653, P.M. 47-58
RECORD OF SURVEY, L.S. 27-69 (SEC.26, ETC.)
RECORD OF SURVEY, L.S. 30-25
PARCEL MAP NO. 5062, P.M. 51-68
RECORD OF SURVEY, L.S. 32-14
POR. RECORD OF SURVEY, L.S. 32-44 (RD. 108)

VICINITY OF TULARE
ASSESSOR'S MAPS BK.149 , PG23
COUNTY OF TULARE, CALIFORNIA, U.S.A.

NOTE: Assessor's Parcel Numbers Shown in Circles (1) (123)
Assessor's Block Numbers Shown in Ellipses

2016-0024698	06/29/2016	ASC
REVISION	DATE	TECH

APPENDIX F

OTHER SUPPORTING DOCUMENTATION

Zone 1 Highest Potential (greater than 4 pCi/L)

Zone 2 Moderate Potential (from 2 to 4 pCi/L)

Zone 3 Low Potential (less than 2 pCi/L)



CTL, INC. **710 S. KAWEAH AVENUE** **EXETER, CA 93221** **(559) 592-3555**	**RADON MAP**	N↑
PROJECT NO. E2151-18	**NEC CARTMILL AVE. & HIGHWAY 99, VISALIA, CA**	

APPENDIX G

QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

Paul J. Humphrey, REPA, CAC

Education:	College of the Sequoias, Visalia, California
	Associate of Science in Biology, 1994
Licenses/Registrations:	Registered Environmental Property Assessor #827718
	Certified Asbestos Consultant, #03-3495
Years of Experience:	Twenty

Summary of Professional Experience

Mr. Humphrey has more than twenty years experience in the environmental field including asbestos surveys, asbestos abatement monitoring and project design, environmental site assessment, soil and groundwater assessment and is an Environmental Professional as defined by the Environmental Protection Agency. Mr. Humphrey has conducted more than 2,000 Phase I Environmental Site Assessments of commercial, industrial, agricultural and multi-family residential properties in California, Nevada, Arizona, and Washington. Mr. Humphrey has more than two years experience in the ground-up development and management of a Hazardous Building Materials Department for a local environmental and engineering firm. Mr. Humphrey has also provided regulatory guidance, assessments, and asbestos surveys and monitoring to utility companies, flood control districts, public works departments, and branches of the military as part of facility expansion projects as well as new site development.

Mr. Humphrey's experience has included preliminary environmental assessments and various soil and groundwater investigations for highway expansion for the State of California Department of Transportation. Projects for the State of California highway expansion also included asbestos surveys of bridges and overpasses.

For a national environmental consulting firm, Mr. Humphrey served as Project Coordinator, where he performed and managed asbestos abatement oversight projects for national clients. Mr. Humphrey has also conducted environmental site assessments on multi-site industrial and commercial properties for various national financial institutions, developers, and property management companies. Assessments included limited and comprehensive surveys for asbestos, lead-based paint, lead-in-drinking-water and radon gas emissions.

APPENDIX F

WATER SUPPLY ASSESSMENT

WATER SUPPLY ASSESSMENT

CITY OF TULARE

CARTMILL CROSSINGS PROJECT



APRIL 2019

WATER SUPPLY ASSESSMENT

CARTMILL CROSSINGS

Prepared for:

City of Tulare
411 East Kern Street
Tulare, CA 93274
Contact Person: Mario Anaya, Principal Planner
Phone: (559) 684-4207

Consultant:

901 East Main Street
Visalia, CA 93292
Contact: Harry A. Tow, Senior Principal Planner
Phone: (559) 733-0440
Fax: (559) 733-7821

April 2019

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Project #170151.02

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SECTION 1 - INTRODUCTION

1.1 - Regulatory Requirement

Senate Bill 610 (Chapter 643, Statutes of 2001) amended State law, effective January 1, 2002, to improve the link between information on water supply availability and land use decisions made by cities and counties. The statue requires detailed information regarding water availability to be provided to city and county decision-makers prior to approval of specified large development projects which are subject to CEQA (the California Environmental Quality Act) approval. The statute also requires this detailed information to be included in the administrative record that serves as the evidentiary basis for an entitlement action by the city or county on such projects. The statute-required water supply assessment (WSA) must examine the availability and sufficiency of an identified water supply under normal year, single dry year, and multiple dry year conditions over a 20-year projection, accounting for the projected water demand of the Project in addition to other existing and planned future uses of the identified water supply.

The State Department of Water Resources "Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001" (Guidebook) and the sample format presented in the Guidebook were used as guides in preparing this WSA. The full text of Chapter 643, Statutes of 2001 (SB 610) is included in Appendix A.

As parameters of the project description essential to analysis of water usage requirements:

- Parking for the Project will be provided on paved surface-parking lots and/or parking structures if necessary;
- The Project will be constructed in full compliance with State laws regarding water conservation, including Title 24 as well as Executive Orders regarding drought conditions.
- Within the commercial area, the Project will incorporate design features to create a water-economical urban environment by utilizing combinations of landscape, pedestrian pass-ways, and street plantings. Water conservation facilities and design features will be integrated into Project design, filtering drainage along landscaped bio-swales and within landscape corridors, street parkways, medians and perimeter plantings.
- Landscaped areas will have water-conserving irrigation systems and will incorporate native vegetation and drought-tolerant plants.

The City's General Plan (2014) incorporates the following development requirements:

Policy LU-P11.3: **System Expansion.** The City shall require new development be responsible for expansion of existing facilities such as water systems, sewer systems, storm drainage systems, parks and other capital facilities made necessary to serve the new development.

Policy LU-P11.4: **Water Supply System.** The City shall require that water supply systems be adequate to serve the size and configuration of land developments. Standards as set forth in the subdivision ordinance shall be maintained and improved as necessary.

Policy LU-P11.5: **Water Supply for New Development.** For al new development, prior to the approval of any subdivision applications, the developers shall assure that there is sufficient available water supply to meet projected buildout.

Policy COS-P.1: **Regional Groundwater Protection.** The City shall work with Tulare County and special districts to help protect groundwater resources from overdraft by promoting water conservation and groundwater recharge efforts.

Policy COS-P1.2: **Groundwater Recharge Area Protection.** When considering new development, the City shall protect existing open spaces, natural habitat, floodplains, and wetland areas that serve as groundwater recharge areas.

Policy COS-P1.3: **Continued Recharge of Groundwater Basin.** In known or identified groundwater recharge areas, the predominant land use and resource activities should be designed to promote recharge of the groundwater basin and protection of groundwater quality at a level superior to standard development practices. When appropriate to the land use designation, clustered development should be encouraged to promote open space and continue infiltration.

Policy COS-P.14: **Groundwater Wells.** The City shall protect and monitor its groundwater wells to ensure a sufficient groundwater supply.

Policy COS-P1.7: **Water Source.** The City shall cooperate with other jurisdictions to jointly study the potential for using surface water sources to help protect the groundwater supply.

Policy COS-P1.8: **Water Conservation.** The City shall promote efficient water use and reduced water demand by:

- Requiring water-conserving design and equipment in new construction;
- Encouraging water-conserving landscaping and other conservation measures;
- Encouraging retrofitting existing development with water-conserving devices;
- Providing public education program;
- Distributing outdoor lawn watering guidelines;
- Promoting water audit and leak detection programs; and enforcing water conservation program.

Policy LU-P11.3: **System Expansion.** The City shall require new development be responsible for expansion of existing facilities such as water systems, sewer systems, storm drainage systems, parks and other capital facilities made necessary to serve the new development.

Policy LU-P11.4: **Water Supply System.** The City shall require that water supply systems be adequate to serve the size and configuration of land developments. Standards as set forth in the subdivision ordinance shall be maintained and improved as necessary.

Policy LU-P11.5: **Water Supply for New Development.** For all new development, prior to the approval of any subdivision applications, the developers shall assure that there is sufficient available water supply to meet projected buildout.

1.2 - Project Location and Description

The Project, 127 acres in extent, is located northeast of the Tulare city limits adjacent to State Route 99 at its intersection with Cartmill avenue (Figures 1-1 and 1-2).

It consists of the construction and occupancy of five land uses: Regional Commercial, Low Density Residential, Medium Density Residential, High Density Residential and Parks and Recreation (Figure 1-3). Examples of permitted uses in the 68.6 acres of Regional Commercial are restaurants, retail stores, hotels and service stations. Low density residential development will be 30 acres, medium density residential development will be 4.4 acres of fourplexes, high density residential development will be 7.7 acres of apartments, and a storm drainage basin/park will occupy seven acres. The balance of the site will be streets.

Table 1-1 summarizes the land use acreages, proposed residential unit numbers, and the allowable lot coverages of the commercial land uses.

Table 1-1
Land Use Summary

Land Use Designation	Allowed Units per Gross Acre	Maximum Allowed FAR/Lot Coverage*	Acreage	Maximum Gross Leasable Area	Estimated Number of Units
Regional Commercial	N/A	.27 FAR	15.0	176,000 SF	N/A
Regional Commercial	N/A	.27 FAR	53.6	630,400 SF	N/A
Low Density Residential	3.1-7.0	50% Lot Coverage	30.3	N/A	132
Medium Density Residential	7.1-14	50% Lot Coverage	4.4	N/A	40
High Density Residential	14.1-20	50% Lot Coverage	7.7	N/A	170**
Parks and Recreation	N/A	N/A	7.0	N/A	N/A
Street Rights of Way	N/A	N/A	8.8	N/A	N/A

FAR = floor area ratio SF = square feet N/A = not applicable
*Maximum allowed FAR and lot coverage per City of Tulare General Plan
**Estimated units based on 22 units per acre



Figure 1-1
Regional Location



Figure 1-2
Vicinity Location

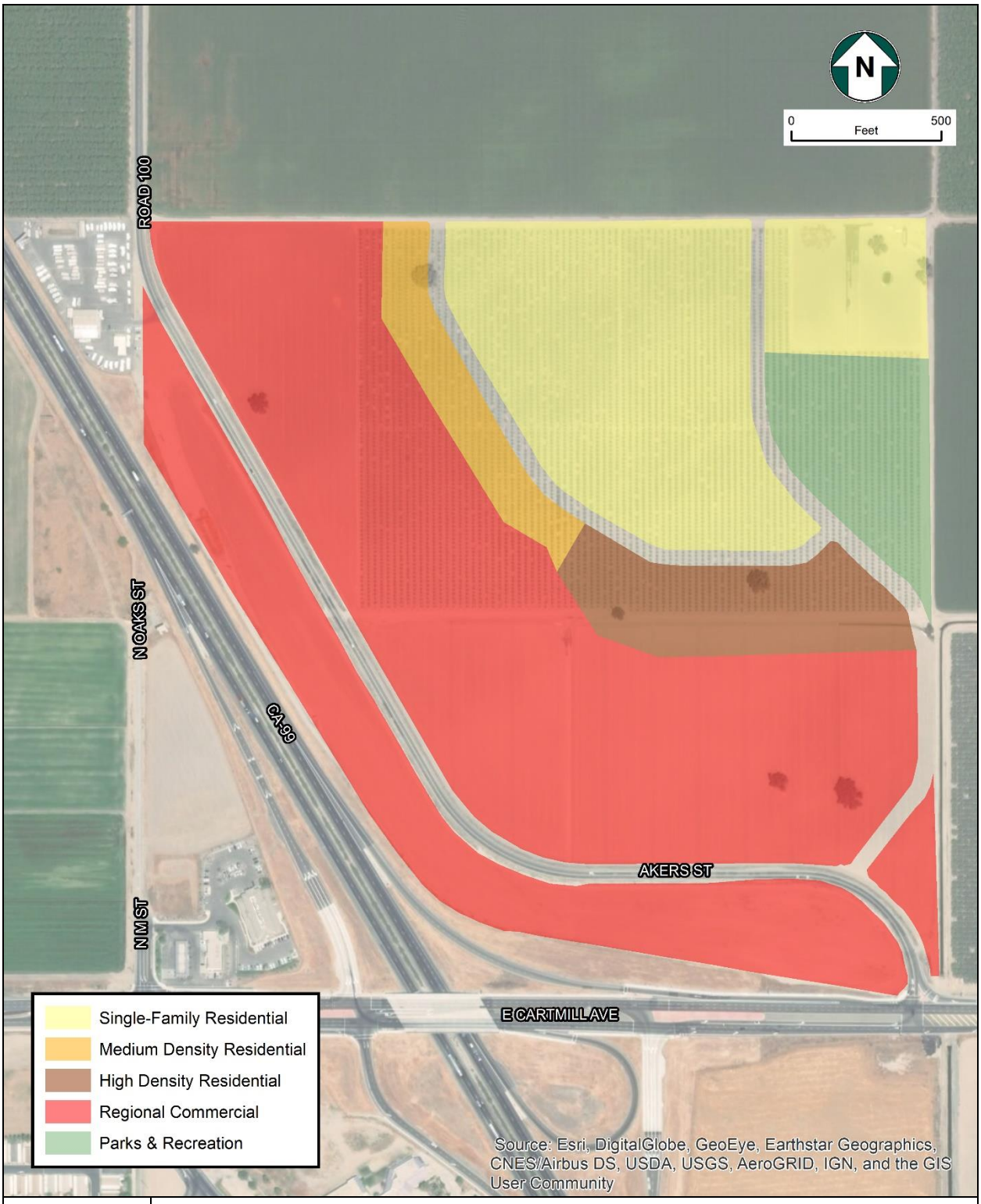


Figure 1-3
Project Land Uses

1.3 - Estimated Water Usage

The Project's water demands at buildout, are summarized in Table 1-2.

Table 1-2
Water Usage

Project Component	Description	Annual	
		Acre Feet	Million Gallons
Regional Commercial	68.6 acres	123.5	40.2
Low Density Residential	30 acres (132 units)	70.3	22.9
Medium Density Residential	4.4 acres (40 units)	12.9	4.2
High Density Residential	7.7 acres (170 units)	54.0	17.6
Parks and Recreation	7 acres	14.7	4.8
	Total	275.4	89.7

The basis for the estimated water usages depicted in Table 1-2 are:

1. The City's 2015 Urban Water Management Plan, extending the City General Plan Update figures, estimates a population of 121,391 in 2040.

   It estimates total water demand as 10,284.9 million gallons in that year (31,563-acre feet). Extrapolating from Table 4.2 in that document, percentages of water usage by land use were projected to be:

Table 1-3
Projected Percentage of Water Usage by Land Use, 2040

Land Use	Percent of Total Water Usage
Single Family	49.6
Multi-family	7.2
Other (Commercial, Institutional, Government)	16.6
Industrial	23.4
Landscape	3.2

These land use percentages are similar to those estimated for the existing land uses in the City's 2010 Urban Water Master Plan:

Table 1-4
Estimated Percentage of Water Usage, 2010

Land Use	Percentage
Single Family	55
Multi-family	7
Other (Commercial, Institutional, Government)	16
Industrial	16
Landscape	6

Utilizing the more conservative of the two estimates (the 2015 UWMP percentages, reflect a lower usage for industrial purposes), Tulare's single-family residential water usage and multi-family water usages in 2040 would be approximately 50 percent and seven percent, respectively, of the total projected water usage of 10,284 million gallons in 2040, which is 5,142 million gallons and 720 million gallons annually.

With respect, to Project residential water usage, average per capita usage for single-family residents would be, based on a projected 2040 population of 121,391, with 81 percent in single-family residences,[1] the water usage per capita would be 143 gallons per day and 85 gallons per day, usage per unit would be 474 and 295 gallons per day, respectively.

In the 2010 Urban Water Master Plan, there were, 1,589 developed commercial/institutional land acres being utilized.

The 2006 total annual water usage was 5,788 million gallons. The Master Plans concluded that commercial/institutional water usage was, in 2010, approximately 16 percent of total usage. The annual usage per acre was thus [(.16 x 5,788)/1,589], .58 million gallons per year, 1.8-acre feet per acre per year.

Without more precise definition of the usages proposed for the commercial land use area of the Project it is difficult to estimate water usage. An analysis recently performed for a project containing described commercial and institutional land uses (Appendix B) illustrates that difficulty. Land uses similar to those which might be developed for this Project were estimated to have water demands ranging from .9 (general commercial) to 3.4 (hotels) acre feet per year.

In the absence of more certainty as to this Project's "commercial development" land uses, the 1.8-acre feet per year acre derived from past Tulare data will be utilized, 1.8-acre feet per acre per year.

Based on prior City of Tulare park/pond water usage, the proposed seven-acre park/pond will require approximately 2.1-acre feet per acre and (7 x 2.1), 14.7-acre feet per year.

[1] City of Tulare Planning Department, March 12, 2019; percentage of housing units in the City

It is important to note that the water usage for the General Plan-designated land uses for the Project site water usage was considered as an effect of General Plan implementation in the adopted General Plan EIR. Such water usage is approximately the same as that required for Project implementation.

Water usage for construction and development is minimal to that required for occupancy of constructed land uses. Water usage for construction dust control, trench and roadway soils compaction, landscaping and related activities and usage is sporadic rather than long-term. Even on a short-term basis such usage does not require the water volumes required for human occupancy of residences and other structures, for waste disposal and for year-round landscaping. It's quantification for analysis is difficult but it clearly does not approximate or approach long-term water demand.

SECTION 2 - WATER RESOURCES/WATER SUPPLY

2.1 - Proposed Water Supply

Following contact with the City of Tulare's Public Works Department, Water Division, it has been determined that, subject to Department requirements, the Project can be served by the City's water system. It is located within the City's Sphere of Influence; it will be annexed; and the City's water system can supply Project-required water volumes.

The Department has noted that Project water service requirements include:

- A currently-being-constructed pipeline on Cartmill Avenue from Akers Street to Hillman Street (a Cartmill Avenue water line extension by the City);
- Preliminary test well evidence of site availability of quality-compliant, or wellhead treatable, groundwater;
- A wellsite to permit supplementation of supply from existing City wells; and
- A developer-installed waterline distribution system.

2.2 - The Groundwater Basin and Subbasin

The proposed water supply will be groundwater; the City utilizes no surface water supply.

The DWR-designated Tulare Lake Basin and Kaweah Subbasin lie within the State's Tulare Lake Hydrologic Region (HR) (Figures 2-1 and 2-2).

The Tulare Lake HR covers approximately 10.0 million acres (17,000 square miles) and includes all of Kings and Tulare Counties and most of Fresno and Kern Counties. Significant geographic features include the southern half of the San Joaquin Valley between the Temblor Range to the west, the Tehachapi Mountains to the south, and the Sierra Nevada to the east. Major population centers include Fresno, Bakersfield and Visalia.

Groundwater has historically been important to both urban and agricultural use in the HR, accounting for 41 percent of the HR's total annual supply and 35 percent of all groundwater use in the State. Groundwater use in the HR represents about 10 percent of the State's overall water supply for agricultural and urban uses (DWR 1998).

The groundwater underlying the City is located within the larger Tulare Lake Groundwater Basin (Basin), specifically located within the Kaweah Groundwater Subbasin (Subbasin) (see Figure 2-2). The Basin contains multiple interconnected subbasins that transmit, filter, and store water, including the Kings, Kern County, Kaweah, Tulare Lake, Tule, Pleasant Valley, and Westside Groundwater Subbasins. The Subbasin lies between the Kings Groundwater Subbasin to the north, Tule Groundwater Subbasin to the south, cyrstallic bedrock of the Sierra Nevada foothills to the east and Tulare Lake Groundwater Subbasin to the west.

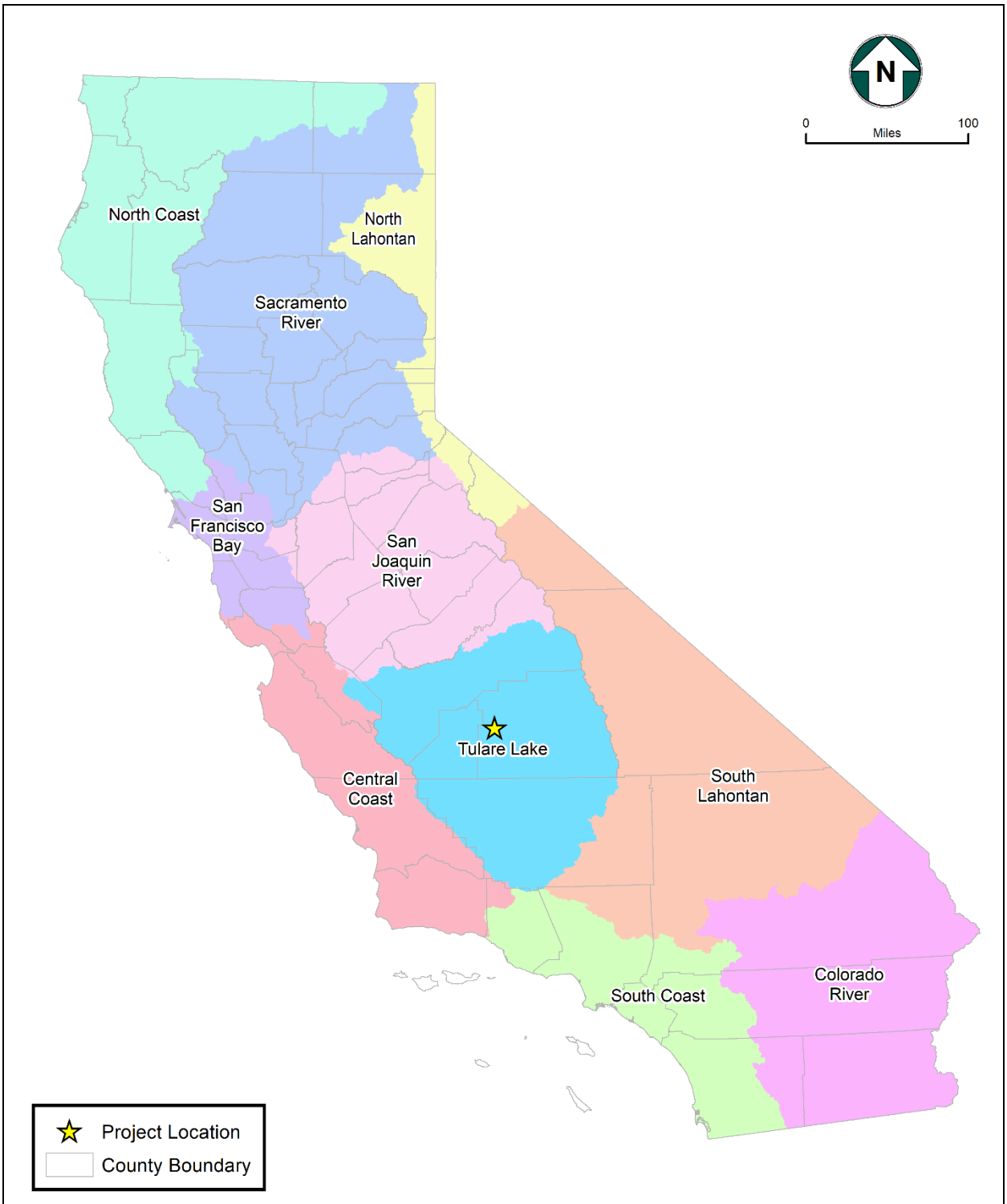


Figure 2-1
Tulare Lake Hydrologic Region

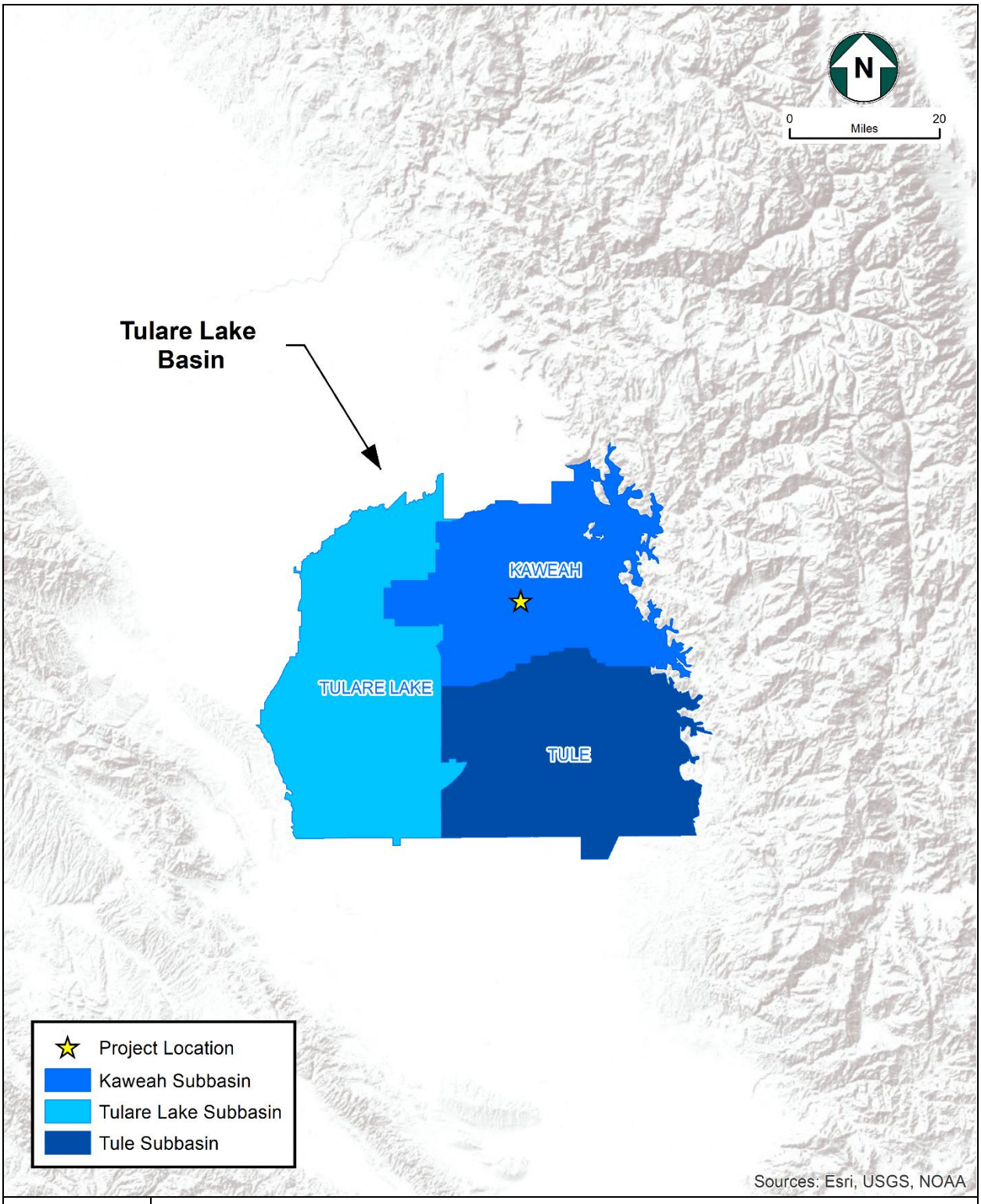


Figure 2-2
Tulare Lake Basin and Kaweah Subbasin

According to DWR Bulletin 118, the Subbasin has a surface area of approximately 446,000 acres (696 square miles) in Tulare County and Kings County. The Subbasin generally comprises the land within the Kaweah Delta Water Conservation District (KDWCD). The two major rivers overlying the Subbasin are the Kaweah and St. Johns Rivers, with the Kaweah River being the primary source of natural recharge to the area. The hydrogeology of the Subbasin is derived from the marine and continental sediments of the San Joaquin Valley. The trough structure of the Valley creates the depositional axis around which a series of rivers, lakes, sloughs, and marshes are located, and the current and historic surface drainage in the San Joaquin Valley. Groundwater flow is generally southwestward.

Both the Basin and the Subbasin have been determined by the state to be in a state of critical overdraft. The impact of this overdraft is illustrated by water levels in the City wells – 20 feet below ground surface in 1922, 185 feet below ground surface in 2019. Water levels drop during drought years, rise during years with normal or above-normal precipitation, but the general trend is downward despite periodic recovery.

2.3 - Surface Water

None of the City's direct potable water supply is currently supplied through surface water. The City is not adjacent to a free-flowing waterway so that such a strategy would be reliable. However, the City and Tulare Irrigation District (TID) have entered into an agreement whereby the City pays TID, based on its extractions, an amount for purchase of surface water through water rights held by TID. Such purchased water is then used in a groundwater recharge basin outside the City limits, but inside TID's jurisdictional boundaries. The City has a 75 percent contractual interest in the recharge basin and, due to its upgrade location, it is believed that the recharged water flows into the City's pumping zone.

The City has also invested significantly in its in-town detention basins to increase their recharge capacity. Recharges have not yet been measured, but the City plans to acquire the capability to do so as part of the measurements required by SGMA related to groundwater management. These 39 basins, previously only viewed as flood control basins, are now part of a year-round effort to collect all surface water (seasonal runoff and storm events) and to recharge the Basin.

It is anticipated that the Sustainable Groundwater Management Plan (SGMP) will require significant addition to the City's recharge program, in further cooperation with TID. Such addition might involve, for example, treatment of City wastewater to tertiary levels for usage by TID in return for added TID/City recharge up-gradient from the City.

SECTION 3 - THE WATER AGENCIES

3.1 - The City of Tulare

Under the direction of the City Council and the Public Works Commission, the City has prepared and submitted to the State 2010 and 2015 Urban Water Master Plans for the operation of the water system.

The City has not prepared a groundwater management plan (GWMP). However, two groundwater management stakeholders, whose boundaries surround or include the City, do maintain current groundwater management plans. These water agencies are the Tulare Irrigation District (TID)and the Kaweah Delta Water Conservation District (KDWCD). The groundwater management plans of both agencies share common goals. While the KDWCD GWMP focuses on regional groundwater issues, TID's GWMP focuses on groundwater issues unique to the district service area.

The City of Tulare, TID, and the City of Visalia have signed a Joint Powers agreement and submitted official notice to the State Water Resource Control Board of their formation of a Groundwater Sustainability Agency (GSA) with the authority to manage the groundwater underlying the City of Tulare, TID, and City of Visalia. A Groundwater Sustainability Plan is being developed. Coordination between this agency and other GSA's will regulate the entire Basin.

The City will extend the necessary pipeline extension to the site (see Figure 2-1) and, given satisfactory test well results, construct a new well, with a storage tank, on the site. The Project developer will install essential onsite water distribution piping.

The City's water system is currently supplied with 22 wells, with production from each well varying from 600 to 1,100 gallons per minute. Wells are drilled to about 700 feet of depth, terminating above a clay layer, and perforated for production in the 300 to 600-foot depth range. Eleven of the 22 wells are currently in non-compliance with State water quality standards; compliance is in progress (see Section 4.2, Water Quality, of this Assessment).

3.2 - Tulare Irrigation District

TID is a political subdivision of the State of California operating under the California Water Code. TID was formed in 1989 as a conjunctive use district to manage, supply, and deliver water to growers within TID. It has conjunctively utilized Kaweah River water and groundwater since the early 1940s. TID's imported water contract supply includes a large quantity of Class 2 entitlement, a supplemental supply used largely for groundwater recharge within the Friant Unit service area.

3.3 - Kaweah Delta Water Conservation District

The KDWCD is a regional water management agency that covers 340,000 acres, including land in both Tulare County and Kings County and all of TID. The KDWCD was formed under

the provisions of the Water Conservation District Act of 1927. The KDWCD GWMP was originally prepared and implemented in response to 1992 State legislation AB 3030 and was updated in 2006 in response to SB 1938, more recent Water Code interpretation, and discussion in DWR's Bulletin 118. The KDWCD GWMP covers all land within its boundaries, except for land within the boundaries of a local agency that elects to not be included.

3.4 - Mid-Kaweah Groundwater Sustainability Agency Joint Powers Authority (MK-JPA)

The City of Tulare, TID, and the City of Visalia have formed a Groundwater Sustainability Agency to complete for State approval by January 2020, a Plan to locally mitigate overdraft in coordination with other agencies in the Subbasin and Basin. The Plan must evidence, for implementation by the participating agencies, mitigation measures sufficient to correct by 2040 the existing overdraft. The Plan has not yet been completed, nor has engineering analysis, to the point that written documentation or recommendations are available.

SECTION 4 - CITY OF TULARE URBAN WATER MASTER PLANS (UWMPS); WATER QUALITY

4.1 - The UWMPs

The City has adopted 2010 and 2015 UWMPs. These documents include, and are utilized as information for Assessment analysis, data regarding existing and project City water supply and system characteristics and water supply adequacy.

4.2 - Water Quality

Tulare's water supply, utilizing only groundwater from above underlying clay layers, has low total dissolved solids, no nitrate problems and none of the potential taste, odor or chlorination-resultant problems which result from the usage of groundwater from below such clay layers (see Appendix C).

The City is, however, currently correcting a 1, 2, 3-TCP compliance issue. Eleven of the 22 existing wells are in non-compliance. All are, and will be, equipped with carbon filtration; complete compliance will be achieved by 2021 (see Appendix D).

It should be noted that a recent State-required survey of school water supplies in California which are served by public water systems found one elementary school in Tulare to exceed the lead contamination compliance level of 5 ppb (at 5.9 ppb). All other schools served by the City of Tulare water system were in compliance. It is likely that non-compliance at that school, in an older neighborhood, is related to the service connection or onsite piping rather than the municipal water system (see Appendix C).

SECTION 5 - WATER SUPPLY SUFFICIENCY

5.1 - Projected "Water Years" Supply Adequacy

This section considers Tulare's water supply reliability during three climate-related water scenarios: normal water year, single dry water year, and multiple dry water years. These scenarios are defined as follows:

Normal Year: The normal year is a year in the historical sequence that most closely represents median runoff levels and patterns. The supply quantities for this condition are derived from historic average yields.

Single dry Year: This is defined as the year with the minimum useable supply. The supply quantities for this condition are derived from the minimum historic annual yield.

Multiple dry Years: This is defined as the three consecutive years with the minimum useable supply. Water systems are more vulnerable to these droughts of long duration, because they deplete water storage reserves in local and State reservoirs and in groundwater basins. The supply quantities for this condition are derived from the minimum of historic three-year running average yields. During multiple dry years, the City relies on more stringent water conservation measures.

THE TOTAL WATER SYSTEM

The 2015 Urban Water Master Plan analyzed in appropriate detail the "water years" supply adequacy for the City. That California Water Code (CWC)-compliant analysis requirement is:

Supply and Demand Assessment

CWC 10635

> *(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry and multiple dry years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional or local agency population projections with the service area of the urban water supplier.*

The City's total water system normal year, dry year, and multiple dry year water demand/water supply projections and analysis excerpted from the 2015 Urban Water Management Plan appear to be based on adequate data and analysis. They are hereby reproduced. They contain data and analyses reflecting both the domestic (residential,

commercial, industrial) service and the City water system supply demand of "industrial agriculture" (dairy products) processors, a significant proportion of which is used in the production of agricultural commodities.

The City's water supplies are drawn 100% from groundwater supplies. There are currently no concerns regarding a diminishment of the groundwater supplies such that the City is not able to provide water to its service area. In all estimates and projections, supply is equal to demand given that the City does not have an accurate account of the quantity of groundwater available in the aquifers below ground and the City shares these aquifers with other municipal service areas. Current and ongoing management of these supplies are achieved through both voluntary and state-mandated consumption conservation efforts, and SGMA.

Table 5-1
Normal Year Supply and Demand Comparison

	2020	2025	2030	2035	2040 (Opt)
Supply totals	11,106	12,968	15,152	17,713	20,372
Demand totals	11,106	12,968	15,152	17,713	20,372
Difference	0	0	0	0	0

Table 5-2
Single Dry Year Supply and Demand Comparison

	2020	2025	2030	2035	2040 (Opt)
Supply totals	8,662	10,512	12,748	15,546	20,372
Demand totals	8,662	10,512	12,748	15,546	20,372
Difference	0	0	0	0	0

Table 5-3
Multiple Dry Years Supply and Demand Comparison

		2020	2025	2030	2035	2040 (Opt)
First Year	Supply totals	8,662	10,512	12,748	15,546	20,372
	Demand totals	8,662	10,512	12,748	15,546	20,372
	Difference	0	0	0	0	0
Second Year	Supply totals	8,662	10,512	12,748	15,546	20,372
	Demand totals	8,662	10,512	12,748	15,546	20,372
	Difference	0	0	0	0	0
Third Year	Supply totals	8,662	10,512	12,748	15,546	20,372
	Demand totals	8,662	10,512	12,748	15,546	20,372
	Difference	0	0	0	0	0

*Table numbers changed for reference convenience in this Assessment.

THE DOMESTIC WATER SYSTEM

For ease in the analysis of the 'domestic' water system, its demand and supply relationships are tabulated in this WSA subsection. These tabulations are based on:

- A 2.7 percent increase (General Plan-estimated) in population each year, resulting in a 2040 population of 121,391;
- A State-methodology estimate (2015 UWMP) of 242 gallons per day per capita;
- The historic data regarding normal year, dry year, and multiple dry year retail water demand fluctuations (Table 5-4); and

Table 5-4
Bases of Water Year Data

Year Type	*Base Year*	*Available supplies*	
		Volume Available	*% of Avg. Supply*
Average Year	*1997*	*4,234.4*	*100%*
Single Dry Year	*1989*	*3,052.9*	*72.1%*
Multiple Dry Years 1st Year	*1988*	*3,253.0*	*76.8%*
Multiple Dry Years 2nd Year	*1989*	*3,052.9*	*72.1%*
Multiple Dry years 3rd Year	*1990*	*3,326.0*	*78.5%*

- An estimate (2015 UWMP) of 10,284 million gallons annual water demand in 2040.

Basis of Water Data

Historical rainfall data available (for Visalia) from the California Department of Water Resources' (DWR) California Data Exchange Center (CDEC) were examined to establish a basis of water years for normal, single dry, and multiple dry years. As shown in Table 5-1, for the purposes of this report, the year 1997 is classified as a "normal" year, the year 1989 is classified as a "single dry" year, and the years 1988 to 1990 are classified as "multiple dry" years.

With these data, the following are the domestic system "project year" demand and supply tables:

Demand figures are based upon City of Tulare General Plan population projections and incorporating community growth including development of the Project site. (Estimated Project water usage is approximately .00027 percent of total estimated water demand.)

Table 5-5
Domestic System Supply and Demand, Normal Year

	2020	2025	2030	2035	2040
Supply Total	6,241	7,130	8,146	9,307	10,284
Demand Total	6,241	7,130	8,146	9,307	10,284

Table 5-6
Percentages of Normal Supply and Demands; Resulting Comparative 2040 Volumes*

	%	Volume, 2040
Single Dry Year	72.1	7,415
Multiple Dry Years, 1st Year	76.8	7,898
Multiple Dry Years, 2nd Year	72.1	7,415
Multiple Dry Years, 3rd Year	78.5	8,073

*See Table 5-1

It is important to note that, given the continuing adequacy of the City's well, storage and distribution system, and State required mandatory groundwater basin resource sustainability, water demand and water supply will never be drought-susceptible as would surface water supplies.

5.2 - Infrastructure Sufficiency

With the well/storage/distribution system additions described in Section 2.1 of this Assessment, the existing City well supply distribution and the water quality compliance program described in Section 4.2, it is evident that the City can supply needed projected water demands to the Project.

5.3 - Regional Supply Reliability

California Water Code Section 1060

> *(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*

The Sustainable Groundwater Management Act (SGMA) provides the City with a legal framework to participate in decisions affecting the Kaweah Subbasin, which is the sole source of the City's water deliveries. The City is working closely with TID on projects to import surplus water in wet years from the Friant-Kern Canal System. The City also participated with other stakeholders in preparing and submitting to the State an Integrated Regional Water Management Plan (IRWMP). This IRWMP, prepared under the direction of the Kaweah Delta Water Conservation District, documents and details the approach of its participants within the watershed as to methods for coordinating and integrating management of available water resources.

The Kaweah Subbasin Groundwater Sustainability Plan will probably not be adopted until January 2020. There is, however, no indication at this time that the Plan would evaluate, or require implementation of, any conditions or measures which would invalidate current conclusions regarding water supply adequacy for the Project. The City of Tulare is a contributor to Subbasin groundwater sustainability with its groundwater recharge program and will probably be required by the adopted, coordinated, Plans to further contribute to and

implement current recharge program in order to achieve Subbasin groundwater sustainability.

The City's participation in, and the State-mandated 2040 groundwater sustainability implementation of, a coordinated Groundwater Sustainability Plan for the Basin, assures the availability of the groundwater resource which is the City's water supply.

SECTION 6 - CONCLUSIONS

Based upon the Project description, its projected water usage, analyses of normal year, dry year and multiple dry year water demand and supply, and infrastructure availability and requirements, it is concluded that the proposed water supply for the Project will be, in all climate years, sufficient to meet Project water demands.

The Project Water Supply Assessment, in providing data and analysis supporting this conclusion, is consistent with the Department of Water Resources Guidelines (see Appendix E).

SECTION 7 - REFERENCES

2010 Urban Water Management Plan, City of Tulare

2015 Urban Water Management Plan, City of Tulare

2006. California's Groundwater Bulletin 118. Hydrologic Region, San Joaquin Valley Groundwater Basin (online): http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/6-44.pdf.

2003. Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001 (online): http://www.water.ca.gov/pubs/use/sb_610_sb_221_guidebook/guidebook.pdf

Personal contacts, Mario A. Anaya, Principal Planner, City of Tulare; March 2019

Personal contacts, Tim Doyle, Water and Wastewater Collections Utility Manager, City of Tulare; March 2019

APPENDIX A

CHAPTER 643, STATUTES OF 2001 (SENATE BILL 610)

Chapter 643, Statutes of 2001 (Senate Bill 610)

An act to amend Section 21151.9 of the Public Resources Code, and to amend Sections 10631, 10656, 10910, 10911, 10912, and 10915 of, to repeal Section 10913 of, and to add and repeal Section 10657 of, the Water Code, relating to water. Approved by Governor October 9, 2001. Filed with Secretary of State October 9, 2001.

The people of the State of California do enact as follows:

SECTION 1. (a) The Legislature finds and declares all of the following:
(1) The length and severity of droughts in California cannot be predicted with any accuracy.

(2) There are various factors that affect the ability to ensure that adequate water supplies are available to meet all of California's water demands, now and in the future.

(3) Because of these factors, it is not possible to guarantee a permanent water supply for all water users in California in the amounts requested.

(4) Therefore, it is critical that California's water agencies carefully assess the reliability of their water supply and delivery systems.

(5) Furthermore, California's overall water delivery system has become less reliable over the last 20 years because demand for water has continued to grow while new supplies have not been developed in amounts sufficient to meet the increased demand.

(6) There are a variety of measures for developing new water supplies including water reclamation, water conservation, conjunctive use, water transfers, seawater desalination, and surface water and groundwater storage.

(7) With increasing frequency, California's water agencies are required to impose water rationing on their residential and business customers during this state's frequent and severe periods of drought.

(8) The identification and development of water supplies needed during multiple-year droughts is vital to California's business climate, as well as to the health of the agricultural industry, environment, rural communities, and residents who continue to face the possibility of severe water cutbacks during water shortage periods.

(9) A recent study indicates that the water supply and land use planning linkage, established by Part 2.10 (commencing with Section 10910) of Division 6 of the Water Code, has not been implemented in a manner that ensures the appropriate level of communication between water agencies and planning agencies, and this act is intended to remedy that deficiency in communication.

(b) It is the intent of the Legislature to strengthen the process pursuant to which local agencies determine the adequacy of existing and planned future water supplies to meet existing and planned future demands on those water supplies.

SEC. 2. Section 21151.9 of the Public Resources Code is amended to read:
21151.9. Whenever a city or county determines that a project, as defined in Section 10912 of the Water Code, is subject to this division, it shall comply with Part 2.10 (commencing with Section 10910) of Division 6 of the Water Code.

SEC. 3. Section 10631 of the Water Code is amended to read:
10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be

based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments as described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the amount and location of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the location, amount, and sufficiency of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(1) An average water year.
(2) A single dry water year.
(3) Multiple dry water years.

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.
(B) Multifamily.
(C) Commercial
(D) Industrial.
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural.

(2) The water use projections shall be in the same five-year increments as described in subdivision (a). (f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.
(B) Residential plumbing retrofit.
(C) System water audits, leak detection, and repair.
(D) Metering with commodity rates for all new connections and retrofit of existing connections.
(E) Large landscape conservation programs and incentives.
(F) High-efficiency washing machine rebate programs.
(G) Public information programs.
(H) School education programs.
(I) Conservation programs for commercial, industrial, and institutional accounts.
(J) Wholesale agency programs.
(K) Conservation pricing.
(L) Water conservation coordinator.
(M) Water waste prohibition.
(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of such savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and non-economic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single dry, and multiple dry water years. The description shall identify specific projects and include a description of the increase

in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

SEC. 3.5. Section 10631 of the Water Code is amended to read:
10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments as described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(1) An average water year.

(2) A single dry water year.

(3) Multiple dry water years. For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.
(B) Multifamily.
(C) Commercial.
(D) Industrial
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural.

(2) The water use projections shall be in the same five-year increments as described in subdivision (a).

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.
(B) Residential plumbing retrofit.
(C) System water audits, leak detection, and repair.
(D) Metering with commodity rates for all new connections and retrofit of existing connections.
(E) Large landscape conservation programs and incentives.
(F) High-efficiency washing machine rebate programs.
(G) Public information programs.
(H) School education programs.
(I) Conservation programs for commercial, industrial, and institutional accounts.
(J) Wholesale agency programs.
(K) Conservation pricing.
(L) Water conservation coordinator.
(M) Water waste prohibition.
(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single dry, and multiple dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).
SEC. 4. Section 10656 of the Water Code is amended to read:
10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

SEC. 4.3. Section 10657 is added to the Water Code, to read:
10657. (a) The department shall take into consideration whether the urban water supplier has submitted an updated urban water management plan that is consistent with Section 10631, as amended by the act that adds this section, in determining whether the urban water supplier is eligible for funds made available pursuant to any program administered by the department.

(b) This section shall remain in effect only until January 1, 2006, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2006, deletes or extends that date.

SEC. 4.5. Section 10910 of the Water Code is amended to read:
10910. (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

(b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined in Section 10912, that may supply water for the project. If the city or county is not able to identify any public water system that may supply water for the project, the city or county shall prepare the water assessment required by this part after consulting with any entity serving domestic water supplies whose service area includes the project site, the local agency formation commission, and any public water system adjacent to the project site.

(c) (1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).

(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).

(3) If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a discussion with regard to whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses.

(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

(d) (1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.

(2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:

(A) Written contracts or other proof of entitlement to an identified water supply.

(B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.

(C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.

(D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.

(e) If no water has been received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts, the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall also include in its water supply assessment pursuant to subdivision (c), an identification of the other public water systems or water service contract-holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has identified as a source of water supply within its water supply assessments.

(f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment:

(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.

(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. A water supply assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.

(g) (1) Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.

(2) Prior to the expiration of the 90-day period, if the public water system intends to request an extension of time to prepare and adopt the assessment, the public water system shall meet with the city or county to request an extension of time, which shall not exceed 30 days, to prepare and adopt the assessment.

(3) If the public water system fails to request an extension of time, or fails to submit the assessment notwithstanding the extension of time granted pursuant to paragraph (2), the city or county may seek a writ of mandamus to compel the governing body of the public water system to comply with the requirements of this part relating to the submission of the water supply assessment.

(h) Notwithstanding any other provision of this part, if a project has been the subject of a water supply assessment that complies with the requirements of this part, no additional water supply assessment shall be required for subsequent projects that were part of a larger project for which a water supply assessment was completed and that has complied with the requirements of this part and for which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has concluded that its water supplies are sufficient to meet the projected water demand associated with the proposed project, in addition to the existing and planned future uses, including, but not limited to, agricultural and industrial uses, unless one or more of the following changes occurs:

(1) Changes in the project that result in a substantial increase in water demand for the project.

(2) Changes in the circumstances or conditions substantially affecting the ability of the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), to provide a sufficient supply of water for the project.

(3) Significant new information becomes available which was not known and could not have been known at the time when the assessment was prepared.

SEC. 5. Section 10911 of the Water Code is amended to read:
10911. (a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. If the city or county, if either is required to comply with this part pursuant to subdivision (b), concludes as a result of its assessment, that water supplies are, or will be, insufficient, the city or county shall include in its water supply assessment its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. Those plans may include, but are not limited to, information concerning all of the following:

(1) The estimated total costs, and the proposed method of financing the costs, associated with acquiring the additional water supplies.

(2) All federal, state, and local permits, approvals, or entitlements that are anticipated to be required in order to acquire and develop the additional water supplies.

(3) Based on the considerations set forth in paragraphs (1) and (2), the estimated timeframes within which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), expects to be able to acquire additional water supplies.

(b) The city or county shall include the water supply assessment provided pursuant to Section 10910, and any information provided pursuant to subdivision (a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.

(c) The city or county may include in any environmental document an evaluation of any information included in that environmental document provided pursuant to subdivision (b). The city or county shall determine, based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses. If the city or county determines that water supplies will not be sufficient, the city or county shall include that determination in its findings for the project.

SEC. 6. Section 10912 of the Water Code is amended to read:
10912. For the purposes of this part, the following terms have the following meanings:

(a) "Project" means any of the following:

(1) A proposed residential development of more than 500 dwelling units.

(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.

(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.

(4) A proposed hotel or motel, or both, having more than 500 rooms.

(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.

(6) A mixed-use project that includes one or more of the projects specified in this subdivision.

(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

(b) If a public water system has fewer than 5,000 service connections, then "project" means any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of 10 percent or more in the number of the public water system's existing service connections, or a mixed-use project that would demand an amount of water equivalent to, or greater than, the amount of water required by residential development that would represent an increase of 10 percent or more in the number of the public water system's existing service connections.

(c) "Public water system" means a system for the provision of piped water to the public for human consumption that has 3000 or more service connections. A public water system includes all of the following:

(1) Any collection, treatment, storage, and distribution facility under control of the operator of the system which is used primarily in connection with the system.

(2) Any collection or pretreatment storage facility not under the control of the operator that is used primarily in connection with the system.

(3) Any person who treats water on behalf of one or more public water systems for the purpose of rendering it safe for human consumption.

SEC. 7. Section 10913 of the Water Code is repealed.

SEC. 8. Section 10915 of the Water Code is amended to read:
10915. The County of San Diego is deemed to comply with this part if the Office of Planning and Research determines that all of the following conditions have been met:

(a) Proposition C, as approved by the voters of the County of San Diego in November 1988, requires the development of a regional growth management plan and directs the establishment of a regional planning and growth management review board.

(b) The County of San Diego and the cities in the county, by agreement, designate the San Diego Association of Governments as that review board.

(c) A regional growth management strategy that provides for a comprehensive regional strategy and a coordinated economic development and growth management program has been developed pursuant to Proposition C.

(d) The regional growth management strategy includes a water element to coordinate planning for water that is consistent with the requirements of this part.

(e) The San Diego County Water Authority, by agreement with the San Diego Association of Governments in its capacity as the review board, uses the association's most recent regional growth forecasts for planning purposes and to implement the water element of the strategy.

(f) The procedures established by the review board for the development and approval of the regional growth management strategy, including the water element and any certification process established to ensure that a project is consistent with that element, comply with the requirements of this part.

(g) The environmental documents for a project located in the County of San Diego include information that accomplishes the same purposes as a water supply assessment that is prepared pursuant to Section 10910.

SEC. 9.
Section 3.5 of this bill incorporates amendments to Section 10631 of the Water Code proposed by both this bill and AB 901. It shall only become operative if (1) both bills are enacted and become effective on or before January 1, 2002, (2) each bill amends Section 10631 of the Water Code, and (3) this bill is enacted after AB 901, in which case Section 3 of this bill shall not become operative.

SEC. 10.
No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because a local agency or school district has the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service mandated by this act, within the meaning of Section 17556 of the Government Code.

APPENDIX B

TYPICAL COMMERCIAL DEVELOPMENT WATER USAGE - SAN JOAQUIN VALLEY

TYPICAL ESTIMATED WATER USAGE – SAN JOAQUIN VALLEY COMMERCIAL DEVELOPMENT

(Although the Project's acreage is proposed to be developed in phases, water usage is estimated for the total Project's implementation.)

Table 1
Water Usage

	Project Component	Description	Annual Usage, Acre Feet/Year
1	Medical Offices	10 acres; 100,000 sq. ft. of buildings	13
2	Surgery Center	6 acres; 150 beds	15
3	Two Hotels	8 acres; 240 rooms	27
4	General Commercial	36 acres (360,000 sq. ft. of buildings)	32
		Total Project	

1. Assuming a moderate-intensity medical office complex (4.0 acres of building on a 10-acre site) and high-quality landscaping, indoor water usage would be in the order of (4.0 x 2) 8.0-acre feet per year and landscaping usage approximately (1 acre x 4-acre feet per acre) 4-acre feet per year; a total of 12-acre feet per year based on 2007 data.

   2012 data (Appendix C) estimates total usage for medical offices as 140 gallons per day per 1,000 square feet of building. For 100,000 square feet of Project-proposed medical offices, this usage would be 14.5-acre feet per year.

   The mean of these two estimates (02/14.5)/2, 13-acre feet per year will be used.

2. With a surgery center of 150 beds, it is assumed that moderate intensity office facility land use intensities will be duplicated. Such intensity, on (6 x .4), 2.4 acres would amount to an allowance of 700 square feet of building per bed/surgery rooms, waiting rooms, reception and clerical space, surgery preparation areas, pharmaceutical and equipment storage, and surgeons' office space. (There is no readily available data for specialty-service ambulatory surgery center facilities-endoscopy, orthomology, orthopedics, urology, etc., thus complicating accurate water demands estimation.)

   With more limited parking demands for ambulatory surgeries than for medical offices, it is assumed that a surgery building area of (700 square feet x 150 beds, 104,000 square feet, 2.4 acres) would require only about 1 ½ acres (225 parking spaces) of parking and access, leaving about 2 acres of landscaping to be irrigated on the proposed 6-acre site.

   Indoor water usage would be approximately (2 x 2.4) 4.8-acre feet per year and outdoor demand (2 acres x 4-acre feet per acre) 8-acre feet, approximately 12-acre feet total.

With a separate database, a total water usage of 132 gallons per day per 1,000 square feet with 105,000 square feet (150 beds @ 700 square feet) of building would be 15-acre feet annually.

15-acre feet of water usage per year will be used.

3. The proposed two 120 room hotels on 8 acres of Project site are estimated both on the basis of average water usage per room of 102 gallons per day (EPA Energy Star Portfolio Manager and on the basis of an average hotel (motel) size of about 50,000 square feet, 120 rooms[1] and average water usage per room of 230 gallons per 1,000 square feet, both resulting in estimated annual usage of approximately 27 acre feet per year.

4. General commercial facilities, presumably a community shopping center or its equivalent, have been estimated to occupy 40 percent of their allotted site, hardscaping (paring and access, 55 percent of that site, and landscaping only 5 percent).

   With a 40 percent assumed building footprint and 1-acre foot per acre usage, in-building usage would be (.4 x 36 x 1) 14-5-acre feet. With 5 percent landscaping and 4-acre feet per acre demand, landscaping usage would be (4 x 36 x .05) 7.2-acre feet. With this usage estimation method, total water usage would be 22-acre feet.

   Utilizing Appendix C as an estimation guide, and 360,000 square feet of building (23 percent of the total allotted retail site, not 50 percent as assumed in the above calculation), total water usage of the retail facilities would be, at 115 gallons per day per 1,000 square footage of buildings, approximately [115 x 360 x 365/1,000,000) x 3.1] 45-acre feet, including landscaping. With modern water conservation savings, at California regulatory and practice levels, this usage should be reduced by 30 percent to 32-acre feet annually.

   To be conservative, 32-acre feet will be used (the higher of the two estimates, with adjustment for regulatory/practice usage reduction).

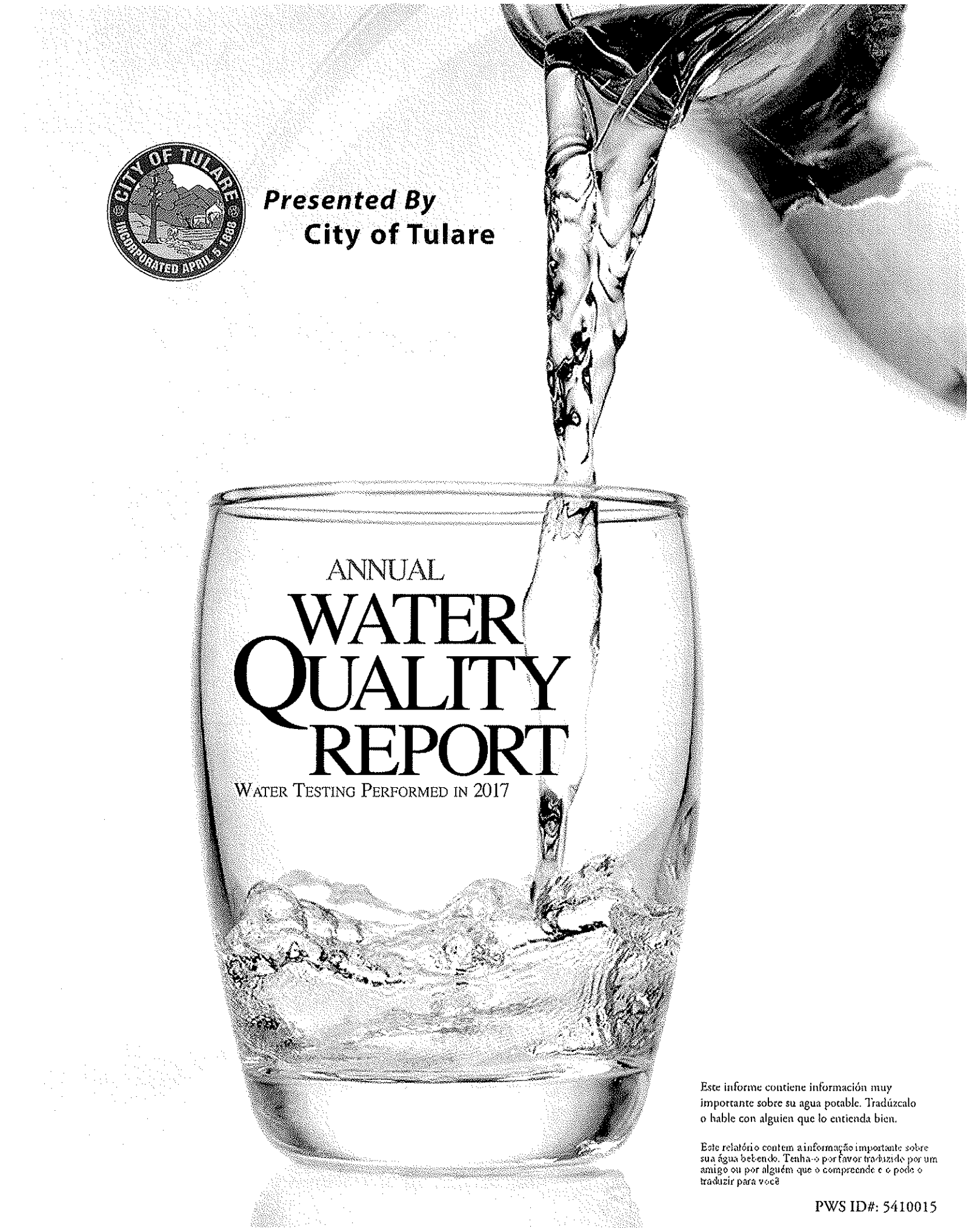
   Conclusion: The calculated total water usage of the Project as described is _____ feet annually. This calculation does not take into account the possible further development of the 36-acre general commercial site. Such further development, as retail, could involve another 270,000 square feet of commercial buildings, as much as an addition (270,000/360,000) .75 x 32, 24-acre feet annually. Neither does it consider the addition and development of 2.7 acres of perhaps unused hotel site land (see 3 above) which would result in another (.40 x 2.7 x 1) acre foot of commercial water demand.

   The total water demand of the fully developed site might thus increase from 112-acre feet to 137-acre feet.

[1] USA Today, https/www.fixr.com/costs/build-hotel

APPENDIX C

CITY OF TULARE 2017 ANNUAL WATER QUALITY REPORT



Presented By
City of Tulare

ANNUAL WATER QUALITY REPORT

WATER TESTING PERFORMED IN 2017

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Este relatório contem a informação importante sobre sua água bebendo. Tenha-o por favor traduzido por um amigo ou por alguém que o compreende e o pode o traduzir para você

PWS ID#: 5410015

Quality First

Once again we are pleased to present our annual water quality report, covering all drinking water testing performed between January 1, 2015 and December 31,2017. As in years past, we are committed to delivering the best-quality drinking water possible. To that end, we remain vigilant in meeting the challenges of new regulations, source water protection, water conservation, distribution system upgrades, and community outreach and education. We encourage you to share your thoughts with us on the information contained in this report. After all, well-informed customers are our best allies.

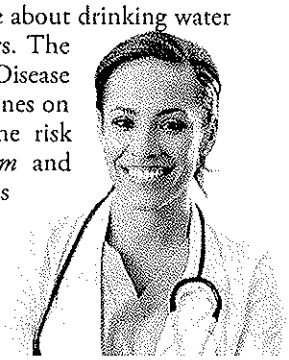
Water treatment is a complex, time-consuming process.

Thank you for the opportunity to serve the needs of all our water users.

Important Health Information

While your drinking water meets the federal and state standard for arsenic, it does contain low levels of arsenic. The arsenic standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The U.S. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or http://water.epa.gov/drink/hotline.



Substances That Could Be in Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (U.S. EPA) and the State Water Resources Control Board (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration regulations and California law also establish limits for contaminants in bottled water that provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk.

Contaminants that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife;

Inorganic Contaminants, such as salts and metals, that can be naturally occurring or can result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

Pesticides and Herbicides, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production and can also come from gas stations, urban stormwater runoff, agricultural applications, and septic systems;

Radioactive Contaminants, that can be naturally occurring or can be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Lead in Home Plumbing

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We are responsible for providing high-quality drinking water, but we cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. (If you do so, you may wish to collect the flushed water and reuse it for another beneficial purpose, such as watering plants.) If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/lead.

Source Water Assessment

A Source Water Assessment was conducted for the City of Tulare in November 2002. No contaminants were detected in the water supply. However, the water source is considered most vulnerable to the following activities: chemical/ petroleum processing, storage, and use; historic gas stations; and high-density septic systems. A copy of the assessment may be viewed at the Water Utility Division Office, 3981 South K Street, Tulare, during regular business hours.

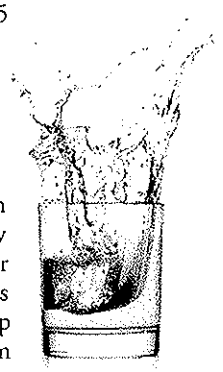
Where Does My Water Come From?

The City of Tulare Water customers enjoy a groundwater supply from 25 City-owned and -operated wells. The source water wells are identified by numbers: #1, #2, #8, #11, #12, #13, #14, #15, #17, #20, #22, #23, #26, #27, #31, #33, #34, #35, #36, #37, #38, #39, #40, #42, and #44. Water is pumped by these wells from an area deep beneath the city called the Confined Ground Water System, which consists of alluvial sediments below a Corcoran Clay layer of the Tulare Lake Basin. Combined, our facilities provide 6 billion gallons of drinking water every year. To learn more about our watershed on the Internet, visit the U.S. EPA's Surf Your Watershed Web site, at www.epa.gov/surf/.

Water Conservation

You can play a role in conserving water and saving yourself money in the process by becoming conscious of the amount of water your household is using and by looking for ways to use less whenever you can. It is not hard to conserve water. Here are a few tips:

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
- Turn off the tap when brushing your teeth.
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and you can save almost 6,000 gallons per year.



- Check your toilets for leaks by putting a few drops of food coloring in the tank. Watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from an invisible toilet leak. Fix it and you save more than 30,000 gallons a year.
- Use your water meter to detect hidden leaks. Simply turn off all taps and water using appliances. Then check the meter after 15 minutes. If it moved, you have a leak.

Community Participation

You are invited to participate in our Board of Public Utilities meeting and voice your concerns about your drinking water. We meet the first and third Thursdays of each month beginning at 4:00 p.m. at the Tulare Library Building, in the City Council Chambers, 475 North M Street, Tulare, California.

QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call Mr. Tim Doyle, Water Utility Manager, at (559) 684-4324.

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. The information in the data tables shows only those substances that were detected between January 1, 2015 and December 31, 2017. Remember that detecting a substance does not necessarily mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels. The State recommends monitoring for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data is included, along with the year in which it was sampled.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	PHG (MCLG) [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
1,2,3-Trichloropropane [1,2,3-TCP][1] (ppt)	2017	5	0.7	11	ND–38	No	Discharge from industrial and agricultural chemical factories; leaching from hazardous waste sites; cleaning and maintenance solvent, paint and varnish remover, and degreasing agent; by-product from production of other compounds and pesticides
Aluminum (ppm)	2017	1	0.6	0.2227	ND–0.72	No	Erosion of natural deposits; residue from some surface water treatment processes
Arsenic[2] (ppb)	2017	10	0.004	7.7	ND–13	No	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes
Chlorine (ppm)	2017	[4.0 (as Cl2)]	[4 (as Cl2)]	0.78	ND–2.0	No	Drinking water disinfectant added for treatment
Dibromochloropropane [DBCP] (ppt)	2017	200	1.7	36	ND–110	No	Banned nematocide that may still be present in soils due to runoff/leaching from former use on soybeans, cotton, vineyards, tomatoes, and tree fruit
Fluoride (ppm)	2017	2.0	1	0.38	ND–1.4	No	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Gross Alpha Particle Activity (pCi/L)	2017	15	(0)	1.6	ND–6.55	No	Erosion of natural deposits
Hexavalent Chromium[3] (ppb)	2017	NS	0.02	1.8	ND–2.9	No	Discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities; erosion of natural deposits
Nitrate [as nitrogen] (ppm)	2017	10	10	4.3	ND–10	No	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2017	80	NA	3.1	1.2–5.6	No	By-product of drinking water disinfection
Uranium (pCi/L)	2017	20	0.43	4.3	ND–6.2	No	Erosion of natural deposits

Tap water samples were collected for lead and copper analyses from sample sites throughout the community.

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	PHG (MCLG)	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2017	1.3	0.3	0	0/33	No	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ppb)	2017	15	0.2	0	0/33	No	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	PHG (MCLG)	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chloride (ppm)	2017	500	NS	14	3.9–55	No	Runoff/leaching from natural deposits; seawater influence
Color (Units)	2017	15	NS	6	5–10	No	Naturally occurring organic materials
Iron (ppb)	2017	300	NS	223.5	ND–440	No	Leaching from natural deposits; industrial wastes
Odor–Threshold (Units)	2017	3	NS	1	ND–1	No	Naturally occurring organic materials
Specific Conductance (µS/cm)	2017	1,600	NS	254	140–460	No	Substances that form ions when in water; seawater influence
Total Dissolved Solids (ppm)	2017	1,000	NS	164	96–260	No	Runoff/leaching from natural deposits
Turbidity (NTU)	2017	5	NS	1.3	0.14–4.3	No	Soil runoff

UNREGULATED AND OTHER SUBSTANCES[4]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH
Agressiveness Index (Units)	2015–2017	11.9	11–12
Alkalinity (ppm)	2015–2017	79.9	51–130
Bicarbonate (ppm)	2015–2017	79.1	39–140
Calcium (ppm)	2015–2017	12.9	1.3–48
Carbonate (ppm)	2015–2017	14.1	4.9–22
Chloroform (ppb)	2016	1.9	ND–1.9
Chloromethane (Methyl Chloride) (ppb)	2015	0.81	ND–0.93
Hardness (ppm)	2015–2017	35.1	3.5–130
Langelier Index (ppm)	2015–2017	0.065	0–0.4
Magnesium (ppm)	2015–2017	0.87	0.11–2.4
pH (Units)	2015–2017	8.4	7.9–9.5
Potassium (ppm)	2015–2017	2.2	2–2.6
Sulfate (ppm)	2015–2017	10.5	3.9–25
Sodium (ppm)	2015–2017	43.2	22–100
tert-Amyl Methyl Ether [TAME] (ppb)	2015	6.5	ND–6.5

DETECTION OF COLIFORM BACTERIA

MICROBIOLOGICAL CONTAMINANTS	HIGHEST NO. OF DETECTIONS	NO. OF MONTHS IN VIOLATION	MCL	MCLG	TYPICAL SOURCE OF BACTERIA
Total Coliform Bacteria (state Total Coliform Rule)	(In a mo.) 2	None	5.0% of monthly samples are positive	0	Naturally present in the environment
Fecal Coliform or *E. coli* (state Total Coliform Rule)	(In the year) 2	None	A routine sample and a repeat sample are total coliform positive, and one of these is also fecal coliform or *E. coli* positive	0	Human and animal fecal waste
E. coli (federal Revised Total Coliform Rule)	(In the year) 2	None	(a)	0	Human and animal fecal waste

(a) Routine and repeat samples are total coliform-positive and either is *E. coli*-positive or system fails to take repeat samples following E. *coli*-positive routine sample or system fails to analyze total coliform-positive repeat sample for *E. coli*.

In June of 2017 one of 72 samples collected was coliform / *E. coli* positive and again in August 2017 two of 72 samples were coliform positive and one of those two was also *E. coli* positive. All repeat samples were negative. *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely-compromised immune systems. Although *E. coli* was detected, the water system is not in violation of the *E. coli* MCL because the system did not have more than one *E.coli* positive sample in any one month.

SODIUM AND HARDNESS

CHEMICAL OR CONSTITUENT (AND REPORTING UNITS)	SAMPLE DATE	LEVEL DETECTED	RANGE OF DETECTIONS	MCL	PHG (MCLG)	TYPICAL SOURCE OF BACTERIA
Sodium (ppm)	2015 - 2017	43.2	22–100	None	None	Salt present in the water and is generally naturally occurring
Hardness (ppm)	2015 - 2017	35.1	3.5–130	None	None	Sum of polyvalent cations present in the water, generally magnesium and calcium, and are usually naturally occurring

[1] In December 2017 1,2,3,-TCP was adopted and moved to the primary standards of regulated substances. Some people who drink water containing 1,2,3,-TCP in excess of the MCL and PHG over many years have an increased risk of getting cancer, based on studies in laboratory animals.

[2] Some people who drink water containing arsenic in excess of the MCL over many years may experience skin damage or circulatory system problems, and may have an increased risk of getting cancer.

[3] Some people who drink water containing hexavalent chromium in excess of the MCL over many years may have an increased risk of getting cancer. There is currently no MCL for hexavalent chromium. The previous MCL of 10 ppb was withdrawn on September 11, 2017.

[4] Unregulated contaminant monitoring helps the U.S. EPA and the State Water Resources Control Board to determine where certain contaminants occur and whether the contaminants need to be regulated.

Definitions

AL (Regulatory Action Level):
The concentration of a contaminant that, if exceeded, triggers treatment
or other requirements that a water system must follow.

µS/cm (microsiemens per centimeter): A unit expressing the amount of electrical conductivity of a solution.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs (SMCLs) are set to protect the odor, taste, and appearance of drinking water.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. EPA.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable

ND (Not detected): Indicates that
the substance was not found by laboratory analysis.

NS: No standard

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L (picocuries per liter): A measure of radioactivity.

PDWS (Primary Drinking Water Standard): MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

PHG (Public Health Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California EPA.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

ppt (parts per trillion): One part substance per trillion parts water (or nanograms per liter).

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

APPENDIX D

1, 2, 3 TCP COMPLIANCE PROGRAM

1,2,3-Trichloropropane (TCP)

Frequently Asked Questions

1,2,3-Trichloropropane (TCP)

Also known as TCP, 1,2,3-Trichloropropane, is an organic chemical found in some groundwater supplies. In December 2017, the State Water Resources Control Board established the maximum contaminant level (MCL) for TCP of 5 parts per trillion (ppt), and compliance monitoring began in January 2018. There is not yet a Federal MCL.

TCP has been detected in some of the groundwater supplies in Fresno, Kern, Merced, Tulare, and Los Angeles Counties. Protecting City of Tulare resident's health and safety is our highest priority, and we are in the process of design and construction of treatment methods due to the implementation of a new MCL regulation regarding 1,2,3-Trichloropropane (TCP).

Construction of facilities will occur in phases, so treatment at the most critical water sources needed to meet current customer demand will be completed first. We will continue to install treatment at other facilities so that additional sources of supply can be utilized.

Is my water safe to drink?

This is not an immediate risk. If it had been, you would have been notified immediately. If you have other health issues concerning the consumption of this water, you may wish to consult your doctor. *You do not need to use an alternative (e.g. , bottled) water supply.*

Why is the MCL set at 5 ppt, when the public health goal is 0.7 ppt?

This is determined by public health experts, which have calculated the theoretical health risks of TCP at the MCL at a 1-in-142,857 cancer risk over a lifetime of exposure. 5 ppt is the level that the State established as the detection reporting limit using currently approved testing methods. A public health goal (PHG) is the level of a contaminant below which there is no known or expected risk to health over a lifetime, assuming a person drinks 2 liters per day for 70 years. PHG's are established solely on the basis of health-effects data and do not consider technical or economic feasibility.

What is TCP?

TCP is a manmade chemical used in pesticides from late 1940 through the 1980's. The TCP contamination in our wells is believed to have come from soil fumigants. Soil fumigants in use today no longer contain TCP.

How is TCP treated?

The TCP is most efficiently removed using granular-activated carbon (GAC) filter technology. GAC filter vessels, will be installed at impacted wells to eliminate or substantially reduce the levels of TCP to meet the new standard.

Where does the TCP (or the waste) go after treatment?

TCP adheres to the surface of the carbon used in the treatment process. When the carbon is exhausted, a carbon provider will replace the old carbon with new carbon. The provider will properly dispose of or regenerate the old carbon in accordance with federal and state laws.

What is the City of Tulare doing?

On December 21, 2017, the Board of Public Utilities approved a contract with Provost & Pritchard Consulting for engineering design services, bidding and construction support services for the treatment of TCP contamination at six City well sites. To help the project move forward more quickly and due to some constraints with land acquisition, the project was split into two groups. The first two wells to receive treatment will be Well 17 and Well 37. The second group of wells planned for treatment are Wells 34, 35, 38, and 13. The first two wells will be at 60% design by June 15 with a bid date in August and anticipated completion of the project by May 2019. There is currently a 16 week lead time on the vessels from receipt of approved drawings. Treatment of the second group of wells will be completed by May 2021.

On May 8, 2018 the City received a Compliance Order from the State Water Resources Control Board for TCP. With adoption of the TCP Regulation, the State has been monitoring lab results for the first and second quarters of 2018 with regards to TCP. The compliance order requires quarterly sampling of all City wells and monthly sampling for the wells with TCP. The running average TCP level for Well 37 is 8 ppt which exceeds the MCL and has caused the system to be non-compliant with primary drinking water standards. Per the compliance order, "Public notification to the customers of the Water System shall be conducted and shall continue every three months until the State Water Board determines that the 1,2,3-TCP contamination is resolved." The first notice must be mailed out by June 10, 2018. Due to the current state of the water system, we are unable to take any wells out of service to avoid the TCP regulations. Quarterly public notification of the customers will keep us in compliance until wells can be treated or taken out of service. Once the new wells and storage tanks are online, staff will re-evaluate the system and look to take the TCP wells out of service until treatment can be added. The Compliance Order states that the water system must be in full compliance with the regulation by May 10, 2021.

To find more information on TCP;

Agency for Toxic Substances and Disease Registry (ATSDR). 1992. "Toxicological Profile for 1,2,3-Trichloropropane." www.atsdr.cdc.gov/toxprofiles/tp57.pdf

California Environmental Protection Agency (Cal/EPA). State Water Resources Control Board. 2009. "Groundwater Information Sheet 1,2,3-Trichloropropane (TCP)." Division of Water Quality. Groundwater Ambient Monitoring and Assessment (GAMA) Program. www.waterboards.ca.gov/gama/docs/coc_tcp123.pdf

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/123TCP.html

For more information, please contact:

Tim Doyle, Water & Waste Water Collections Utility Manager
3981 S. K Street, Tulare, CA 93274
(559) 684-4324
http://www.tulare.ca.gov/departments/public-works/water

CITY OF TULARE

1,2,3-TCP MITIGATION FEASIBILITY STUDY



DATE SIGNED_ 11/5/2014

November, 2014

Prepared for:

City of Tulare

Prepared by:

Provost & Pritchard Consulting Group
Fresno, California

1 EXECUTIVE SUMMARY

The volatile organic compound (VOC) 1,2,3-trichloropropane (TCP) has been detected in half of the City of Tulare's wells. The City has requested that Provost & Pritchard evaluate alternatives to mitigate the impact of the TCP contamination on the water system and determine the cost to implement the most feasible mitigation alternative.

In August 2009, the California Office of Environmental Health Hazard Assessment (OEHHA) established a California Public Health Goal (PHG) for TCP of 0.0007 µg/L (0.7 parts per trillion) based on carcinogenicity. This is the second lowest California PHG among all drinking water contaminants. TCP is not currently regulated at the federal or state level. However, the California State Water Resources Control Board Division of Drinking Water is expected to announce a draft maximum contaminant level in 2014. Regardless of the MCL level the state ultimately adopts, the City of Tulare's *TCP Well Water Contamination Monitoring and Mitigation Strategy and Plan* (effective April 1, 2014) states that the City's goal is to "remove TCP from the City's water supply and eliminate public exposure to TCP in the City's drinking water" and that TCP removal "must be accomplished when/as funding becomes available".

Historical TCP levels in the City's wells have ranged from approximately 0.010 µg/L to 0.075 µg/L (14 to over 100 times the public health goal). The City requires that these levels be reduced to below the public health goal. The only feasible means of satisfying this requirement is to treat the 13 contaminated wells evaluated in this study with granular activated carbon (GAC) adsorption. GAC is the most economical treatment solution and is also the only viable alternative that can reliably reduce the TCP concentration to below the public health goal. The GAC treatment plants should be designed using a series vessel configuration and an empty bed contact time of 15 minutes. Well sites 12, 13, 23, 24, 34, 35, 38, 43, and 44 are not large enough for construction of GAC treatment and the City will therefore need to acquire additional property. Wells 43 and 44 can be treated together at the Well 44 site.

The following table summarizes the estimated cost for capital improvements and ongoing operation and maintenance of the treatment plants:

Well	Capital Cost	30-Year O&M Cost	30-Year Present Worth Cost
8	$855,833	$595,429	$1,451,262
11	$1,992,596	$1,954,663	$3,947,259
12	$2,082,868	$1,541,242	$3,624,110
13	$2,569,450	$712,403	$3,281,853
17	$2,444,420	$2,145,923	$4,590,343
23	$1,646,537	$626,948	$2,273,484
24	$1,616,449	$626,933	$2,243,382
34	$2,629,560	$2,573,842	$5,203,402
35	$2,167,285	$2,725,012	$4,892,298
37	$2,021,786	$1,772,638	$3,794,423
38	$2,043,462	$1,968,804	$4,012,266
43/44	$3,614,101	$3,097,736	$6,711,837
TOTAL	**$25,684,344**	**$20,341,574**	**$46,025,918**

APPENDIX E

CONSISTENCY WITH DWR GUIDELINES

CARTMILL CROSSINGS WSA – CONSISTENCY WITH DWR GUIDELINES

Guidelines Section Number and Title (DWR, 2003)	Guidelines Direction	Relevant WSA Section and Response
Section 1.0 (page 2). Does SB 610 or SB 221 apply to the proposed project	Is the project subject to SB 610? Is the project subject to CEQA (Water Code §10910(a)? If yes, continue.	WSA Section 1.2. Yes, the Project is subject to SB 610 and CEQA.
	Is it a "Project" as defined by Water Code §10910(a) or (b)? If yes, to comply with SB 610 go to Section 2.0, page 4.	WSA Section 1.1. Yes, the Project is considered to meet the definition of "project" per Water Code §10912(a) or (b).
	Is the project subject to SB 221? Does the tentative map include a "subdivision" as defined by Government Code §66473.7(a)(1)? If no, stop.	Yes, the Project includes a "subdivision", SB 221 applies.
Section 2.0 (page 4) who will prepare the SB 610 analysis?	Is there a public water system ("water supplier") for the project (Water Code §10910(b)? If no, go to Section 3.0, page 6.	WSA Section 1.3. Yes, the Project site will be connected to the City of Tulare public water system.
Section 3.0 (page 6). Has an assessment already been prepared that includes this project?	Has this project already been the subject of an assessment (Water Code §10910(h)? If no, got to Section 4.0, page 8.	No, the Project has not been the subject of an assessment.
Section 4.0 (page 8). Is there a current Urban Water Management Plan?	Is there an adopted urban water management plan (Water Code §10910(c)? If yes, continue. If yes, the information from the UWMP related to the proposed water demand for the project may also be used for carrying out Section 5.0, Steps 1 and 2, Section 7.0; proceed to Section 5.0, page 10 of the Guidelines.	WSA Section 1.3. Yes, there is an adopted UWMP for the Project area. Information contained in the UWMP was used in the preparation of the WSA and cited accordingly.
	Is the project water demand for the project accounted for in the most recent UWMP (Water Code §10910(c)(2)? If no, got to Section 5.0, page 10.	Yes
Section 5.0 (page 10). What information should be included in an assessment?	Step One (page 13). Documenting wholesale water supplies.	The Project is not a retail water supplier and would not include the use of wholesale water supplies.
	Ste Two (page 17). Documenting Supply if Groundwater is a Source.	The Kaweah Subbasin is the proposed water supply. WSA Section 2.2.
	Specify if a groundwater management plan or any other specific authorization for groundwater management for the basin has been adopted and how it affects the water supplier's use of the basin.	WSA Section 3.1. Two groundwater management plans are currently in place for the Kaweah Subbasin.

Guidelines Section Number and Title (DWR, 2003)	Guidelines Direction	Relevant WSA Section and Response
	Description and analysis of the amount and location of groundwater pumped by the water supplier for the past five years. Include information on proposed pumping locations and quantities. The description and analysis is to be based on information that is reasonably available, including, but not limited to, historic use records from DWR.	WSA Sections 1.3 and 5 provide a description of the Project's water requirements.
	Analysis of the location, amount, and sufficiency of groundwater that is projected to be pumped by the water supplier.	WSA Section 5. The quantity of water available in the Kaweah Subbasin is sufficient for the Project.
	Step 3 (page 21). Documenting project demand (Project Demand Analysis).	WSA Section 5.
	Step 4 (page 26). Documenting dry year(s) supply.	WSA Section 5.
	Step 5 (page 31). Documenting dry year(s) demand.	WSA Section 5.
Section 6.0 (page 33). Is the projected water supply sufficient or insufficient for the proposed project?		WSA Section 5 summarizes how the identified water supply/supplies are considered sufficient for the Project.
Section 7.0 (page 35). If the projected supply is determined to be insufficient	Does the assessment conclude that supply is "sufficient"? If no, continue.	WSA Section 6 concludes that sufficient water supplies are available for the Project.
Section 8.0 (page 38). Final SB 610 assessment actions by lead agencies.	The lead agency shall review the WSA and must decide whether additional water supply information is needed for its consideration of the proposed project. The lead agency "shall determine, based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses."	The WSA for the Project must be approved prior to or in concurrence with the EIR.
	The description of the groundwater basin may be excerpted from the groundwater management plan, from DWR Bulletin 118, California's Groundwater, or from some other document that has been published and that discusses the basin boundaries, type of rock that constitutes the aquifer,	WSA Section 2.2 provides a description of the groundwater basin characteristics using all available resources, including DWR Bulletin 118.

Guidelines Section Number and Title (DWR, 2003)	Guidelines Direction	Relevant WSA Section and Response
	variability of the aquifer material, and total groundwater in storage (average specific yield times the volume of the aquifer).	
	In an adjudicated basin the amount of water the urban supplier has the legal right to pump should be enumerated in the court decision.	Not applicable; the Basin and Subbasin are not adjudicated.
	The Department of Water Resources has projected estimates of overdraft, or "water shortage", based on projected amounts of water supply and demand (basin management) are projected by the Watermaster agency (AVEK) in WSA Section 3.2, the hydrologic region level in Bulletin 160, California Water Plan Update. Estimates at the basin or subbasin level will be projected for some basins in Bulletin 118. If the basin has not been evaluated by DWR, data that indicate groundwater level trends over a period of time should be collected and evaluated.	Basin groundwater resources are discussed in WSA Section 2.2.
	If the evaluation indicates an overdraft due to existing groundwater extraction, or projected increases in groundwater extraction, describe actions and/or program designed to eliminate the long-term overdraft condition.	WSA Section 3.2. The referenced 2015 Urban Water Master Plan describes in detail the subject actions and programs.

APPENDIX G

TRAFFIC STUDY

Project No: 257-44

TRAFFIC STUDY

Cartmill Crossings
Proposed Mixed Use Development

Northeast Corner of SR 99 & Cartmill Avenue in the City of Tulare

Prepared for:

QK

November 2018

Prepared by:

1800 30TH STREET, SUITE 260
BAKERSFIELD, CA 93301

DRAFT (11/13/2018)

Ian J. Parks, RCE 58155

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INTRODUCTION

The purpose of this study is to evaluate the potential traffic impact of a proposed mixed-use development in the northern region of the City of Tulare, California.

A. Land Use, Site and Study Area Boundaries

The current land use designation for the proposed 127-acre development project is Regional Commercial, and it is bounded by SR 99 to the west, Cartmill Avenue to the south, and undeveloped land to the north and the east. A vicinity map and a location map are presented in Figures 1 and 2.

The proposed project will consist of 176K square feet of regional commercial land use, which will be constructed during phase one of the project, and then an additional 630.4K square feet of regional commercial land use, along with 132 single family residences, 210 multifamily residences, and a public park will be constructed in two overlapping phases. It is anticipated that phase one will be completed by the year 2020, and phases two and 3 will be completed by the year 2039. A site plan is presented in Figure 3.

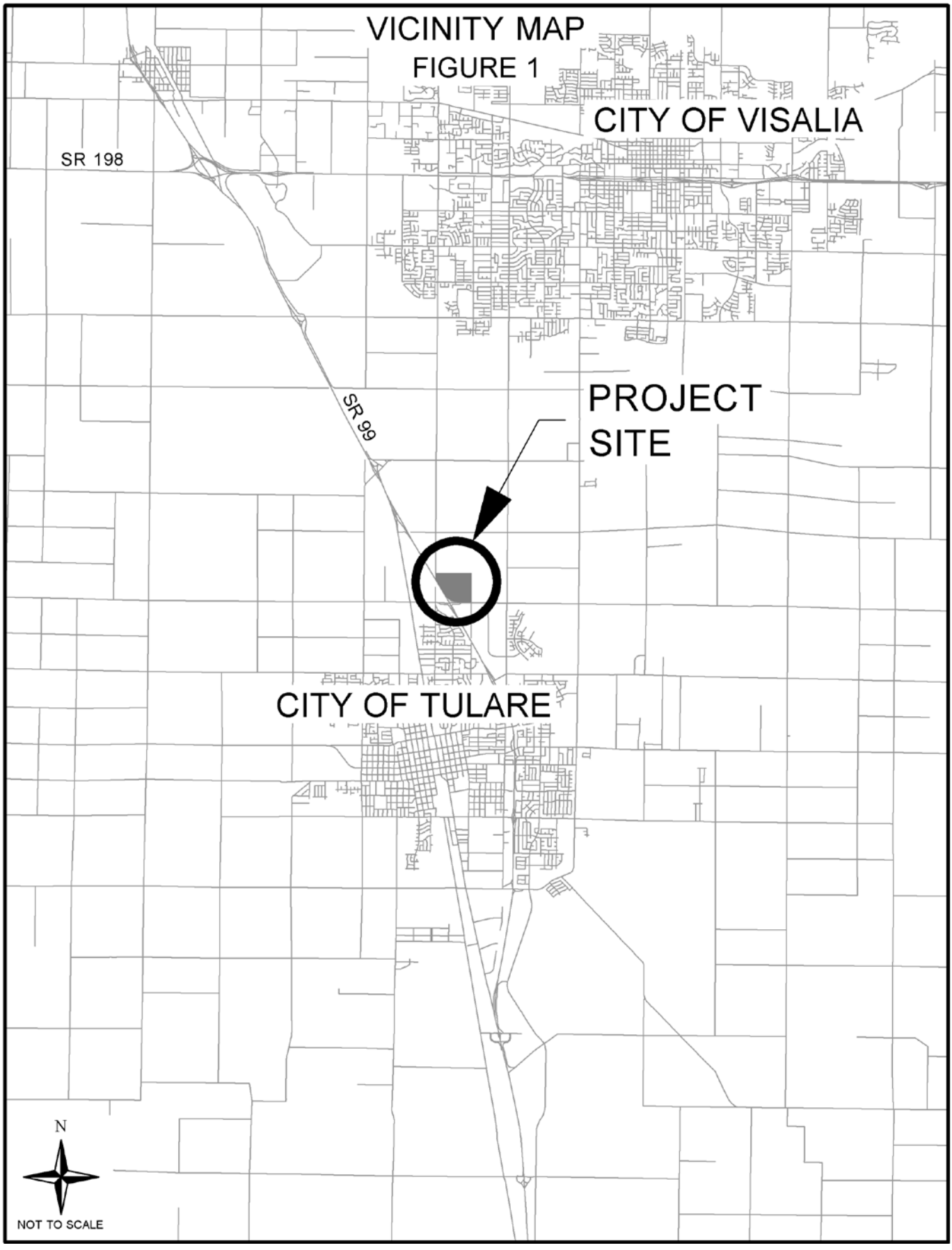
A total of 10 signalized intersections and 3 unsignalized intersections are included in the study. The scope of the study was developed in association with The City of Tulare Engineering Department and Caltrans District 6.

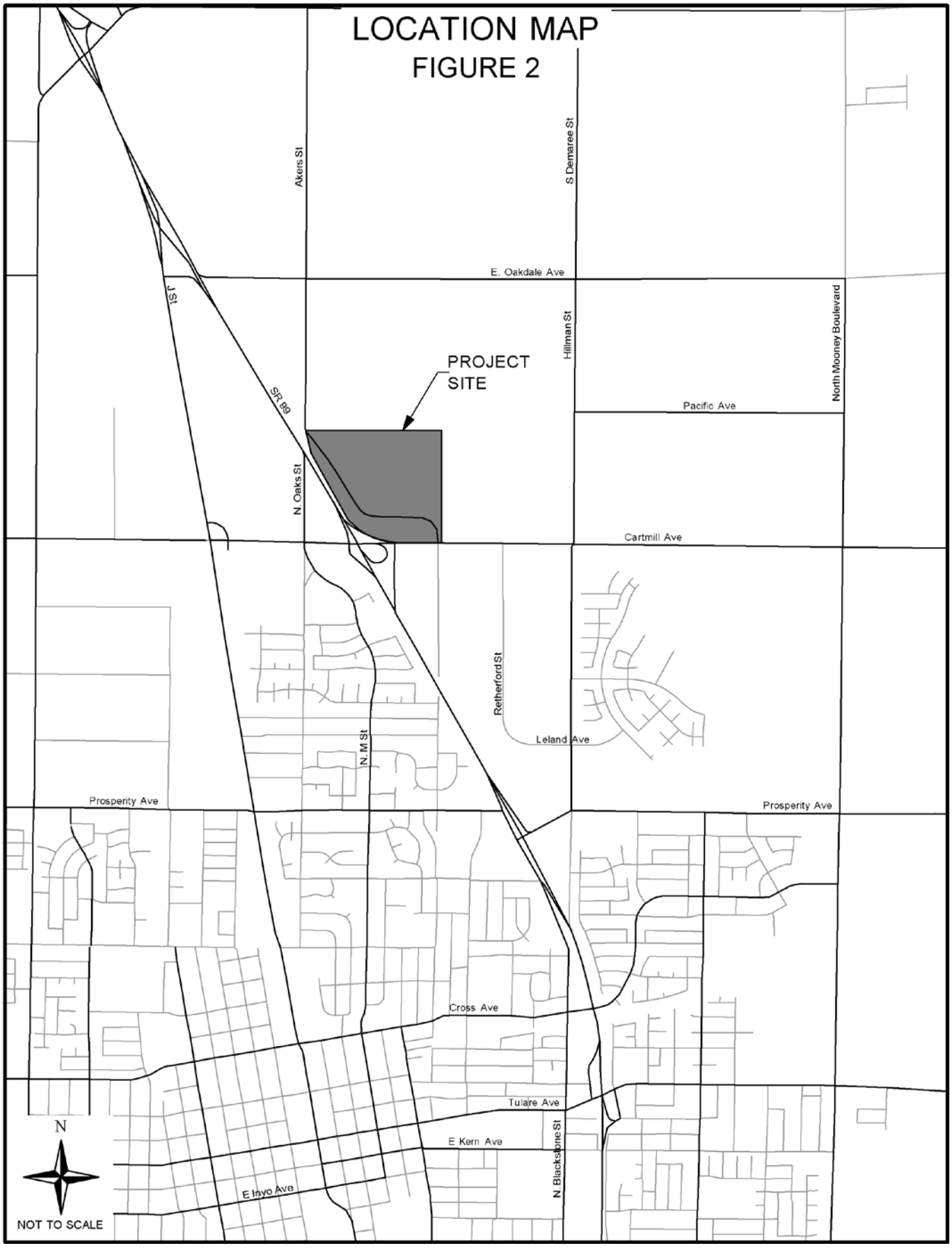
B. Existing Site Uses and Site Access

The project site is currently being used for agricultural purposes. Primary access to the project is anticipated from Akers Street, which runs through the project site. Construction of collectors along the northern and eastern boundaries of the project are also planned, and will provide further access to the site.

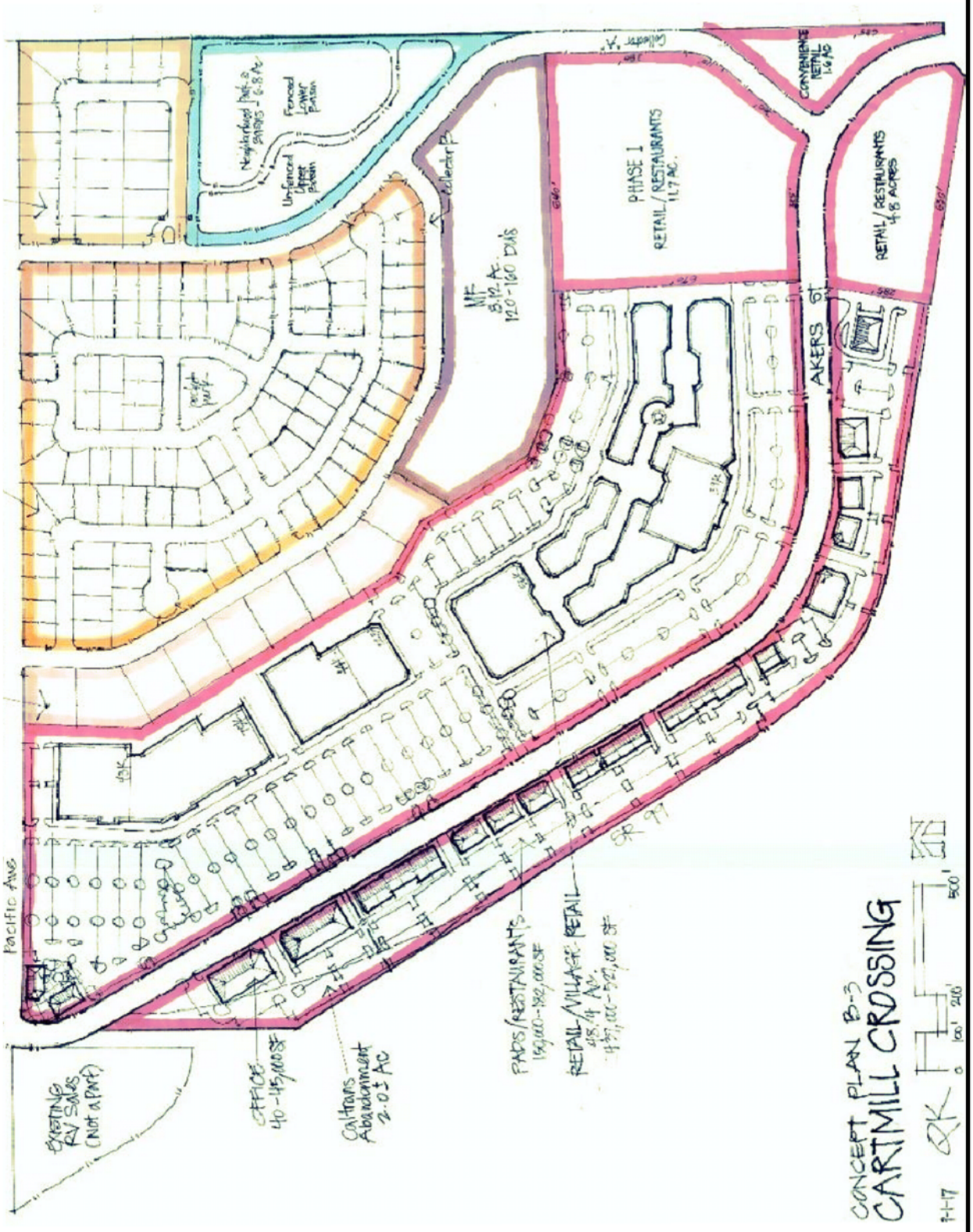
C. Existing Uses in the Vicinity of the Site

Existing land uses in the vicinity of the project include residential developments to the south, agricultural land use to the north, east and west, and State Route 99 along the western project boundary.


VICINITY MAP
FIGURE 1
CITY OF VISALIA
SR 198
SR 99
PROJECT SITE
CITY OF TULARE
N
NOT TO SCALE


LOCATION MAP
FIGURE 2
Akers St
S Demaree St
E. Oakdale Ave
J St
SR 99
Hillman St
North Mooney Boulevard
PROJECT SITE
Pacific Ave
N Oaks St
Cartmill Ave
Retherford St
Leland Ave
N M St
Prosperity Ave
Prosperity Ave
Cross Ave
Tulare Ave
E Kern Ave
N Blackstone St
E Inyo Ave
N
NOT TO SCALE

SITE PLAN
FIGURE 3



D. Existing Street Descriptions

Cartmill Avenue is an east-west major arterial that provides access to agricultural and residential land uses as well as an interchange with State Route 99. In the vicinity of the project, Cartmill Avenue exists as a 6-lane roadway, but reduces to a 2-lane roadway east of N. Oak Street.

Golden State Highway (State Route 99) is a north-south state highway that stretches almost the entire length of the Central Valley. Cities served include Bakersfield, Visalia, Fresno, Madera, Merced, Modesto, Stockton, and Sacramento. State Route 99 lies along the western boundary of the project and exists as a 6-lane divided facility north of Caldwell Avenue (Avenue 280) and a 4-lane divided facility south of Caldwell Avenue and in the vicinity of the project.

Hillman Street is a north-south major arterial that provides access to commercial, agricultural and residential land uses north of Prosperity Avenue. In the vicinity of the project, Hillman Street (Road 108) exists as a 6-lane divided roadway south of Cartmill Avenue, and a 4-lane divided roadway north of Cartmill Avenue.

J Street is a north-south major arterial that provides access to commercial, agricultural and residential land uses across central Tulare, and provides access to State Route 99 at its northern extent. In the vicinity of the project, J Street primarily exists as a 2-lane roadway, however it is expanded to 4 lanes for a short segment at the Cartmill Avenue overpass.

N. Oaks Street is a north-south primary collector that provides access to residential land uses to the south of State Route 99 and agricultural land uses to the north of State Route 99. While it exists to the north and south of State Route 99, N. Oaks Street is discontinuous and does not currently provide access to the highway. In the vicinity of the project, N. Oaks Street exists as a 2-lane roadway, and shares the M Street alignment south of Cartmill Avenue.

M Street is a north-south minor arterial north of Tulare Avenue. It primarily provides access to residential land uses across central Tulare. In the vicinity of the project, it exists as a 4-lane roadway between Cartmill Avenue and the southern segment of N. Oaks Street, and it shares the N. Oaks Street alignment north of Cartmill Avenue.

E. Oakdale Avenue is an east-west major arterial that provides access to agricultural and agricultural production land uses north of metropolitan Tulare, as well as a northbound connection with State Route 99. In the vicinity of the project, E. Oakdale Avenue exists as a two-lane roadway.

Prosperity Avenue is an east-west major arterial east of Blackstone Street and a minor arterial west of Blackstone Street. Prosperity Avenue provides access to commercial and residential land uses across northern Tulare, and provides northbound access to State Route 99. In the vicinity of the project, Prosperity Avenue exists as a 4-lane divided roadway and shares a short portion of its alignment with N. Blackstone Street.

Retherford Street is a north-south minor arterial that extends south from Cartmill Avenue to the south where it becomes Leland Avenue at the entrance of the Tulare Outlet Center. Retherford Street provides access to agricultural as well as developing commercial land uses. In the vicinity of the project, it exists as a 2-lane roadway.

E. Future Street Descriptions

Pacific Avenue is an east-west collector that currently exists between Hillman Street and Mooney Boulevard. The Tulare General Plan calls for an extension of Pacific Avenue from Hillman Street to Akers Street, along the north side of the project.

PROJECT TRIP GENERATION AND DESIGN HOUR VOLUMES

The trip generation and design hour volumes for phase one and phase two of the project are shown in Tables 1 and 2, respectively. The trip generation and design hour volumes were calculated using the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition, as well as data provided in the project proposal. The AM/PM rates and directional splits for ITE Land Use Codes 210 (Single-Family Detached Housing), 220 (Multi-Family Low-Rise Housing), 411 (Public Park), and 820 (Shopping Center) were used to estimate the trip generation for the proposed project, for AM and PM peak hour of adjacent street traffic.

Table 1
Phase 1 Project Trip Generation

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
820	Shopping Center	176 1000 sq ft GLA	eq	8830	eq	62% 149	38% 91	eq	48% 396	52% 429
sub-total				8,830		149	91		396	429
Adjustments										
Pass-by		15%		1,325		22	14		59	64
Total				7,505		127	77		337	365

Table 2
Phase 2 Project Trip Generation

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	132 Dwelling Units	eq	1342	eq	25% 25	75% 74	eq	63% 84	37% 49
220	Multifamily Housing (Low-Rise)	210 Dwelling Units	eq	1547	eq	23% 22	77% 74	eq	63% 72	37% 42
411	Public Park	7 Acres	eq	93	0.02	59% 0	41% 0	eq	55% 13	45% 10
820	Shopping Center	806.4 1000 sq ft GLA	eq	24858	eq	62% 344	38% 211	eq	48% 1222	52% 1324
sub-total				27,841		391	359		1391	1425
Adjustments										
Capture[1]		7%		1,949		27	25		97	100
Pass-by[2]		15%		3,729		52	32		183	199
Total				22,163		312	302		1,111	1,126

[1]Capture rate of 7%, per NCHRP 684 Internal Capture Estimator, applied to all land uses.

[2]Pass-by rate of 15% applied to Shopping Center only.

A capture rate of 7% was applied to all land uses to account for trips between multiple land uses within the project. Capture trips originate and terminate within the project, and therefore do not impact the surrounding roadway system. The Caltrans Guide for the Preparation of Traffic Impact Studies suggests a 5% capture rate, but where justified, the capture rate may be higher. In this case, due to the proximity and size of the residential and shopping land uses, a slightly higher capture rate was approved by Caltrans District 6, as well as by the City of Tulare's Development Services Engineering Division.

A pass-by rate of 15% was applied to the shopping center land use to account for trips which are made as intermediate stops between trip origin and ultimate destination. Pass-by trips are drawn from traffic passing the site, and therefore, do not add trips to the adjacent street system. The pass-by rates used for this study were based on the Caltrans Guide for the Preparation of Traffic Impact Studies.

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Based on a review of the City of Tulare's General Plan, dated 2013, and the zoning for the region, including existing and future housing developments, project trips were distributed as shown in Table 3.

Table 3
Project Trip Distribution

Direction	Percent	Roadway
North	50	State Route 99
South	40	State Route 99
East	5	Cartmill Avenue
West	5	Cartmill Avenue

The project trip distribution was based on the most logically traveled routes for traffic accessing the project, a review of the potential draw from population centers within the region, the types of land uses involved, and input from the City of Tulare's Engineering Division. Project peak hour turn movement volumes for phase one and phase two are shown in Figures 5a and 5b.

EXISTING AND FUTURE TRAFFIC

Existing weekday peak hour turning movement volumes were field measured at the study intersections in September 2018. Counts were conducted from 7:30 to 8:30 AM and 4:30 to 5:30 PM to coincide with the peak hours of traffic. The existing peak hour volumes are shown in Figure 4.

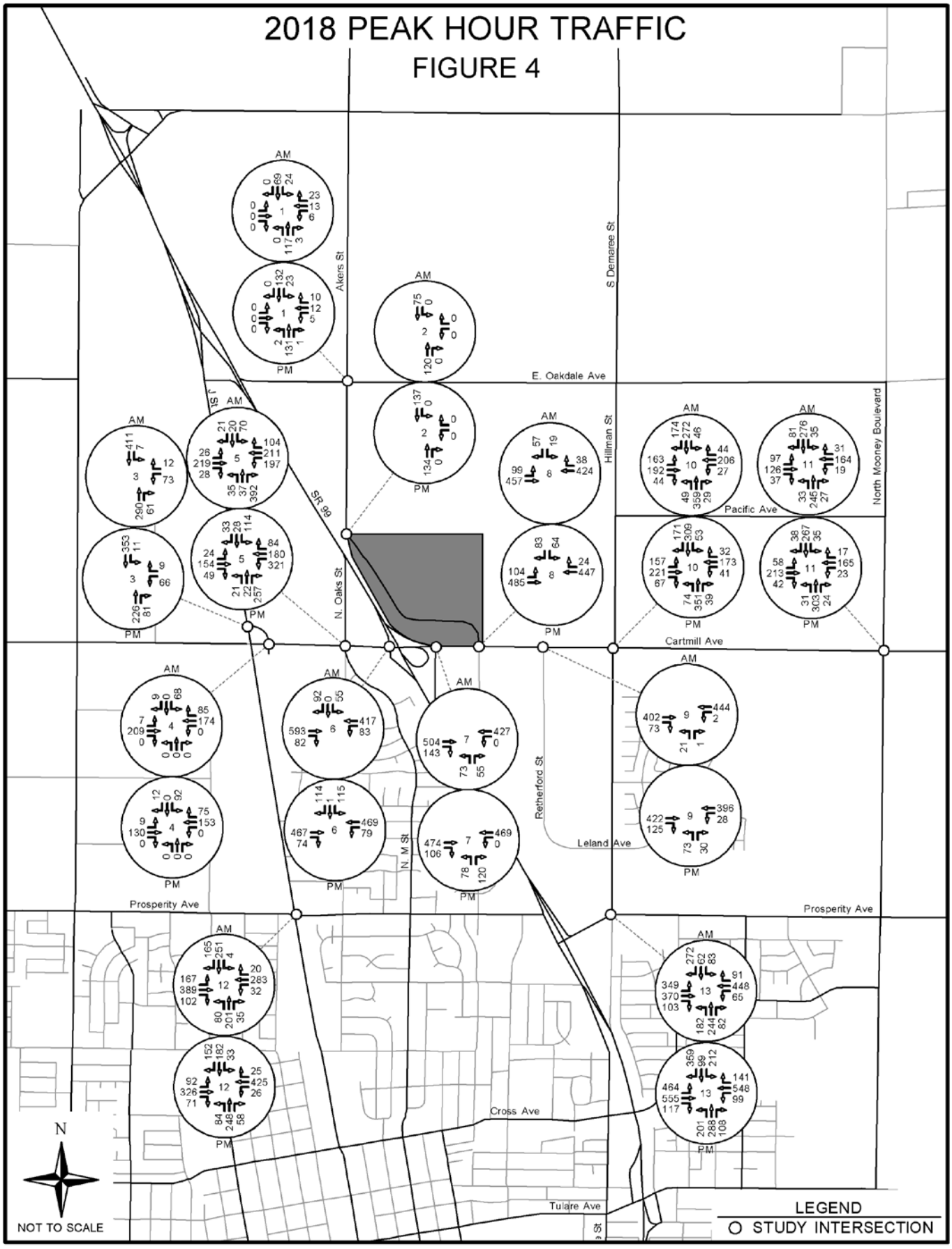
Future traffic was estimated based on traffic model data obtained from the Tulare County Association of Governments (TCAG). Based on this data, annual growth rates of approximately 0.0% to 10.0% were applied to existing traffic volumes to estimate future traffic volumes for the future year scenarios. Future peak hour volumes are shown in Figures 6 and 11.

An investigation was made with the City of Tulare's Planning Department to determine if there are any pending projects which would influence future traffic beyond what the TCAG model is predicting. Table 4 identifies all the in-process developments within a 1-mile radius of the project that would not be accounted for in the TCAG traffic model. A trip generation table and a distribution map for the traffic generated by the projects listed in Table 4 are provided in the attached appendix. Future peak hour volumes with the cumulative projects added are shown in Figures 10 and 11.

Table 4
List of Cumulative Projects

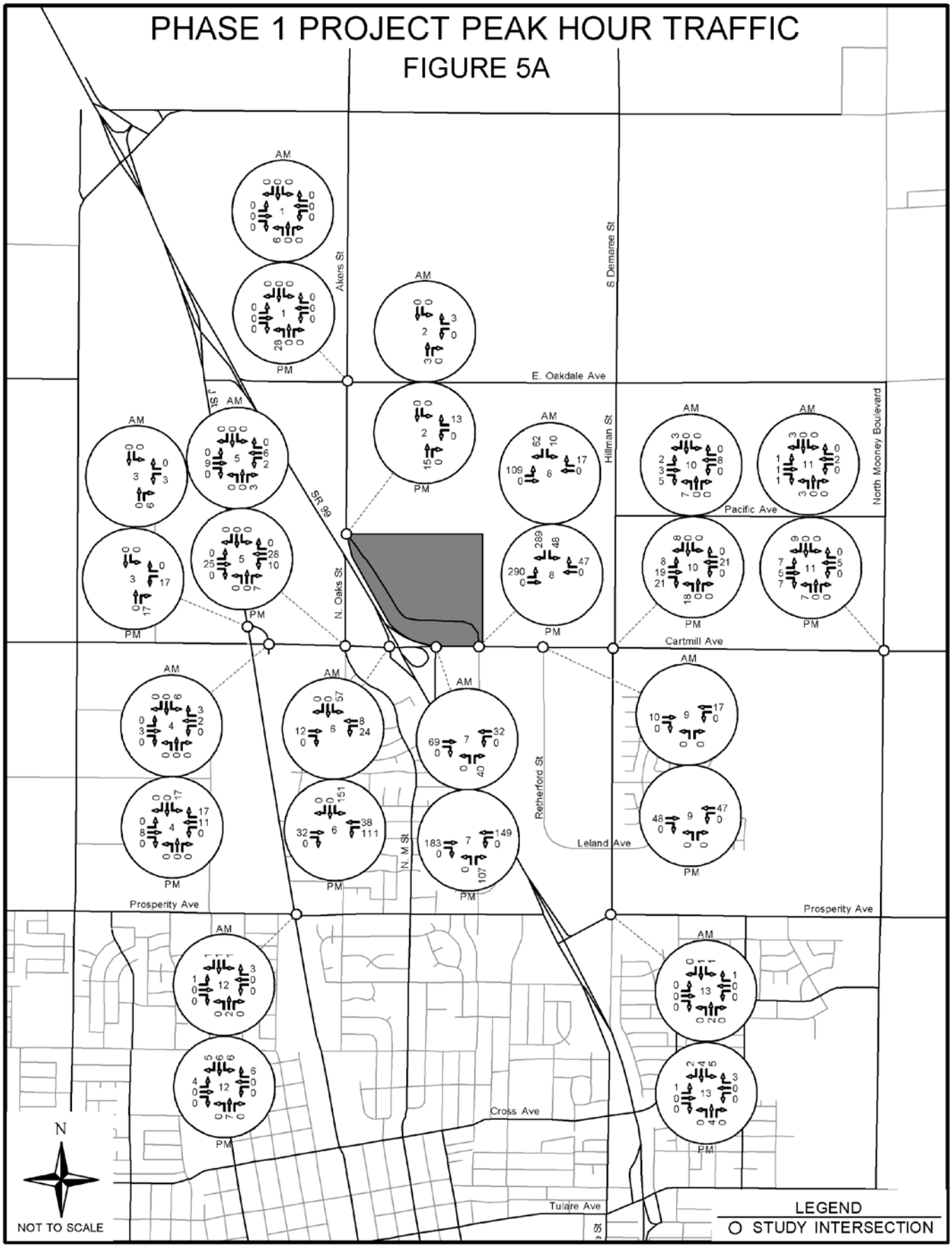
Project	Location	Zoning	Description
GPA 2015-14, ZA 710, CUP 2015-13	4.64 acres southwest corner of Cartmill and SR 99	C-3 Retail Commercial	24,500 sq. ft. 5 story hotel with restaurant/bar, outdoor wedding venue, convention hall
CUP 2017-05	5.82 acres located on the west side of Retherford Street between Cartmill Avenue and Corvina Avenue	C-3	91 Unit two story assisted living facility and 77 unit independent living facility
CUP 2017-06	16.1 acres located on the west side of Retherford Street between Cartmill Avenue and Corvina Avenue	C-3 Retail Commercial	57,579 sq. ft. church, 21,096 sq. ft. furture church building, 25,500 sq. ft. children's classroom, 19,810 sq. ft. youth building and 2,800 sq. ft.
Design Review No. 1092	located on the west side of Retherford Street between Cartmill Avenue and Corvina Avenue	RM-2 Multi-Family Residential	122,235 sq. ft. 100 unit senior apartment building
CUP 2018-11	northeast corner of Cartmill Avenue and Hillman Street	C-3 Retail Comercial	Health clinic consisting of 5 buildings with a total of 84,554 sq. ft. to be constructed in 2 phases
Ventana CUP / TSM	South side of Corvina Avenue between Hillman Street and Retherford Street	C-3 Retail Commercial	42 lot single family subdivsion, 104 unit multi-family residential development, 8 commercial buildings totalling 38,455 sq. ft. (4,800 retail,
Oak Tree Estates TSM	18.82 acres on the southeast corner of 'J' Street and Cartmill Avneue	R-1-7 (Single Family Residential, 7,000 sq. ft. minimum lot area), RM-2 Mult- Family and C-3 Retail Commercail	28 lot single family subdivsion, 40 multi-family units, comercial remainder
Kensington Estaes TSM	28.6 acres located on the northeast coenr of Cartmill Avenue and De La Vina Street	R-1-4 (Small Lot Single Family Residential)	134 lot single family residential subdivsion
Willow Glen TSM	approximately 109.4 acres located on the northwest corner of Cartmill Avenue and Mooney Blvd.	R-1-6, R-1-7, RM-2 and PL	381 lot single family subdivsion, 68 units multi family residential, 13.7 acres of future commercial space

*NOTE: Trip generation and distribution map are included in the attached appendix.


2018 PEAK HOUR TRAFFIC
FIGURE 4
Akers St
S Demaree St
E. Oakdale Ave
Hillman St
North Mooney Boulevard
SR 99
N. Oaks St
Pacific Ave
Cartmill Ave
Retherford St
Leland Ave
N M St
Prosperity Ave
Cross Ave
Tulare Ave
AM
PM
N
NOT TO SCALE
LEGEND
STUDY INTERSECTION

PHASE 1 PROJECT PEAK HOUR TRAFFIC

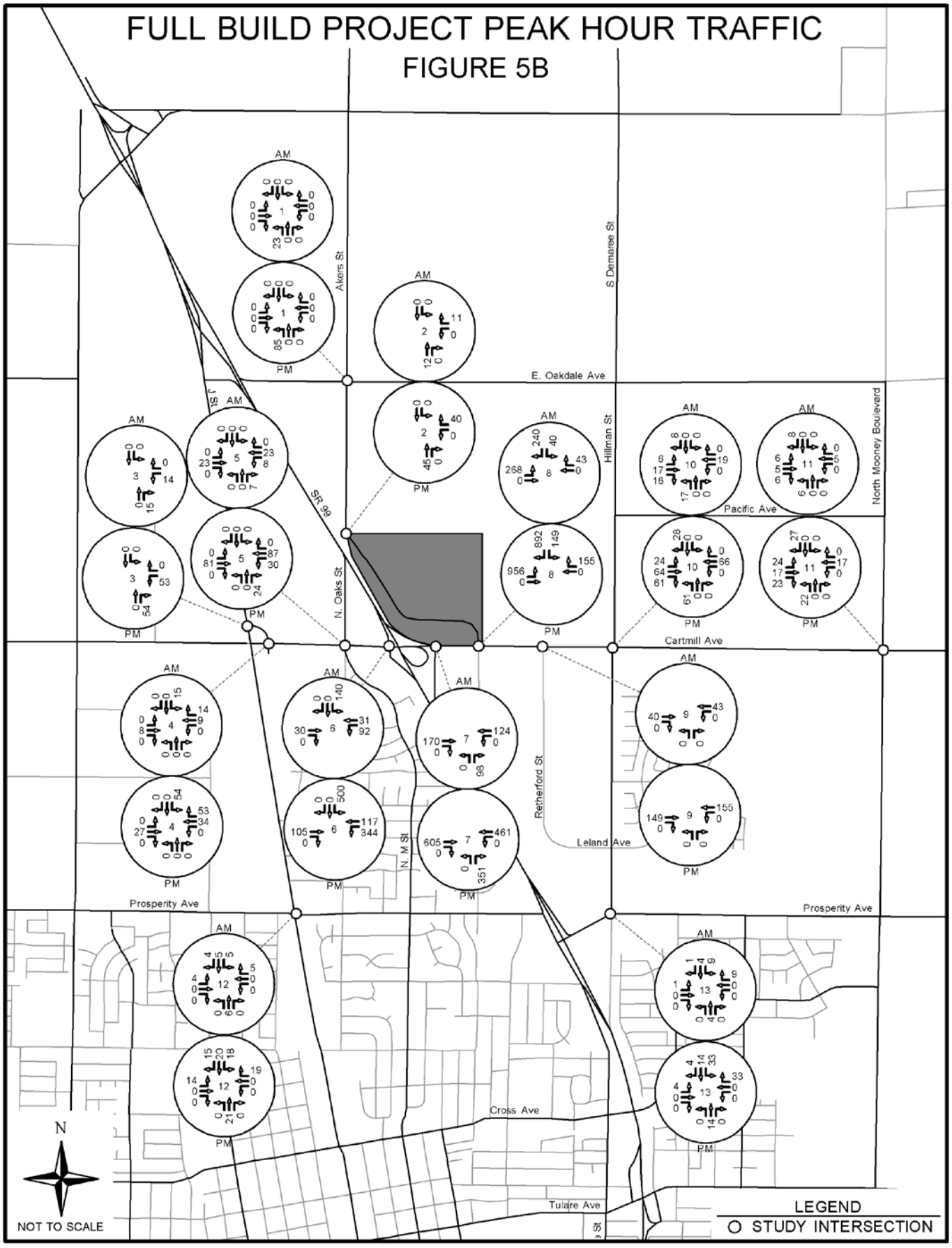
FIGURE 5A



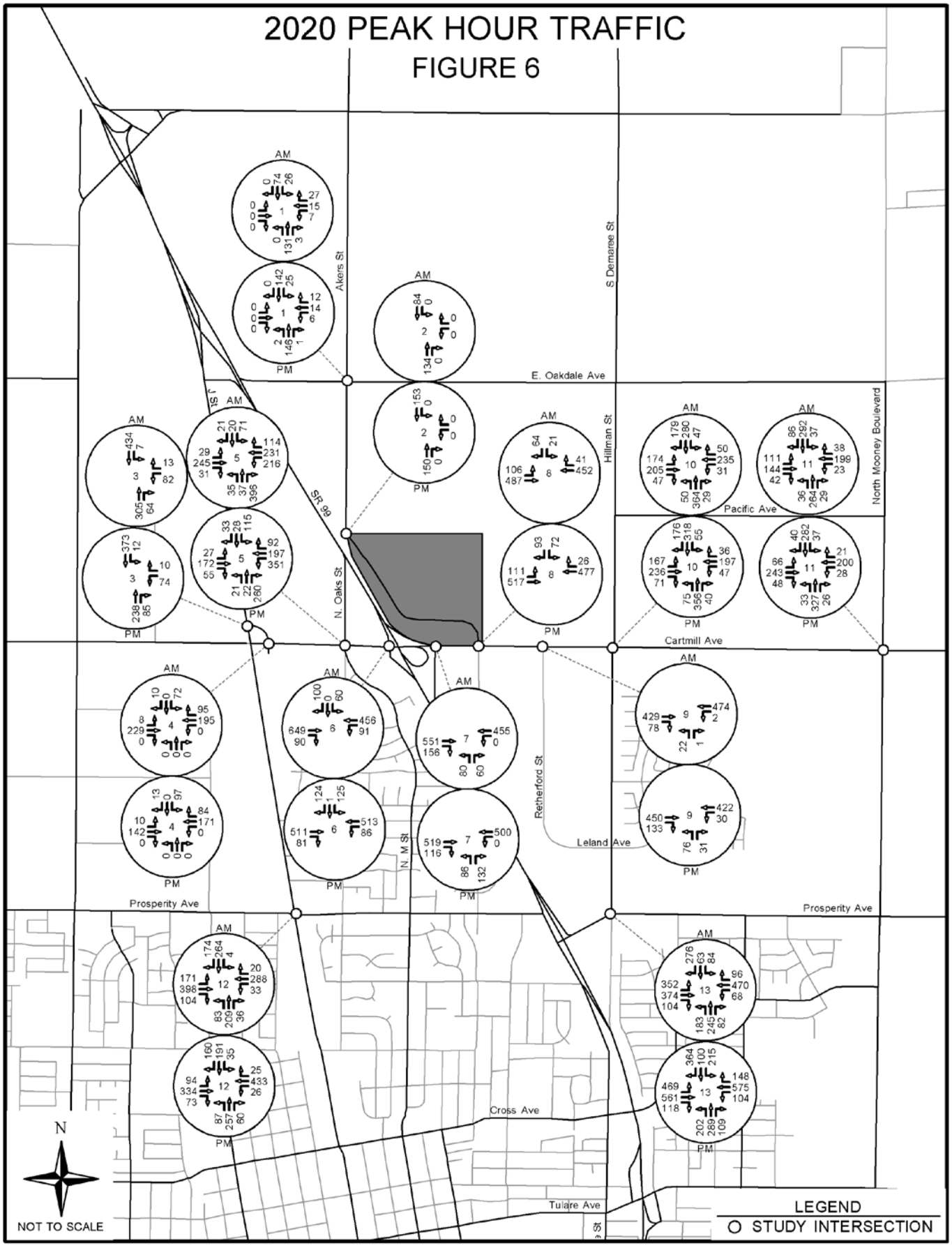
RUETTGERS & SCHULER CIVIL ENGINEERS

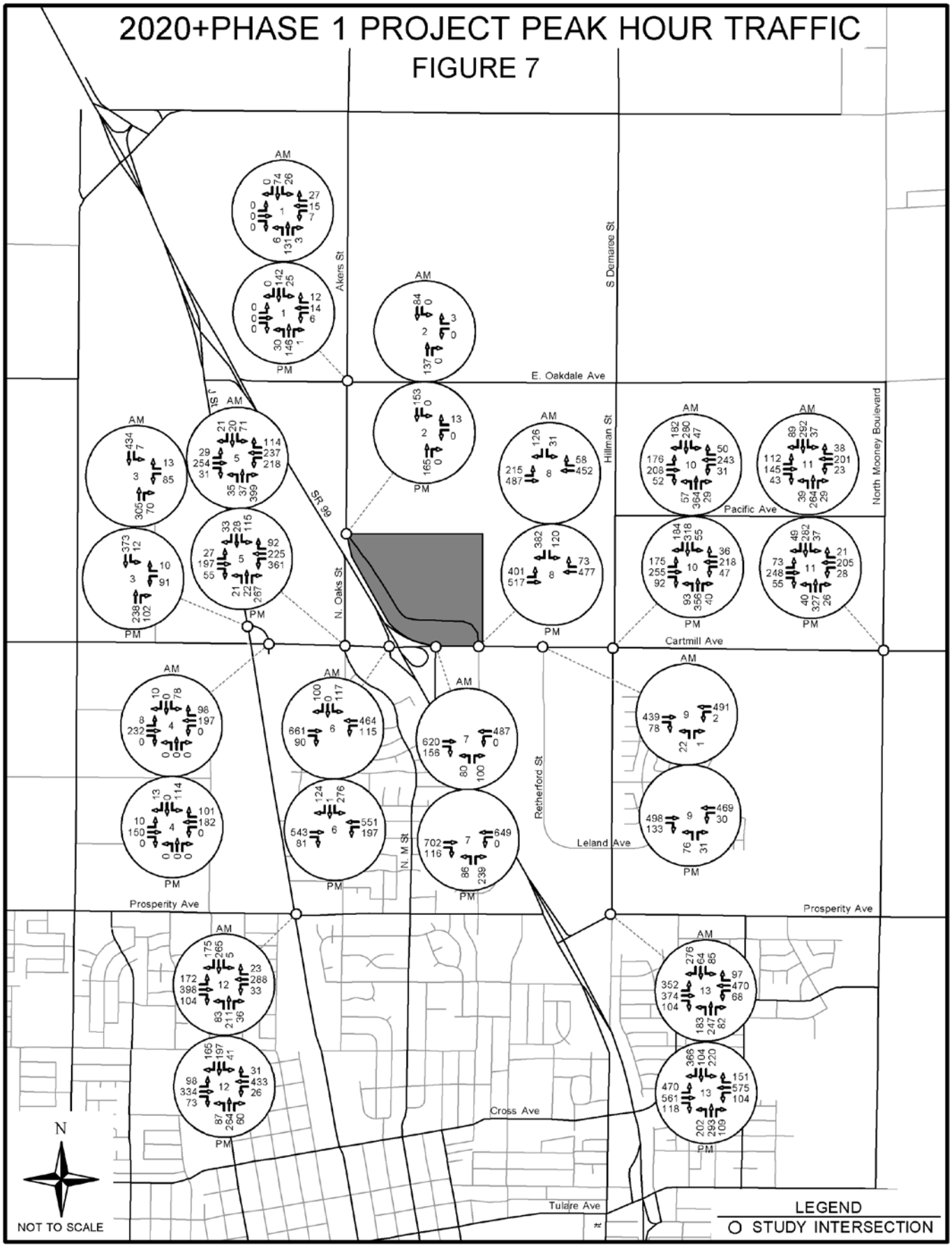
FULL BUILD PROJECT PEAK HOUR TRAFFIC

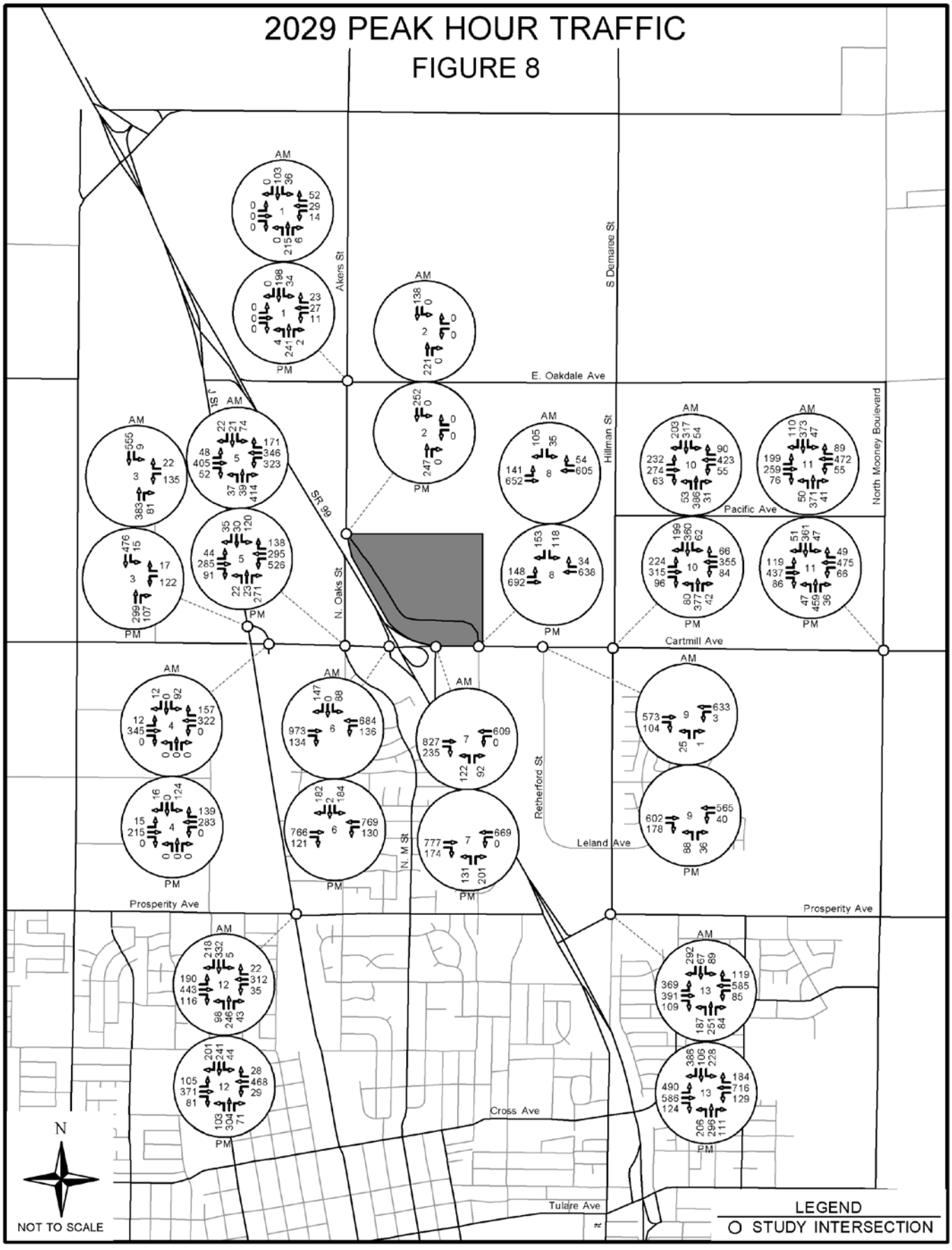
FIGURE 5B

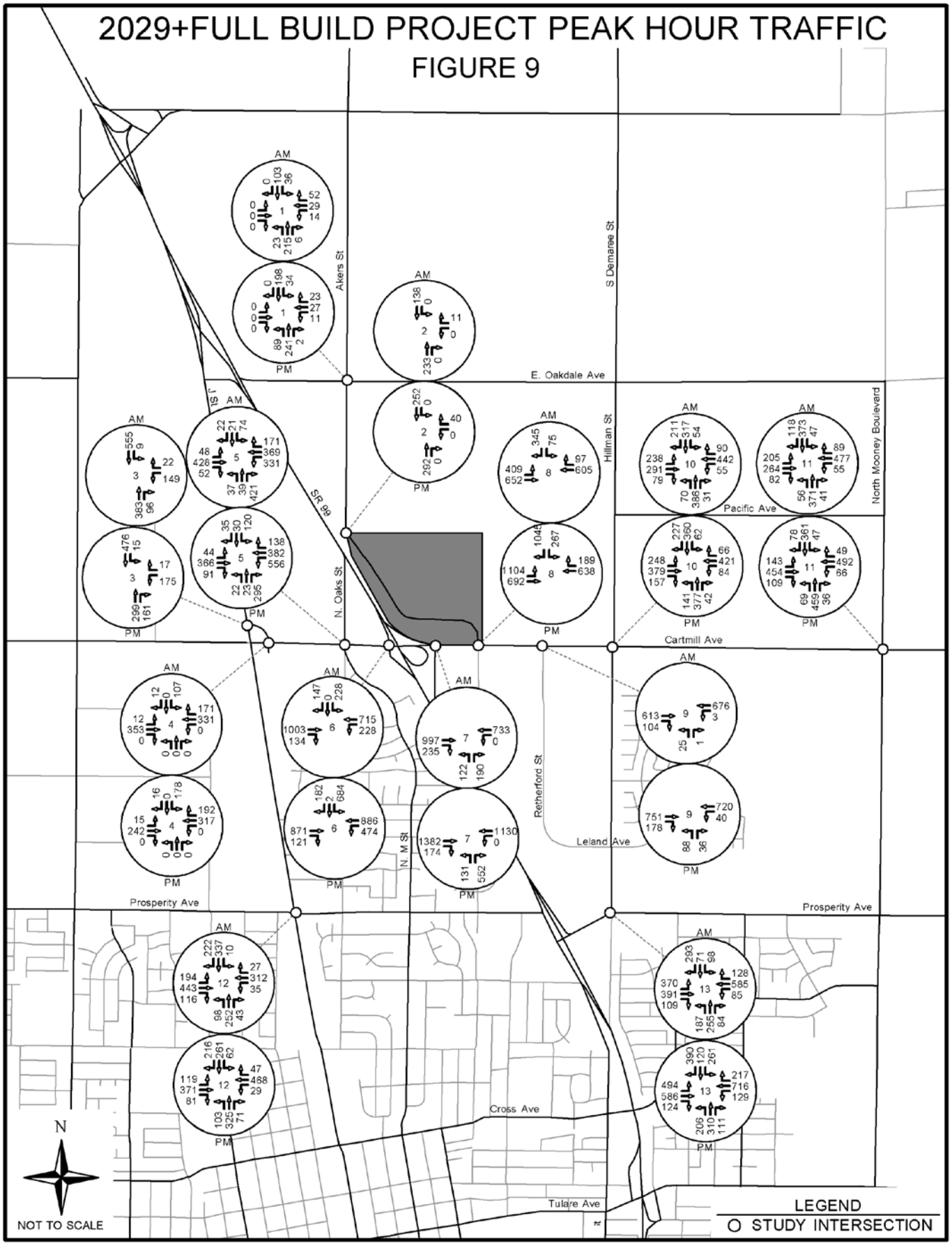


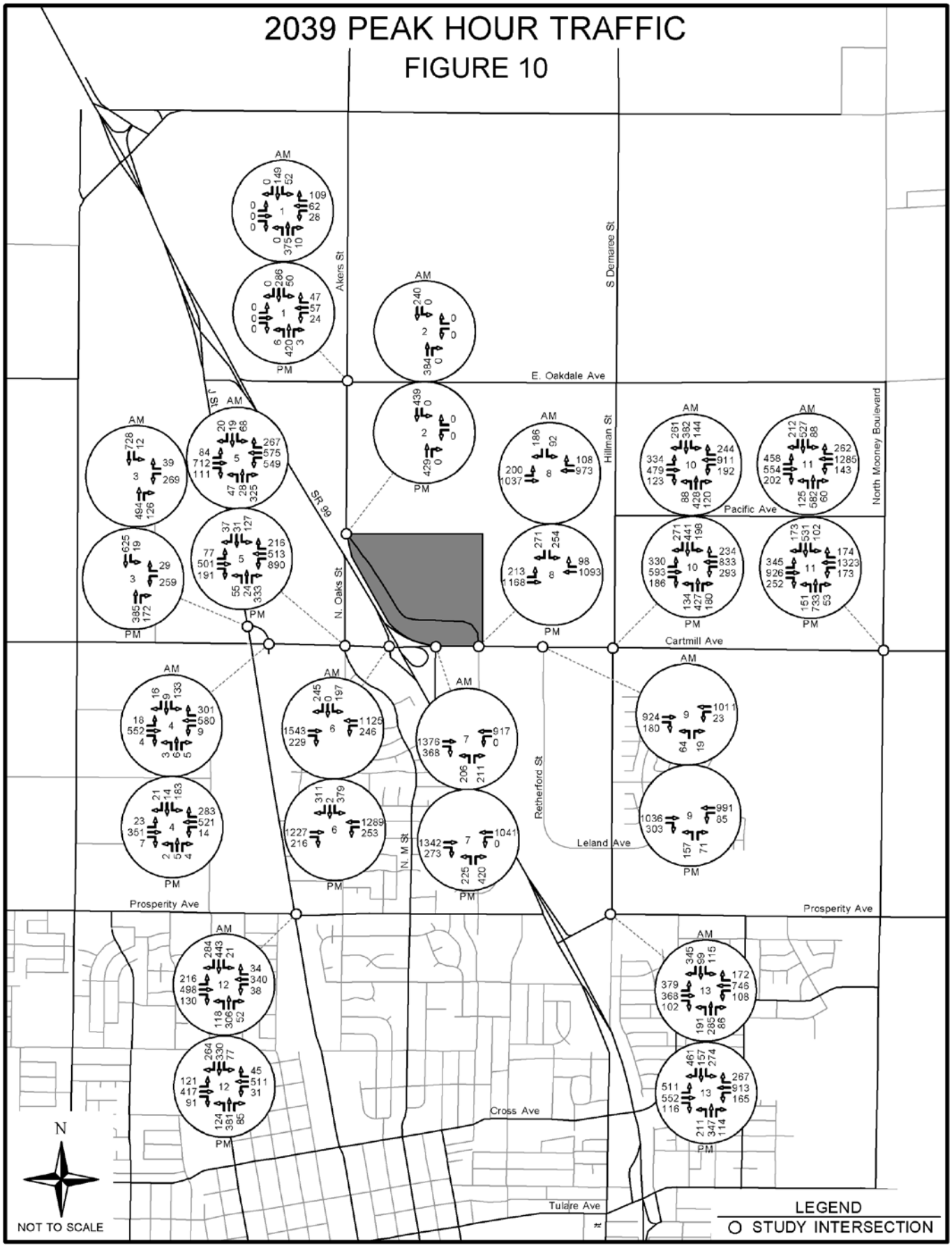
RUETTGERS & SCHULER CIVIL ENGINEERS

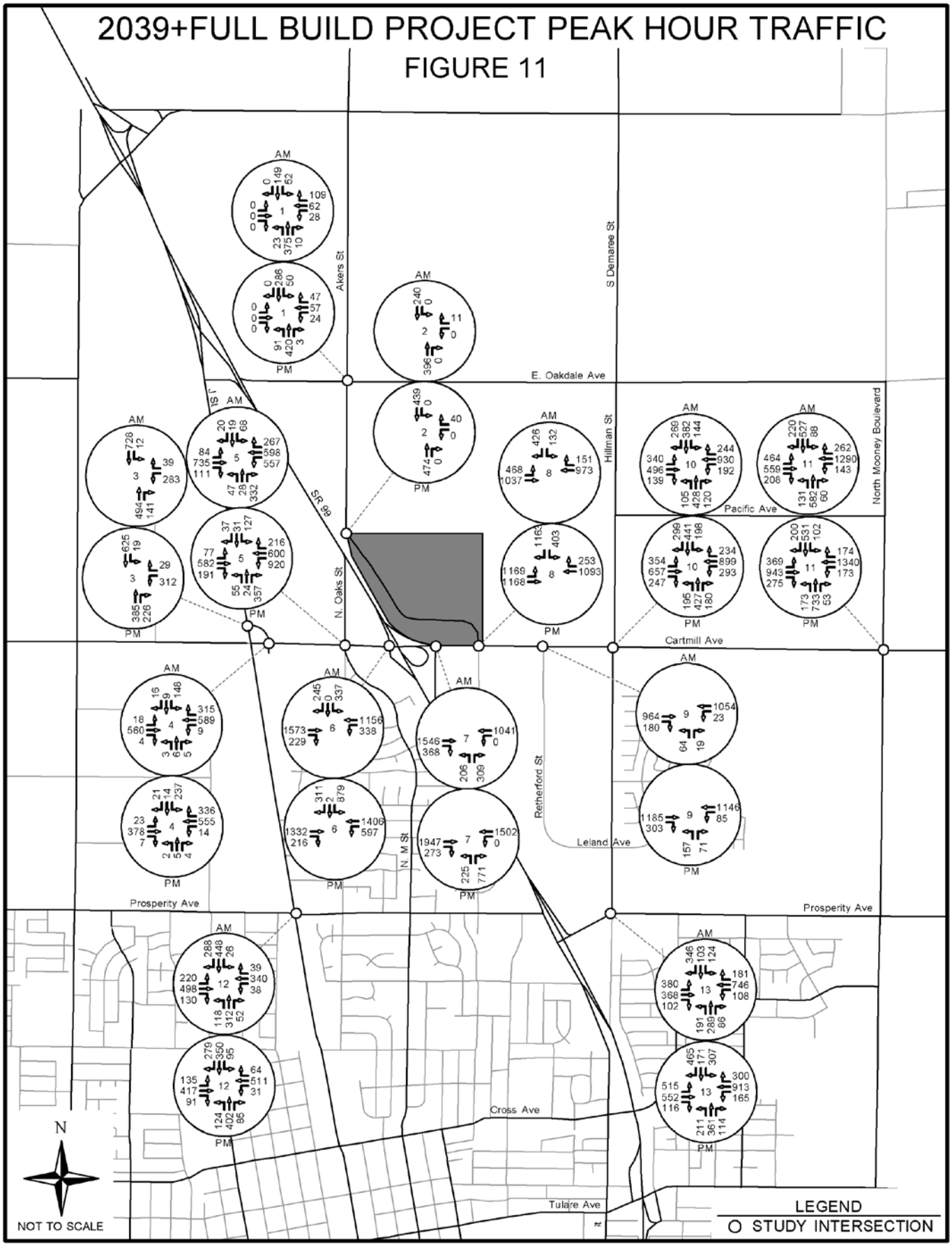

2020 PEAK HOUR TRAFFIC
FIGURE 6
AM
PM
Akers St
S Demaree St
E. Oakdale Ave
SR 99
N. Oaks St
Hillman St
North Mooney Boulevard
Pacific Ave
Cartmill Ave
Retherford St
Leland Ave
N M St
Prosperity Ave
Cross Ave
Tulare Ave
N
NOT TO SCALE
LEGEND
STUDY INTERSECTION


2020+PHASE 1 PROJECT PEAK HOUR TRAFFIC
FIGURE 7
Akers St
S Demaree St
E. Oakdale Ave
SR 99
N. Oaks St
Hillman St
Pacific Ave
North Mooney Boulevard
Cartmill Ave
Retherford St
N. M St
Leland Ave
Prosperity Ave
Prosperity Ave
Cross Ave
Tulare Ave
AM
PM
N
NOT TO SCALE
LEGEND
STUDY INTERSECTION


2029 PEAK HOUR TRAFFIC
FIGURE 8
AM
PM
Akers St
S Demaree St
E. Oakdale Ave
SR 99
Hillman St
N. Oaks St
Pacific Ave
North Mooney Boulevard
Cartmill Ave
Retherford St
N. M St
Leland Ave
Prosperity Ave
Cross Ave
Tulare Ave
N
NOT TO SCALE
LEGEND
STUDY INTERSECTION


2029+FULL BUILD PROJECT PEAK HOUR TRAFFIC
FIGURE 9
Akers St
S Demaree St
E. Oakdale Ave
SR 99
Hillman St
Pacific Ave
North Mooney Boulevard
N. Oaks St
Cartmill Ave
Retherford St
Leland Ave
N M St
Prosperity Ave
Cross Ave
Tulare Ave
AM
PM
N
NOT TO SCALE
LEGEND
STUDY INTERSECTION


2039 PEAK HOUR TRAFFIC
FIGURE 10
Akers St
S Demaree St
E. Oakdale Ave
SR 99
Hillman St
North Mooney Boulevard
Pacific Ave
N. Oaks St
Cartmill Ave
Retherford St
Leland Ave
N. M St
Prosperity Ave
Prosperity Ave
Cross Ave
Tulare Ave
AM
PM
N
NOT TO SCALE
LEGEND
STUDY INTERSECTION


2039+FULL BUILD PROJECT PEAK HOUR TRAFFIC
FIGURE 11
Aker's St
S Demaree St
E. Oakdale Ave
SR 99
Hillman St
North Mooney Boulevard
Pacific Ave
N. Oaks St
Cartmill Ave
Retherford St
Leland Ave
N M St
Prosperity Ave
Prosperity Ave
Cross Ave
Tulare Ave
AM
PM
N
NOT TO SCALE
LEGEND
STUDY INTERSECTION

INTERSECTION ANALYSIS

A capacity analysis of the study intersections was conducted using Synchro 9 software from Trafficware. This software utilizes the capacity analysis methodology in the Transportation Research Board's 2010 Highway Capacity Manual. The analysis was performed for the following AM and PM traffic scenarios:

- Existing 2018
- Future 2020
- Future 2020+Project Phase 1
- Future 2029
- Future 2029+Project Phases 1-3 (Full Build Out)
- Future 2039 Cumulative
- Future 2039 Cumulative+Project Phases 1-3

Criteria for intersection level of service (LOS) are shown in the tables below.

LEVEL OF SERVICE CRITERIA
UNSIGNALIZED INTERSECTION

Average Control Delay (sec/veh)	Level of Service	Expected Delay to Minor Street Traffic
≤ 10	A	Little or no delay
> 10 and ≤ 15	B	Short traffic delays
> 15 and ≤ 25	C	Average traffic delays
> 25 and ≤ 35	D	Long traffic delays
> 35 and ≤ 50	E	Very long traffic delays
> 50	F	Extreme delays

LEVEL OF SERVICE CRITERIA
SIGNALIZED INTERSECTIONS

Volume/Capacity	Control Delay (sec/veh)	Level of Service
< 0.60	≤ 10	A
0.61 - 0.70	> 10 and ≤ 20	B
0.71 - 0.80	> 20 and ≤ 35	C
0.81 - 0.90	> 35 and ≤ 55	D
0.91 - 1.00	> 55 and ≤ 80	E
> 1.0	> 80	F

According to the Tulare County 2014 Association of Governments Regional Transportation Plan, the peak hour level of service shall be no lower than LOS "D" for urban areas and LOS "C" for rural areas. Levels of service for the study intersections are presented in Tables 5a and 5b. The intersection peak hour level of service goal for the study intersections is LOS C or better.

Table 5a
AM Intersection Level of Service

#	Intersection	Control Type/Direction	2018	2020	2020+ Project (P1)	2029	2029+ Project (P1-3)	2039 Cum	2039 Cum+ Project	2039+Proj w/Mit[1]
1	Oakdale Ave & Akers St	EB Stop WB Stop	A A	A B	A B	A B	A B	A C	A C	B[2]
2	Akers St & Pacific Ave	WB Stop	A	A	A	A	B	A	B	-
3	J St & Cartmill Ave (Northerly Intersection)	Signal	A	A	A	A	A	B	B	-
4	Cartmill Ave & J St (Southerly Intersection)	Signal	A	A	A	A	A	B	B	-
5	Cartmill Ave & N Oaks St/M St	Signal	D (43.5)	D (45.2)	D (45.8)	D (48.5)	D (48.8)	D (36.0)	D (36.6)	C
6	Cartmill Ave & SR-99 SB Ramps	Signal	A	B	B	B	B	B	B	-
7	Cartmill Ave & SR-99 NB Ramps	Signal	A	A	A	A	A	A	A	-
8	Akers St (Project Access) & Cartmill Ave	Signal	A	B	C	B	C	C	D (54.4)	B
9	Retherford St & Cartmill Ave	NB Stop	C	C	C	D (31.7)	E (36.0)	F (>300)	F (>300)	B
10	Cartmill Ave & Hillman St	Signal	C	C	C	C	C	F (256.0)	F (275.0)	C
11	Cartmill Ave & N Mooney Blvd	Signal	C	C	C	D (40.9)	D (41.3)	F (321.2)	F (327.3)	C (34.2)
12	Prosperity Ave & J St	Signal	C	C	C	C	C	C	C	-
13	Prosperity Ave & Hillman St	Signal	E (63.0)	E (62.9)	E (62.8)	E (62.2)	E (62.1)	E (61.5)	E (61.5)	-[3]

NOTE: (P1)=Phase 1; (P1-3)=All Phases (Full Build); Cum=Background Cumulative Traffic; Mit=Mitigation
[1]See Table 9 for Mitigation Measures.
[2]Mitigation due to PM level of service.
[3]Project does not decrease level of service or create any further impact.

Table 5b
PM Intersection Level of Service

#	Intersection	Control Type/Direction	2018	2020	2020+ Project (P1)	2029	2029+ Project (P1-3)	2039 Cum	2039 Cum+ Project	2039+Proj w/Mit[1]
1	Oakdale Ave & Akers St	EB Stop WB Stop	A B	A B	A B	A B	A C	A C	A E (37.9)	C
2	Akers St & Pacific Ave	WB Stop	A	A	A	A	B	A	B	-
3	J St & Cartmill Ave (Northerly Intersection)	Signal	A	A	A	B	B	B	B	-
4	Cartmill Ave & J St (Southerly Intersection)	Signal	B	B	B	B	B	B	B	-
5	Cartmill Ave & N Oaks St/M St	Signal	C	C	D (38.5)	D (38.8)	D (36.3)	D (48.4)	E (59.7)	C
6	Cartmill Ave & SR-99 SB Ramps	Signal	B	B	B	B	B	B	C	-
7	Cartmill Ave & SR-99 NB Ramps	Signal	A	A	A	A	A	A	B	-
8	Akers St (Project Access) & Cartmill Ave	Signal	B	B	D (52.1)	C	F (415.0)	C	F (461.2)	C
9	Retherford St & Cartmill Ave	NB Stop	C	D (27.5)	D (33.8)	F (85.5)	F (268.8)	F (>300)	F (>300)	B
10	Cartmill Ave & Hillman St	Signal	C	C	C	D (48.9)	D (54.8)	F (275.0)	F (336.8)	C
11	Cartmill Ave & N Mooney Blvd	Signal	C	C	C	C	C	F (314.4)	F (336.7)	C
12	Prosperity Ave & J St	Signal	B	B	B	C	C	C	C	-
13	Prosperity Ave & Hillman St	Signal	E (75.3)	E (76.0)	E (77.8)	E (76.2)	E (75.5)	E (75.5)	E (76.2)	-[3]

NOTE: (P1)=Phase 1; (P1-3)=All Phases (Full Build); Cum=Background Cumulative Traffic; Mit=Mitigation
[1]See Table 9 for Mitigation Measures.
[2]Mitigation due to AM level of service.
[3]Project does not decrease level of service or create any further impact.

TRAFFIC SIGNAL WARRANT ANALYSIS

Peak hour signal warrants were evaluated for each of the unsignalized intersections within the study based on the California Manual on Uniform Traffic Control Devices (MUTCD). Peak hour signal warrants assess delay to traffic on the minor street approaches when entering or crossing a major street. Signal warrant analysis results for AM and PM peak hours are shown in Tables 6a and 6b.

It is important to note that a signal warrant defines the minimum condition under which signalization of an intersection might be warranted. Meeting this threshold does not suggest traffic signals are required, but rather, that other traffic factors and conditions be considered in order to determine whether signals are truly justified.

It is also noted that signal warrants do not necessarily correlate with level of service. An intersection may satisfy a signal warrant condition and operate at or above an acceptable level of service, or operate below an acceptable level of service and not meet signal warrant criteria.

Table 6a
AM Traffic Signal Warrant Analysis

		2018			2020			2020+Project		
#	Intersection	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
1	Akers St at E Oakdale Ave	213	42	NO	234	49	NO	240	49	NO
2	Akers St at Pacific Avenue	195	0	NO	218	0	NO	221	3	NO
9	Retherford St at E Cartmill Ave	921	22	NO	983	23	NO	1010	23	NO

Table 6a CONTINUED
AM Traffic Signal Warrant Analysis

		2029			2029+Project			2039			2039+Project		
#	Intersection	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
1	Akers St at E Oakdale Ave	360	95	NO	383	95	NO	586	199	YES	609	199	YES
2	Akers St at Pacific Avenue	359	0	NO	371	11	NO	624	0	NO	636	11	NO
9	Retherford St at E Cartmill Ave	1313	26	NO	1396	26	NO	2138	83	YES	2221	83	YES

Table 6b
PM Traffic Signal Warrant Analysis

		2018			2020			2020+Project		
#	Intersection	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
1	Akers St at E Oakdale Ave	289	27	NO	316	32	NO	344	32	NO
2	Akers St at Pacific Avenue	271	0	NO	303	0	NO	318	13	NO
9	Retherford St at E Cartmill Ave	971	103	YES	1035	107	YES	1130	107	YES

Table 6b CONTINUED
PM Traffic Signal Warrant Analysis

		2029			2029+Project			2039			2039+Project		
#	Intersection	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
1	Akers St at E Oakdale Ave	479	61	NO	564	61	NO	765	128	YES	850	128	YES
2	Akers St at Pacific Avenue	499	0	NO	544	40	NO	868	0	NO	913	40	NO
9	Retherford St at E Cartmill Ave	1385	124	YES	1689	124	YES	2415	228	YES	2719	228	YES

ROADWAY ANALYSIS

A capacity analysis of the study roadways was conducted using HCS software from McTrans. This software utilizes the capacity analysis methodology in the Transportation Research Board's Highway Capacity Manual. Table 7 shows the directional LOS and mitigated LOS for the roadway segments in the study scope.

Table 7
ROADWAY LEVEL OF SERVICE

Roadway Segment	Segment Orientation	Directional Level of Service					
		2018		2020		2020+Project (Phase 1)	
		N or E AM/PM	S or W AM/PM	N or E AM/PM	S or W AM/PM	N or E AM/PM	S or W AM/PM
Cartmill Ave/J St: North Intersection at J St to South Intersection at Cartmill Ave	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: J St to N Oaks St	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: N Oaks St to SR 99 SB Ramps	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: SR 99 SB Ramps to SR 99 NB Ramps	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: SR 99 NB Ramps to Akers St	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: Akers St to Retherford St	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: Retherford St to Hillman St	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Cartmill Ave: Hillman St to N Mooney Blvd	E-W	A/A	A/A	A/A	A/A	A/A	A/A
Akers St: Oakdale Ave to Pacific Ave	N-S	B/B	B/B	B/B	B/B	B/B	B/B
Akers St: Pacific Ave to Cartmill Ave	N-S	C/C	C/C	C/D	D/C	C/D	D/C
J St: Cartmill Ave to Prosperity Ave	N-S	C/C	D/C	C/C	D/C	C/C	D/D
Hillman St: Cartmill Ave to Proseperity Ave	N-S	A/A	A/A	A/B	A/A	A/B	A/A

(Table 7 Continued on Next Page)

Table 7 CONTINUED
ROADWAY LEVEL OF SERVICE

Roadway Segment	Directional Level of Service									
	2029		2029+Project Full Build (Phases 1-3)		2039 Cumulative		2039 Cum+Project		2039 Cum+Project w/Mitigation[1]	
	N or E AM/PM	S or W AM/PM	N or E AM/PM	S or W AM/PM	N or E AM/PM	S or W AM/PM	N or E AM/PM	S or W AM/PM	N or E AM/PM	S or W AM/PM
Cartmill Ave/J St: North Intersection at J St to South Intersection at Cartmill Ave	A/A	A/A	A/A	A/A	A/A	A/A	A/A	A/A	-	-
Cartmill Ave: J St to N Oaks St	A/A	A/A	A/A	A/A	A/A	A/A	A/A	A/A	-	-
Cartmill Ave: N Oaks St to SR 99 SB Ramps	B/A	A/A	B/B	A/A	C/B	B/B	C/C	B/B	-	-
Cartmill Ave: SR 99 SB Ramps to SR 99 NB Ramps	B/A	A/A	B/B	A/B	C/B	B/B	C/C	B/C	-	-
Cartmill Ave: SR 99 NB Ramps to Akers St	A/A	A/A	B/B	A/A	B/B	A/A	C/C	B/C	-	-
Cartmill Ave: Akers St to Retherford St	A/A	A/A	A/A	A/A	B/B	B/B	B/B	B/B	-	-
Cartmill Ave: Retherford St to Hillman St	A/A	A/A	A/A	A/A	B/B	A/B	B/B	A/B	-	-
Cartmill Ave: Hillman St to N Mooney Blvd	A/A	A/A	A/A	A/A	B/C	B/B	C/C	B/B	-	-
Akers St: Oakdale Ave to Pacific Ave	B/C	B/C	B/C	B/C	D/D	E/D	E/D	E/D	A/A	A/A
Akers St: Pacific Ave to Cartmill Ave	D/D	D/D	D/E	D/E	E/E	E/E	E/E	E/E	A/A	A/A
J St: Cartmill Ave to Prosperity Ave	D/D	D/D	D/D	D/D	E/D	E/E	E/D	E/E	A/A	B/B
Hillman St: Cartmill Ave to Proseperity Ave	A/B	A/A	A/B	A/A	A/B	A/A	A/B	A/B	-	-

[1]See Table 10 for Mitigation Measures.

FREEWAY SEGMENT & RAMP ANALYSIS

A freeway segment and ramp analysis for State Route 99 within the study area was also conducted using HCS software from McTrans. The freeway segments and ramps analyzed, along with the level of service results are shown in Table 8 below.

Table 8
FREEWAY SEGMENT & RAMP LEVEL OF SERVICE

Freeway Segments & Ramps	2018	2020	2020 +Project (Phase 1)	2029[1]	2029+Project Full Build (Phases 1-3)[1]	2039 Cumulative[1]	2039 Cum +Project[1]
State Route 99: Prosperity Ave to Cartmill Ave (south of Project)	C	C	C	B	C	C	C
State Route 99: Cartmill Ave to Avenue 264 (north of Project)	C	C	C	B	B	C	C
SR 99 and Cartmill Ave SB Off-Ramp	B	B	B	A	A	A	A
SR 99 and Cartmill Ave SB On-Ramp	B	B	B	A	B	B	B
SR 99 and Cartmill Ave NB Off-Ramp	A	A	A	A	A	A	A
SR 99 and Cartmill Ave NB-E On-Ramp	C	C	C	B	C	C	C
SR 99 and Cartmill Ave NB-W On-Ramp	C	C	C	C	C	C	C
SR 99 and Oakdale Ave NB On-Ramp	C	C	D	C	C	C	C

[1]Analysis for 2029 and 2039 includes planned freeway improvements listed in the Caltrans *State Route 99 Transportation Concept Report*, which calls for the addition of two through lanes as well as auxiliary lanes by 2025.

MITIGATION

Intersection improvements needed by the year 2039 to maintain or improve the operational level of service of the street system in the vicinity of the project is shown in Tables 9 and 10.

Table 9
Future Intersection Improvements and Local Mitigation

#	Intersection	Total Improvements Required by 2039	Project % Share for Local Mitigation
1	Oakdale Ave & Akers St	Add Stop Control NB and SB	12.84%
5	Cartmill Ave & N Oaks St/M St	Configure NBR to Permitted Overlap	11.5%
8	(Project Access) Akers St & Cartmill Ave	Change SBR/L to 2 SBR, 2 SBL Set SBR to Permitted Overlap Add 1 EBL	53.24%
9	Retherford St & Cartmill Ave	Signal Change EBT/R to EBT, EBR	16.23%
10	Cartmill Ave & Hillman St	Change EBT/R to EBR, 2 EBT, EBL Change WBT/R to WBR, 2 WBT, WBL	11.11%
11	Cartmill Ave & N Mooney Blvd	Change EBT/R to 3 EBT, EBR, Add 1 EBL Change WBT/R to 3 WBT, WBR, Add 1 WBL Change NBT/R to NBT, NBR, Add 1 NBL Change SBT/R to SBT, SBR, Add 1 SBL	3.38%

Notes: NB = Northbound; L = Left-Turn Lane; B = Southbound; T = Through Lane; WB = Westbound; R = Right-Turn Lane; EB = Eastbound

Table 10
Future Roadway Improvements and Local Mitigation

Roadway Segment	Total Improvements Required by 2039	Project % Share for Local Mitigation
Akers St: Oakdale Ave to Pacific Ave	Add 2 Lanes	24.20%
*Akers St: Pacific Ave to Cartmill Ave	Add 2 Lanes	88.99%
J St: Cartmill Ave to Prosperity Ave	Add 2 Lanes	13.76%

*NOTE: The segment of Akers Street between Pacific Avenue and Cartmill Avenue is contained within the project boundary and may already be subject to conditional improvements related to the project.

SUMMARY

This study evaluated the potential traffic impacts of a proposed mixed-use development in the northern region of the City of Tulare.

Intersection Analysis

Of the intersections within the study area, the intersections of Prosperity Avenue & Hillman Street and Cartmill Avenue & N Oaks Street/M Street currently operate below an acceptable level of service during peak hours prior to the addition of project traffic. All other intersections operate at or above LOS C in the existing year.

By the year 2020 (Phase 1), it is anticipated that the intersection of Retherford Street and Cartmill Avenue will operate below an acceptable level of service during peak hours prior to the addition of project traffic. With the addition of project traffic, it is anticipated that Akers Street & Cartmill Avenue will also operate below an acceptable level of service. All remaining intersections operating at or above LOS C, are anticipated to continue to do so in the future year (2020 Phase 1).

By the year 2029 (Phases 1-3), it is anticipated that the intersections of Cartmill Avenue & Hillman Street and Cartmill Avenue & N Mooney Boulevard will operate below an acceptable level of service prior to the addition of project traffic. All remaining intersections operating at or above LOS C, are anticipated to continue to do so in the future year (2029 Phase 1-3).

By the year 2039, it is anticipated that the intersection of Oakdale Avenue & Akers Street will operate below an acceptable level of service with the addition of cumulative and project traffic. All remaining intersections operating at or above LOS C, are anticipated to continue to do so after the addition of cumulative and project traffic in the future year (2039).

Roadway Analysis

Based on the capacity analysis conducted using HCS 2010 software, and the level of service standards for the City of Tulare, all roadway segments within the study area operate at an acceptable level of service in the existing year, and are anticipated to continue to do so through the future year 2020 before and after the addition of project traffic.

By the year 2029 (Phases 1-3), with the addition of project traffic, it is anticipated that the roadway segment of Akers Street, from Pacific Avenue to Cartmill Avenue, will operate below an acceptable

level of service. All other roadways within the project scope that operate at acceptable levels of service in the future year 2029 are anticipated to continue to do so before and after the addition of project traffic.

By the year 2039, it is anticipated that the roadway segment of J Street, from Cartmill Avenue to Prosperity Avenue, will operate below an acceptable level of service prior to the addition of project traffic. With the addition of project traffic, it is anticipated that the roadway segment of Akers Street, from Oakdale Avenue to Pacifica Avenue, will also operate below an acceptable level of service.

All other remaining roadways within the project scope that operate at acceptable levels of service in the future year 2039 are anticipated to continue to do so before and after the addition of project traffic.

Freeway Segment & Ramp Analysis

Based on the level of service threshold criteria established in the Caltrans *State Route 99 Transportation Concept Report*, the State Route 99 freeway segments to the north and south of the project currently operate at an acceptable level of service, and with the improvements noted in the Caltrans concept report, both segments are anticipated to continue to operate at acceptable levels of service through the future year 2039 before and after the addition of project traffic.

All ramps within the study scope operate at acceptable levels of service in the current year (2018), and with the improvements noted in the Caltrans concept report, both segments are anticipated to continue to operate at acceptable levels of service through the future year 2039 before and after the addition of project traffic.

REFERENCES

1. 2010 Highway Capacity Manual, Transportation Research Board
2. Caltrans. "4. State Route 99 Transportation Concept Report." *California Department of Transportation (Caltrans Title)*, Nov. 2003, www.dot.ca.gov/d6/planning.
3. City of Tulare General Plan, approved June 2009
4. Manual on Uniform Traffic Control Devices for Streets and Highways, 2012 Edition, Federal Highway Administration (FHA)
5. Trip Generation, 9th Edition, Institute of Transportation Engineers (ITE)

APPENDIX

Intersection 1
N Oaks St & E Oakdale Ave

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	5	12	10	2	131	1	23	132	0
Future Vol, veh/h	0	0	0	5	12	10	2	131	1	23	132	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	13	11	2	142	1	25	143	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	352	341	143	340	340	143	143	0	0	143	0	0
Stage 1	193	193	-	147	147	-	-	-	-	-	-	-
Stage 2	159	148	-	193	193	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	603	581	905	614	582	905	1440	-	-	1440	-	-
Stage 1	809	741	-	856	775	-	-	-	-	-	-	-
Stage 2	843	775	-	809	741	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	576	569	905	604	570	905	1440	-	-	1440	-	-
Mov Cap-2 Maneuver	576	569	-	604	570	-	-	-	-	-	-	-
Stage 1	807	727	-	854	773	-	-	-	-	-	-	-
Stage 2	817	773	-	794	727	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.6	0.1	1.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1440	-	-	-	669	1440	-	-
HCM Lane V/C Ratio	0.002	-	-	-	0.044	0.017	-	-
HCM Control Delay (s)	7.5	0	-	0	10.6	7.5	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	6	14	12	2	146	1	25	142	0
Future Vol, veh/h	0	0	0	6	14	12	2	146	1	25	142	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	7	15	13	2	159	1	27	154	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	387	373	154	373	373	159	154	0	0	160	0	0
Stage 1	209	209	-	164	164	-	-	-	-	-	-	-
Stage 2	178	164	-	209	209	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	572	557	892	584	557	886	1426	-	-	1419	-	-
Stage 1	793	729	-	838	762	-	-	-	-	-	-	-
Stage 2	824	762	-	793	729	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	542	544	892	574	544	886	1426	-	-	1419	-	-
Mov Cap-2 Maneuver	542	544	-	574	544	-	-	-	-	-	-	-
Stage 1	791	714	-	836	760	-	-	-	-	-	-	-
Stage 2	794	760	-	776	714	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.9	0.1	1.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1426	-	-	-	643	1419	-	-
HCM Lane V/C Ratio	0.002	-	-	-	0.054	0.019	-	-
HCM Control Delay (s)	7.5	0	-	0	10.9	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	6	14	12	30	146	1	25	142	0
Future Vol, veh/h	0	0	0	6	14	12	30	146	1	25	142	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	7	15	13	33	159	1	27	154	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	448	434	154	433	433	159	154	0	0	160	0	0
Stage 1	209	209	-	224	224	-	-	-	-	-	-	-
Stage 2	239	225	-	209	209	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	521	515	892	533	516	886	1426	-	-	1419	-	-
Stage 1	793	729	-	779	718	-	-	-	-	-	-	-
Stage 2	764	718	-	793	729	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	484	492	892	514	493	886	1426	-	-	1419	-	-
Mov Cap-2 Maneuver	484	492	-	514	493	-	-	-	-	-	-	-
Stage 1	773	714	-	760	700	-	-	-	-	-	-	-
Stage 2	718	700	-	776	714	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	11.4	1.3	1.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1426	-	-	-	597	1419	-	-
HCM Lane V/C Ratio	0.023	-	-	-	0.058	0.019	-	-
HCM Control Delay (s)	7.6	0	-	0	11.4	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	11	27	23	4	241	2	34	198	0
Future Vol, veh/h	0	0	0	11	27	23	4	241	2	34	198	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	12	29	25	4	262	2	37	215	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	588	562	215	561	561	263	215	0	0	264	0	0
Stage 1	289	289	-	272	272	-	-	-	-	-	-	-
Stage 2	299	273	-	289	289	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	421	436	825	438	436	776	1355	-	-	1300	-	-
Stage 1	719	673	-	734	685	-	-	-	-	-	-	-
Stage 2	710	684	-	719	673	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	376	421	825	426	421	776	1355	-	-	1300	-	-
Mov Cap-2 Maneuver	376	421	-	426	421	-	-	-	-	-	-	-
Stage 1	717	651	-	732	683	-	-	-	-	-	-	-
Stage 2	656	682	-	696	651	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	13.1	0.1	1.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1355	-	-	-	510	1300	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.13	0.028	-	-
HCM Control Delay (s)	7.7	0	-	0	13.1	7.8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	11	27	23	89	241	2	34	198	0
Future Vol, veh/h	0	0	0	11	27	23	89	241	2	34	198	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	12	29	25	97	262	2	37	215	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	773	747	215	746	746	263	215	0	0	264	0	0
Stage 1	289	289	-	457	457	-	-	-	-	-	-	-
Stage 2	484	458	-	289	289	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	316	341	825	330	342	776	1355	-	-	1300	-	-
Stage 1	719	673	-	583	568	-	-	-	-	-	-	-
Stage 2	564	567	-	719	673	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	259	302	825	301	303	776	1355	-	-	1300	-	-
Mov Cap-2 Maneuver	259	302	-	301	303	-	-	-	-	-	-	-
Stage 1	659	651	-	534	520	-	-	-	-	-	-	-
Stage 2	472	519	-	696	651	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	16	2.1	1.2
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1355	-	-	-	393	1300	-	-
HCM Lane V/C Ratio	0.071	-	-	-	0.169	0.028	-	-
HCM Control Delay (s)	7.9	0	-	0	16	7.8	0	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	24	57	47	6	420	3	50	286	0
Future Vol, veh/h	0	0	0	24	57	47	6	420	3	50	286	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	26	62	51	7	457	3	54	311	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	948	893	311	891	891	458	311	0	0	460	0	0
Stage 1	420	420	-	471	471	-	-	-	-	-	-	-
Stage 2	528	473	-	420	420	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	241	281	729	263	282	603	1249	-	-	1101	-	-
Stage 1	611	589	-	573	560	-	-	-	-	-	-	-
Stage 2	534	558	-	611	589	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	172	262	729	250	263	603	1249	-	-	1101	-	-
Mov Cap-2 Maneuver	172	262	-	250	263	-	-	-	-	-	-	-
Stage 1	606	554	-	568	556	-	-	-	-	-	-	-
Stage 2	431	554	-	575	554	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	23.8	0.1	1.3
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1249	-	-	-	328	1101	-	-
HCM Lane V/C Ratio	0.005	-	-	-	0.424	0.049	-	-
HCM Control Delay (s)	7.9	0	-	0	23.8	8.4	0	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	2	0.2	-	-

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	24	57	47	91	420	3	50	286	0
Future Vol, veh/h	0	0	0	24	57	47	91	420	3	50	286	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	26	62	51	99	457	3	54	311	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1133	1078	311	1076	1076	458	311	0	0	460	0	0
Stage 1	420	420	-	656	656	-	-	-	-	-	-	-
Stage 2	713	658	-	420	420	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	180	219	729	197	219	603	1249	-	-	1101	-	-
Stage 1	611	589	-	454	462	-	-	-	-	-	-	-
Stage 2	423	461	-	611	589	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	108	184	729	173	184	603	1249	-	-	1101	-	-
Mov Cap-2 Maneuver	108	184	-	173	184	-	-	-	-	-	-	-
Stage 1	546	554	-	405	413	-	-	-	-	-	-	-
Stage 2	294	412	-	575	554	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	37.9	1.4	1.3
HCM LOS	A	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1249	-	-	-	243	1101	-	-
HCM Lane V/C Ratio	0.079	-	-	-	0.573	0.049	-	-
HCM Control Delay (s)	8.1	0	-	0	37.9	8.4	0	-
HCM Lane LOS	A	A	-	A	E	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	-	3.2	0.2	-	-

Intersection	
Intersection Delay, s/veh	16.8
Intersection LOS	C

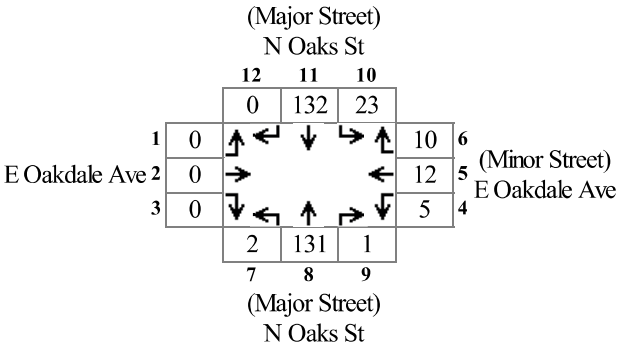
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	24	57	47	0	91	420	3	0	50	286	0
Future Vol, veh/h	0	0	0	0	0	24	57	47	0	91	420	3	0	50	286	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	26	62	51	0	99	457	3	0	54	311	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	10.7	20.7	13.3
HCM LOS	-	B	C	B

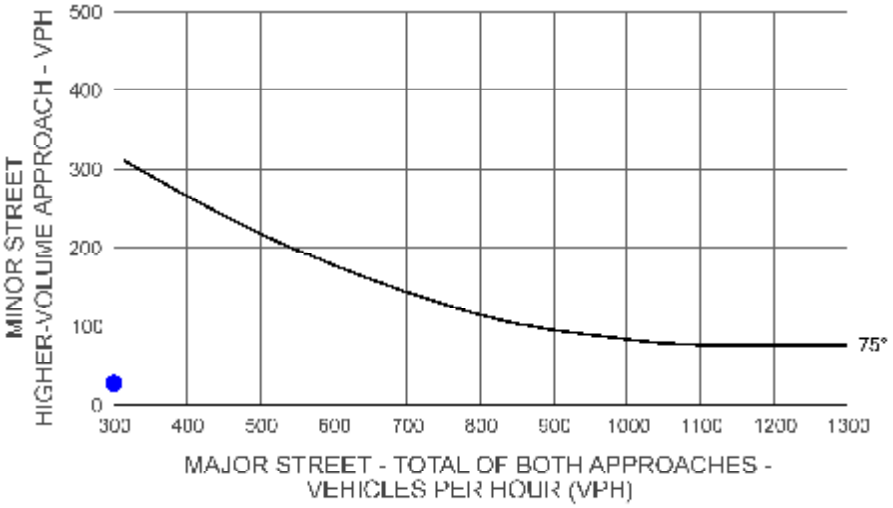
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	18%	0%	19%	15%
Vol Thru, %	82%	100%	45%	85%
Vol Right, %	1%	0%	37%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	514	0	128	336
LT Vol	91	0	24	50
Through Vol	420	0	57	286
RT Vol	3	0	47	0
Lane Flow Rate	559	0	139	365
Geometry Grp	1	1	1	1
Degree of Util (X)	0.745	0	0.229	0.508
Departure Headway (Hd)	4.801	6.52	5.937	5.109
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	743	0	608	709
Service Time	2.891	4.528	3.937	3.109
HCM Lane V/C Ratio	0.752	0	0.229	0.515
HCM Control Delay	20.7	9.5	10.7	13.3
HCM Lane LOS	C	N	B	B
HCM 95th-tile Q	6.8	0	0.9	2.9

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 1

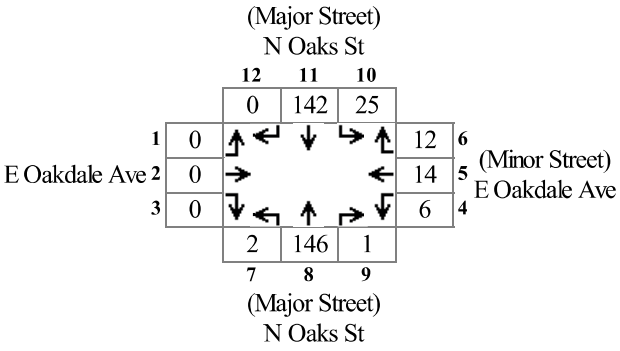


Major Total: 289
Minor High Volume: 27

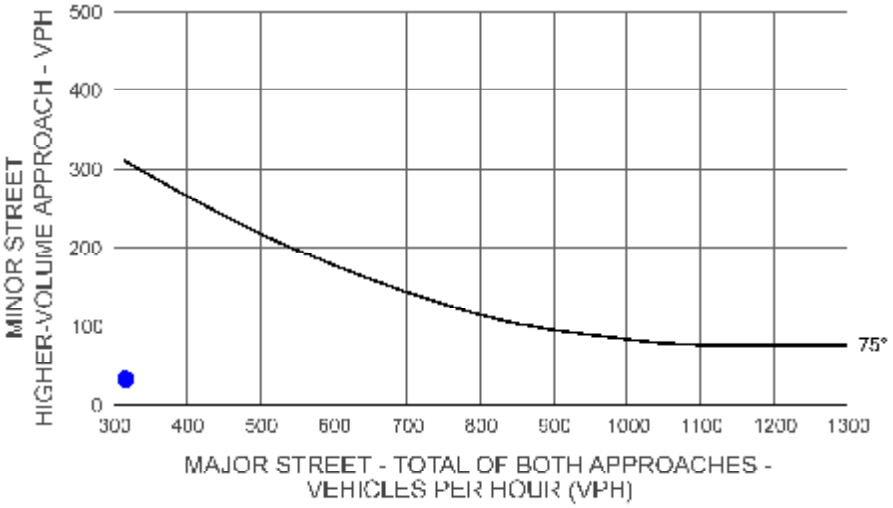


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 1

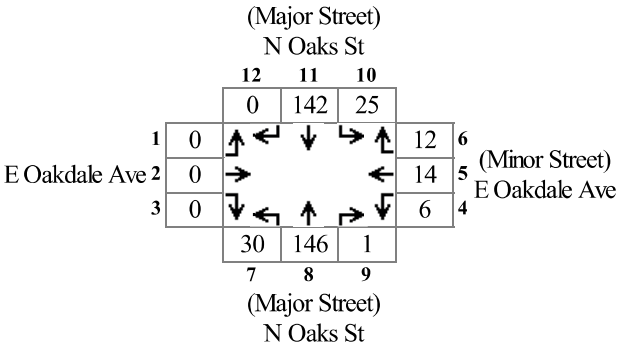


Major Total: 316
Minor High Volume: 32

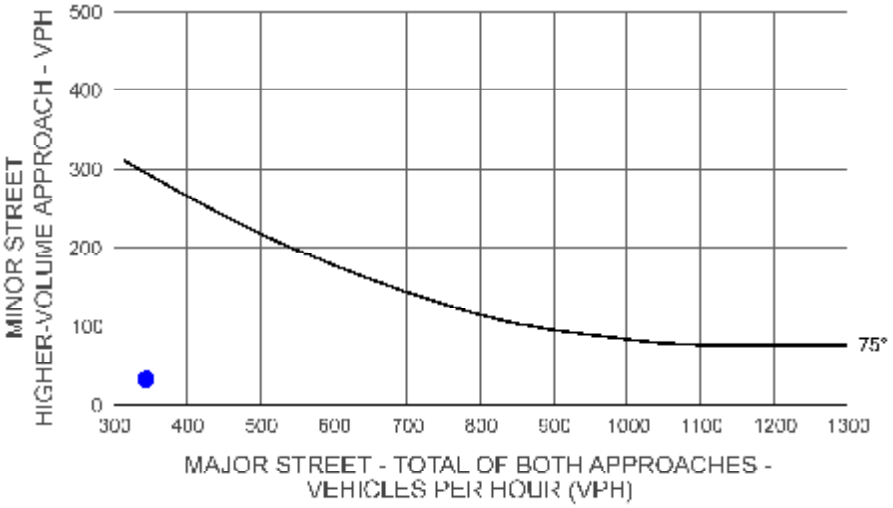


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 1

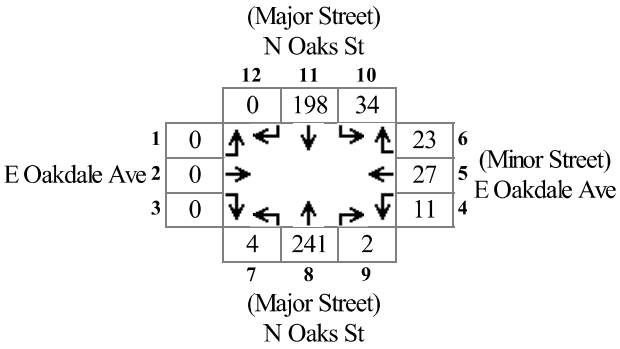


Major Total: 344
Minor High Volume: 32

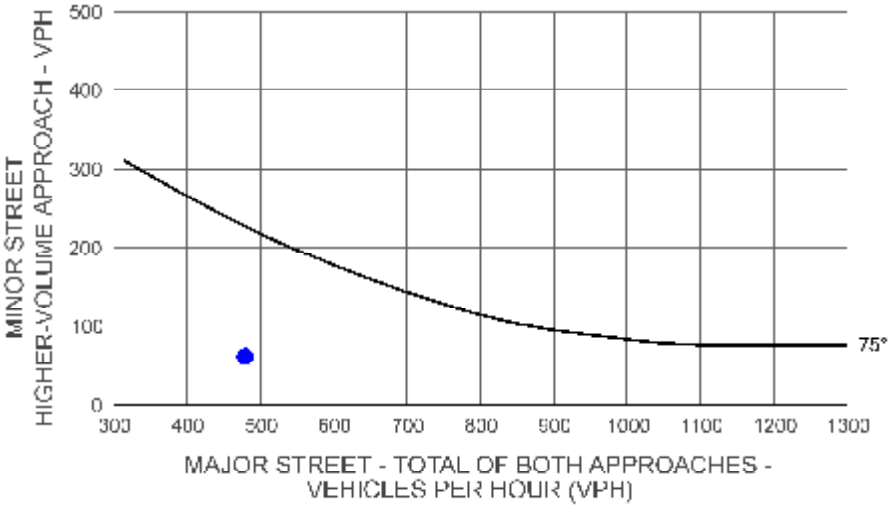


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 1

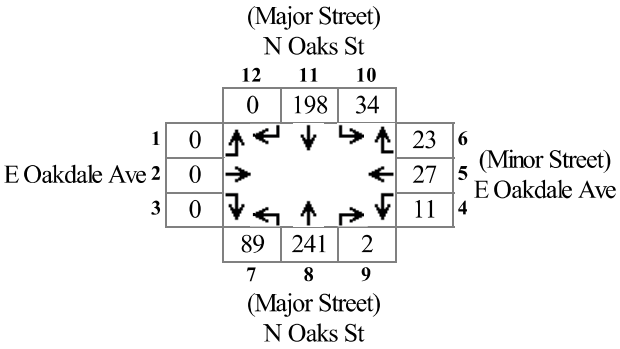


Major Total: 479
Minor High Volume: 61

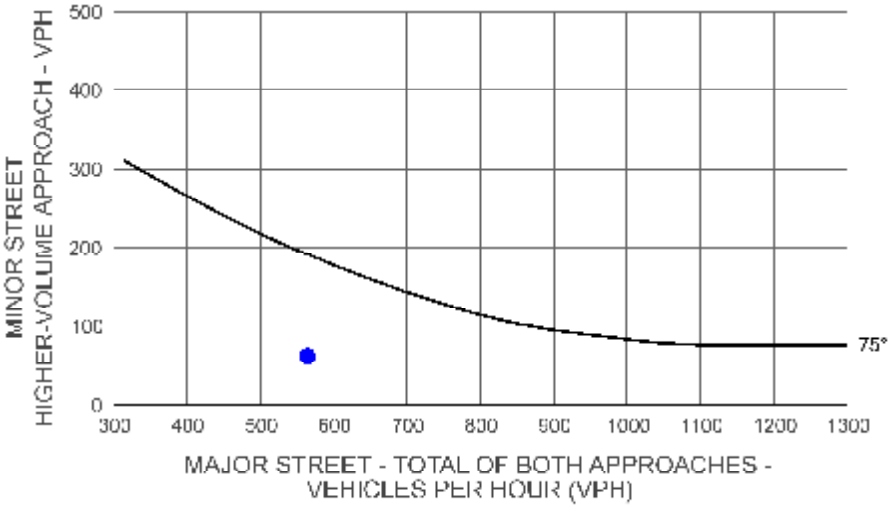


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 1

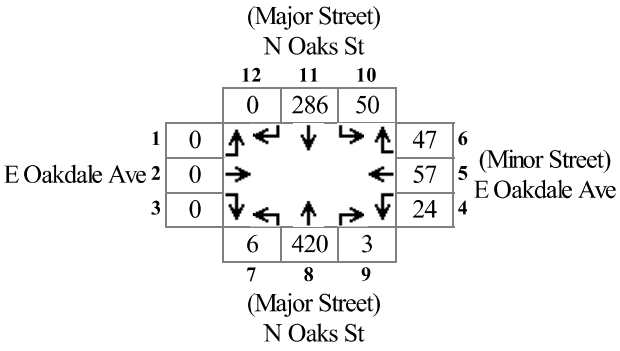


Major Total: 564
Minor High Volume: 61

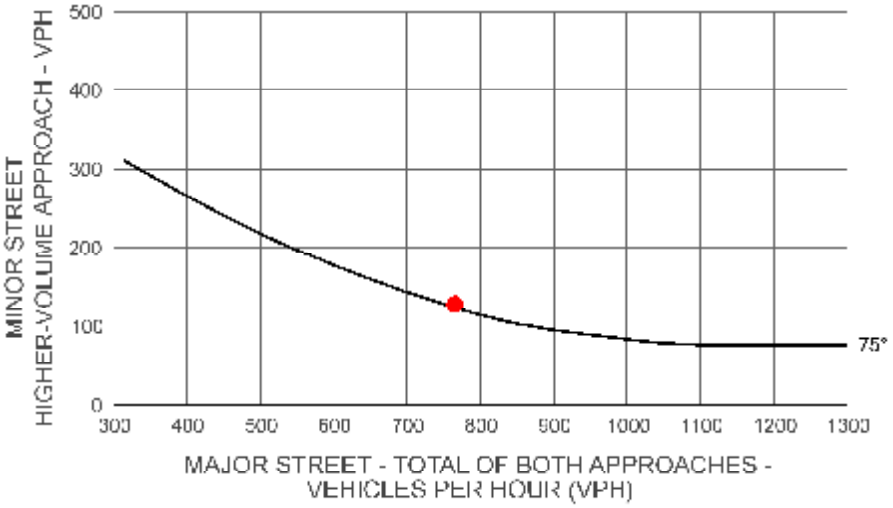


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future
Intersection #: 1

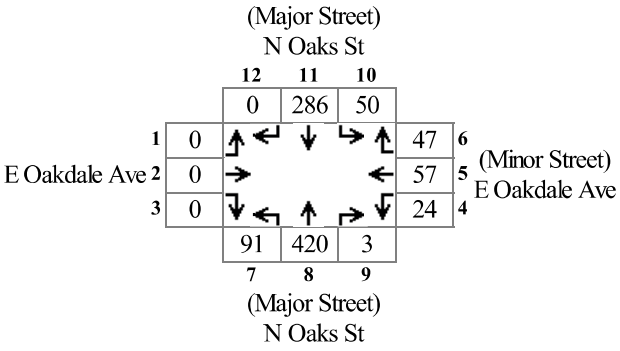


Major Total: 765
Minor High Volume: 128

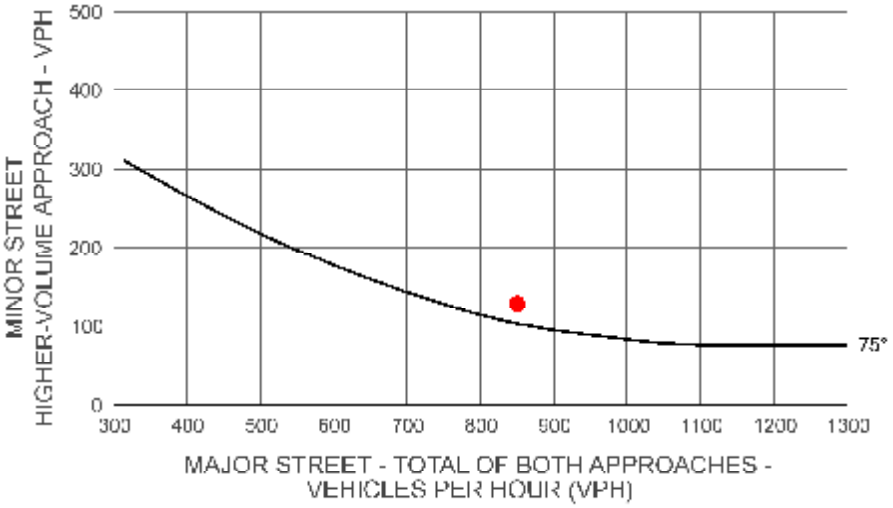


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project
Intersection #: 1



Major Total: 850
Minor High Volume: 128



Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	6	13	23	0	117	3	24	69	0
Future Vol, veh/h	0	0	0	6	13	23	0	117	3	24	69	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	7	14	25	0	127	3	26	75	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	275	257	75	256	256	129	75	0	0	130	0	0
Stage 1	127	127	-	129	129	-	-	-	-	-	-	-
Stage 2	148	130	-	127	127	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	677	647	986	697	648	921	1524	-	-	1455	-	-
Stage 1	877	791	-	875	789	-	-	-	-	-	-	-
Stage 2	855	789	-	877	791	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	638	635	986	687	636	921	1524	-	-	1455	-	-
Mov Cap-2 Maneuver	638	635	-	687	636	-	-	-	-	-	-	-
Stage 1	877	776	-	875	789	-	-	-	-	-	-	-
Stage 2	817	789	-	860	776	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.9	0	1.9
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1524	-	-	-	776	1455	-	-
HCM Lane V/C Ratio	-	-	-	-	0.059	0.018	-	-
HCM Control Delay (s)	0	-	-	0	9.9	7.5	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	7	15	27	0	131	3	26	74	0
Future Vol, veh/h	0	0	0	7	15	27	0	131	3	26	74	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	8	16	29	0	142	3	28	80	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	304	283	80	281	281	144	80	0	0	146	0	0
Stage 1	137	137	-	144	144	-	-	-	-	-	-	-
Stage 2	167	146	-	137	137	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	648	626	980	671	627	903	1518	-	-	1436	-	-
Stage 1	866	783	-	859	778	-	-	-	-	-	-	-
Stage 2	835	776	-	866	783	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	605	613	980	661	614	903	1518	-	-	1436	-	-
Mov Cap-2 Maneuver	605	613	-	661	614	-	-	-	-	-	-	-
Stage 1	866	767	-	859	778	-	-	-	-	-	-	-
Stage 2	791	776	-	849	767	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.1	0	2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1518	-	-	-	755	1436	-	-
HCM Lane V/C Ratio	-	-	-	-	0.071	0.02	-	-
HCM Control Delay (s)	0	-	-	0	10.1	7.6	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	7	15	27	6	131	3	26	74	0
Future Vol, veh/h	0	0	0	7	15	27	6	131	3	26	74	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	8	16	29	7	142	3	28	80	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	317	296	80	294	294	144	80	0	0	146	0	0
Stage 1	137	137	-	157	157	-	-	-	-	-	-	-
Stage 2	180	159	-	137	137	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	636	616	980	658	617	903	1518	-	-	1436	-	-
Stage 1	866	783	-	845	768	-	-	-	-	-	-	-
Stage 2	822	766	-	866	783	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	591	601	980	645	602	903	1518	-	-	1436	-	-
Mov Cap-2 Maneuver	591	601	-	645	602	-	-	-	-	-	-	-
Stage 1	862	767	-	841	764	-	-	-	-	-	-	-
Stage 2	774	762	-	849	767	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.2	0.3	2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1518	-	-	-	746	1436	-	-
HCM Lane V/C Ratio	0.004	-	-	-	0.071	0.02	-	-
HCM Control Delay (s)	7.4	0	-	0	10.2	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	14	29	52	0	215	6	36	103	0
Future Vol, veh/h	0	0	0	14	29	52	0	215	6	36	103	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	15	32	57	0	234	7	39	112	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	471	430	112	427	427	237	112	0	0	240	0	0
Stage 1	190	190	-	237	237	-	-	-	-	-	-	-
Stage 2	281	240	-	190	190	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	503	518	941	538	520	802	1478	-	-	1327	-	-
Stage 1	812	743	-	766	709	-	-	-	-	-	-	-
Stage 2	726	707	-	812	743	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	435	502	941	525	504	802	1478	-	-	1327	-	-
Mov Cap-2 Maneuver	435	502	-	525	504	-	-	-	-	-	-	-
Stage 1	812	720	-	766	709	-	-	-	-	-	-	-
Stage 2	645	707	-	787	720	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	11.7	0	2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1478	-	-	-	637	1327	-	-
HCM Lane V/C Ratio	-	-	-	-	0.162	0.029	-	-
HCM Control Delay (s)	0	-	-	0	11.7	7.8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	14	29	52	23	215	6	36	103	0
Future Vol, veh/h	0	0	0	14	29	52	23	215	6	36	103	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	15	32	57	25	234	7	39	112	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	521	480	112	477	477	237	112	0	0	240	0	0
Stage 1	190	190	-	287	287	-	-	-	-	-	-	-
Stage 2	331	290	-	190	190	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	466	485	941	498	487	802	1478	-	-	1327	-	-
Stage 1	812	743	-	720	674	-	-	-	-	-	-	-
Stage 2	682	672	-	812	743	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	395	461	941	479	462	802	1478	-	-	1327	-	-
Mov Cap-2 Maneuver	395	461	-	479	462	-	-	-	-	-	-	-
Stage 1	796	720	-	706	661	-	-	-	-	-	-	-
Stage 2	592	659	-	787	720	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	12.2	0.7	2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1478	-	-	-	606	1327	-	-
HCM Lane V/C Ratio	0.017	-	-	-	0.17	0.029	-	-
HCM Control Delay (s)	7.5	0	-	0	12.2	7.8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	28	62	109	0	375	10	52	149	0
Future Vol, veh/h	0	0	0	28	62	109	0	375	10	52	149	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	30	67	118	0	408	11	57	162	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	781	693	162	688	688	413	162	0	0	418	0	0
Stage 1	275	275	-	413	413	-	-	-	-	-	-	-
Stage 2	506	418	-	275	275	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	312	367	883	360	369	639	1417	-	-	1141	-	-
Stage 1	731	683	-	616	594	-	-	-	-	-	-	-
Stage 2	549	591	-	731	683	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	208	347	883	345	349	639	1417	-	-	1141	-	-
Mov Cap-2 Maneuver	208	347	-	345	349	-	-	-	-	-	-	-
Stage 1	731	645	-	616	594	-	-	-	-	-	-	-
Stage 2	396	591	-	691	645	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	19.4	0	2.2
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1417	-	-	-	463	1141	-	-
HCM Lane V/C Ratio	-	-	-	-	0.467	0.05	-	-
HCM Control Delay (s)	0	-	-	0	19.4	8.3	0	-
HCM Lane LOS	A	-	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	2.4	0.2	-	-

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	28	62	109	23	375	10	52	149	0
Future Vol, veh/h	0	0	0	28	62	109	23	375	10	52	149	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	30	67	118	25	408	11	57	162	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	831	743	162	738	738	413	162	0	0	418	0	0
Stage 1	275	275	-	463	463	-	-	-	-	-	-	-
Stage 2	556	468	-	275	275	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	289	343	883	334	346	639	1417	-	-	1141	-	-
Stage 1	731	683	-	579	564	-	-	-	-	-	-	-
Stage 2	515	561	-	731	683	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	186	317	883	314	319	639	1417	-	-	1141	-	-
Mov Cap-2 Maneuver	186	317	-	314	319	-	-	-	-	-	-	-
Stage 1	714	645	-	566	551	-	-	-	-	-	-	-
Stage 2	360	548	-	691	645	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	21	0.4	2.2
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1417	-	-	-	438	1141	-	-
HCM Lane V/C Ratio	0.018	-	-	-	0.494	0.05	-	-
HCM Control Delay (s)	7.6	0	-	0	21	8.3	0	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	2.7	0.2	-	-

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

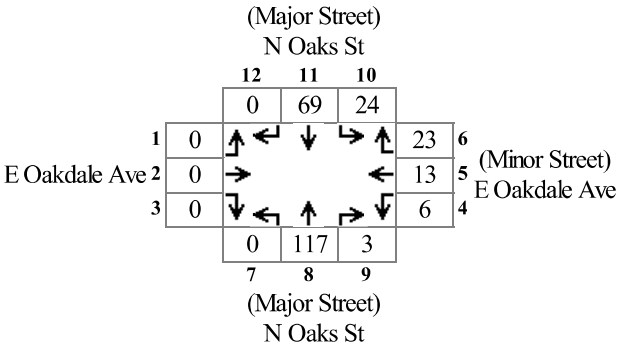
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	28	62	109	0	23	375	10	0	52	149	0
Future Vol, veh/h	0	0	0	0	0	28	62	109	0	23	375	10	0	52	149	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	30	67	118	0	25	408	11	0	57	162	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	10.6	14.5	10.4
HCM LOS	-	B	B	B

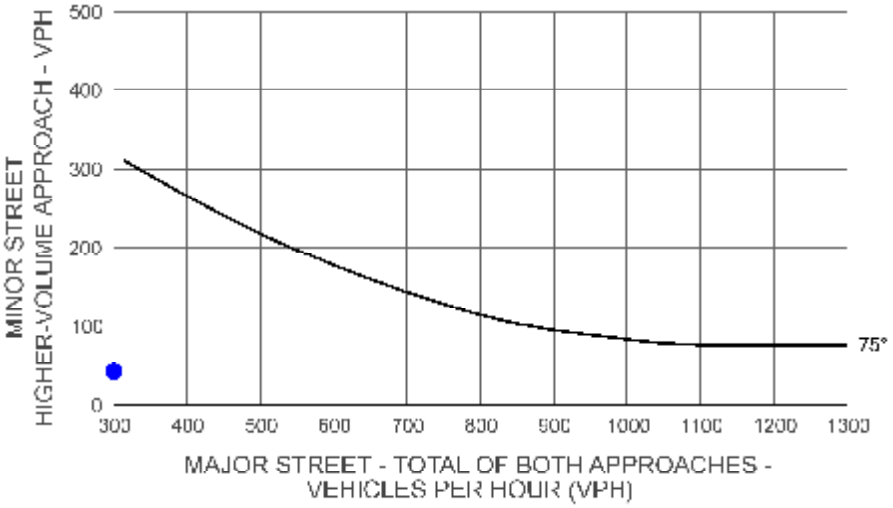
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	0%	14%	26%
Vol Thru, %	92%	100%	31%	74%
Vol Right, %	2%	0%	55%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	408	0	199	201
LT Vol	23	0	28	52
Through Vol	375	0	62	149
RT Vol	10	0	109	0
Lane Flow Rate	443	0	216	218
Geometry Grp	1	1	1	1
Degree of Util (X)	0.587	0	0.31	0.308
Departure Headway (Hd)	4.765	5.997	5.162	5.074
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	749	0	688	701
Service Time	2.839	3.997	3.254	3.164
HCM Lane V/C Ratio	0.591	0	0.314	0.311
HCM Control Delay	14.5	9	10.6	10.4
HCM Lane LOS	B	N	B	B
HCM 95th-tile Q	3.9	0	1.3	1.3

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 1

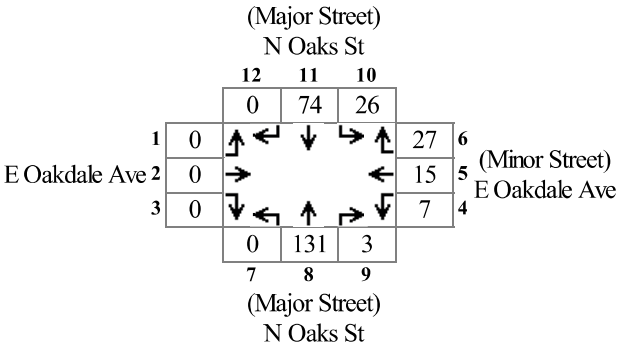


Major Total: 213
Minor High Volume: 42

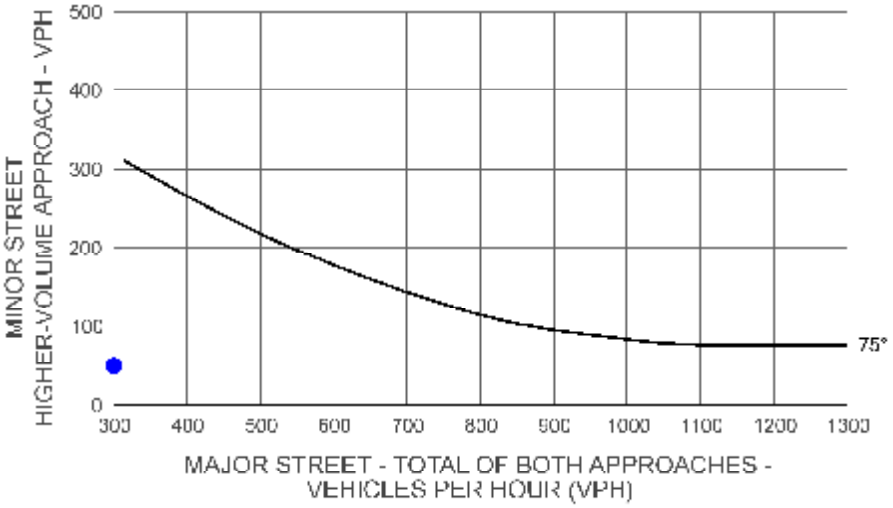


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 1

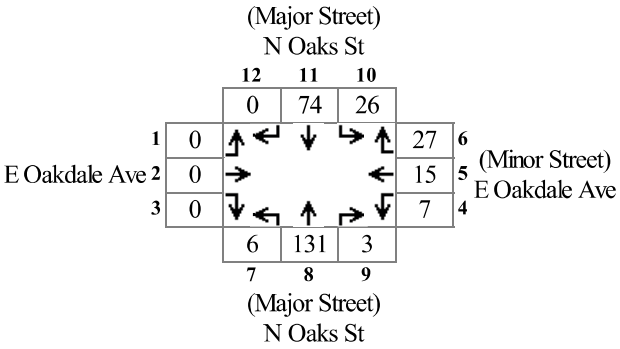


Major Total: 234
Minor High Volume: 49

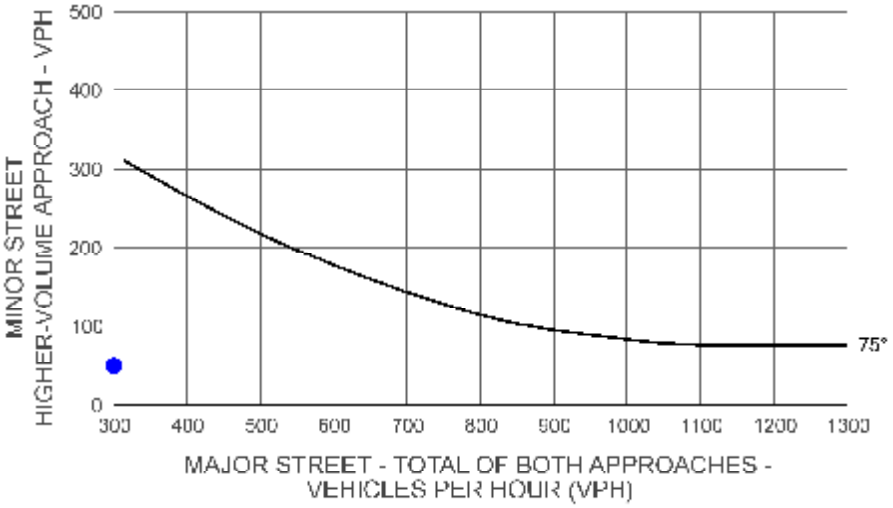


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 1

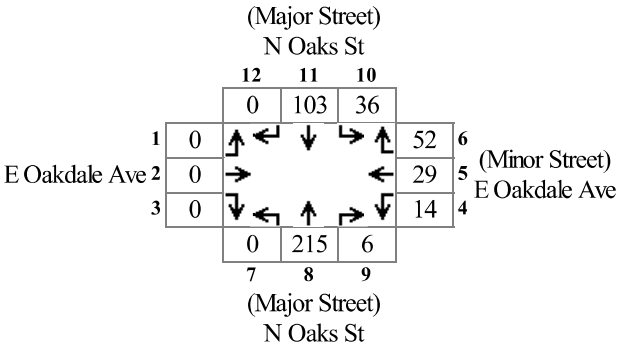


Major Total: 240
Minor High Volume: 49

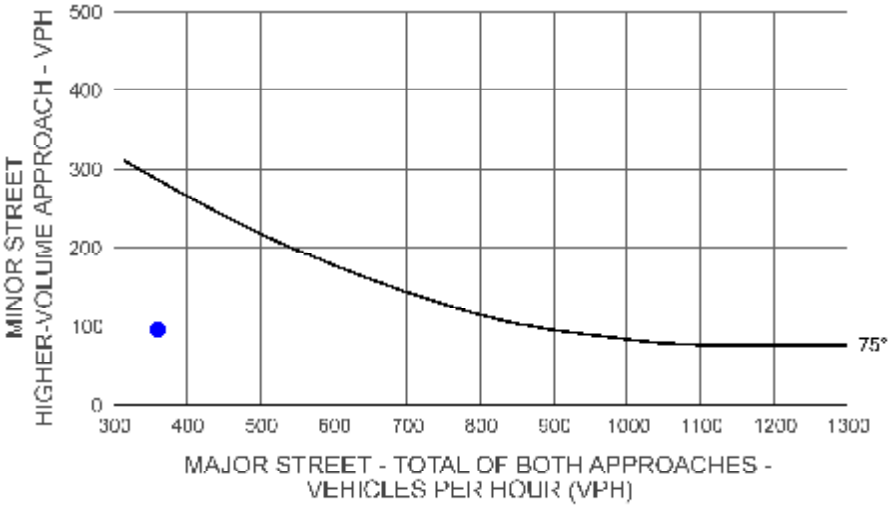


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 1

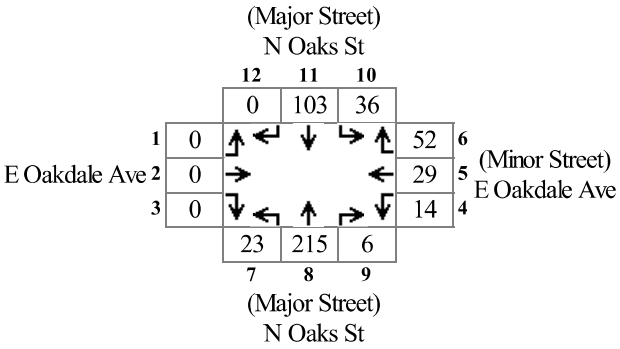


Major Total: 360
Minor High Volume: 95

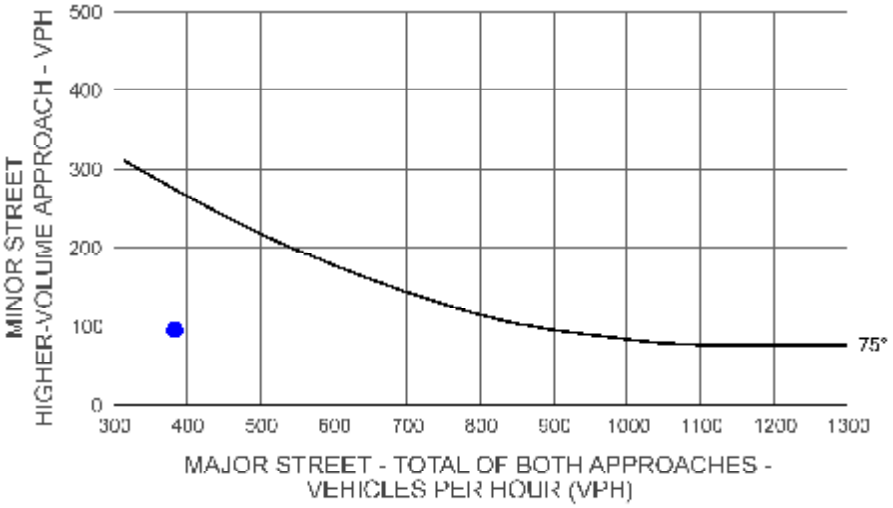


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 1

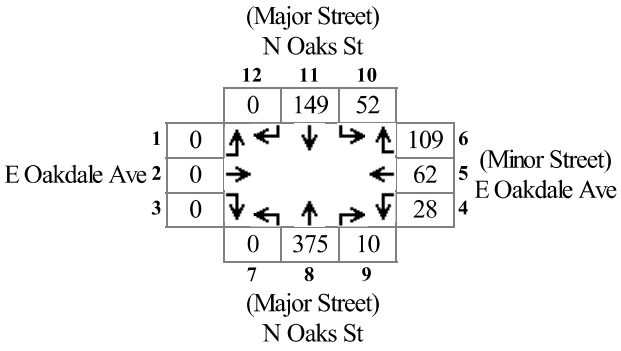


Major Total: 383
Minor High Volume: 95

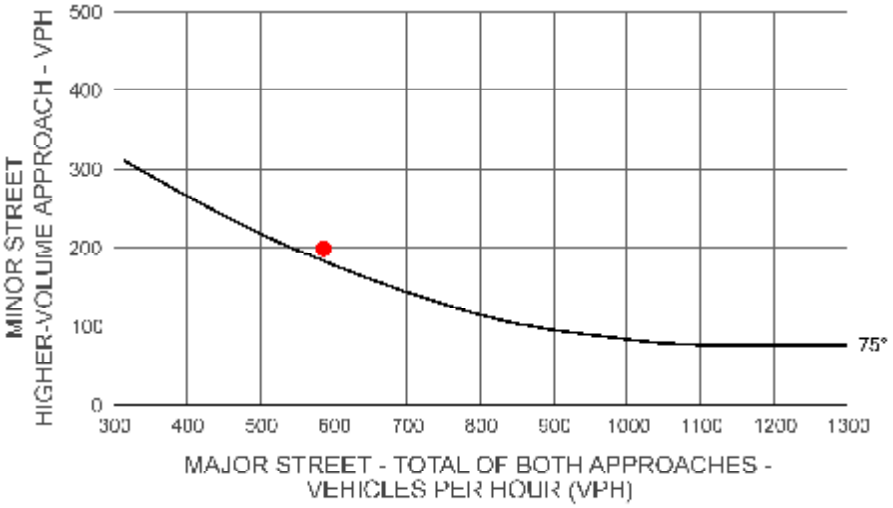


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future
Intersection #: 1

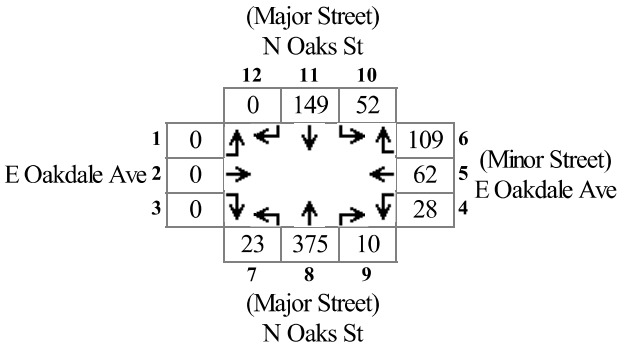


Major Total: 586
Minor High Volume: 199

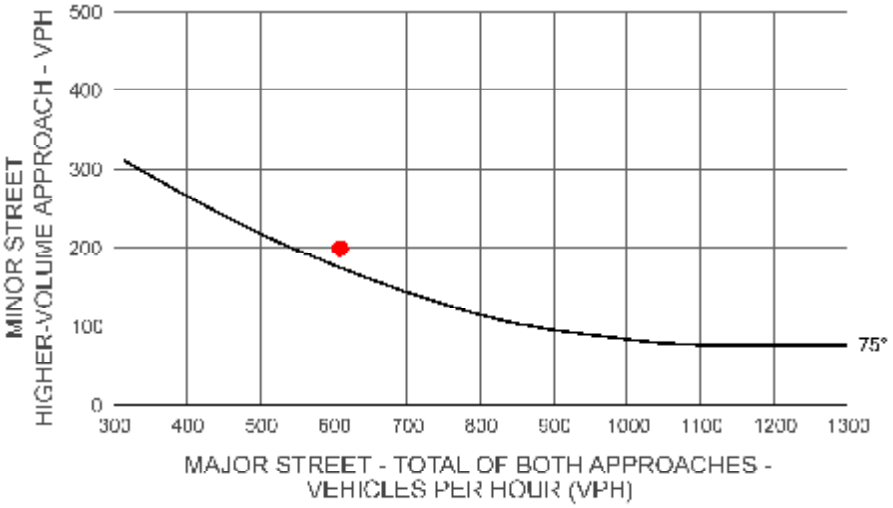


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future+Project
Intersection #: 1



Major Total: 609
Minor High Volume: 199



Intersection 2
N Oaks St & Project Collector

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	0	134	0	0	137
Future Vol, veh/h	0	0	134	0	0	137
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	146	0	0	149

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	295	146	0	0	146	0
Stage 1	146	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	696	901	-	-	1436	-
Stage 1	881	-	-	-	-	-
Stage 2	879	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	696	901	-	-	1436	-
Mov Cap-2 Maneuver	696	-	-	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	879	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1436	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	0	150	0	0	153
Future Vol, veh/h	0	0	150	0	0	153
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	163	0	0	166

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	329	163	0	0	163	0
Stage 1	163	-	-	-	-	-
Stage 2	166	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	665	882	-	-	1416	-
Stage 1	866	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	665	882	-	-	1416	-
Mov Cap-2 Maneuver	665	-	-	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1416	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	13	165	0	0	153
Future Vol, veh/h	0	13	165	0	0	153
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	14	179	0	0	166

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	345	179	0	0	179	0
Stage 1	179	-	-	-	-	-
Stage 2	166	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	652	864	-	-	1397	-
Stage 1	852	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	652	864	-	-	1397	-
Mov Cap-2 Maneuver	652	-	-	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	864	1397	-
HCM Lane V/C Ratio	-	-	0.016	-	-
HCM Control Delay (s)	-	-	9.2	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	0	247	0	0	252
Future Vol, veh/h	0	0	247	0	0	252
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	268	0	0	274

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	542	268	0	0	268	0
Stage 1	268	-	-	-	-	-
Stage 2	274	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	501	771	-	-	1296	-
Stage 1	777	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	501	771	-	-	1296	-
Mov Cap-2 Maneuver	501	-	-	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1296	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	40	292	0	0	252
Future Vol, veh/h	0	40	292	0	0	252
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	43	317	0	0	274

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	591	317	0	0	317	0
Stage 1	317	-	-	-	-	-
Stage 2	274	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	470	724	-	-	1243	-
Stage 1	738	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	470	724	-	-	1243	-
Mov Cap-2 Maneuver	470	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	724	1243	-
HCM Lane V/C Ratio	-	-	0.06	-	-
HCM Control Delay (s)	-	-	10.3	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	0	429	0	0	439
Future Vol, veh/h	0	0	429	0	0	439
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	466	0	0	477

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	943	466	0	0	466	0
Stage 1	466	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	291	597	-	-	1095	-
Stage 1	632	-	-	-	-	-
Stage 2	624	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	291	597	-	-	1095	-
Mov Cap-2 Maneuver	291	-	-	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	624	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1095	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	40	474	0	0	439
Future Vol, veh/h	0	40	474	0	0	439
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	43	515	0	0	477

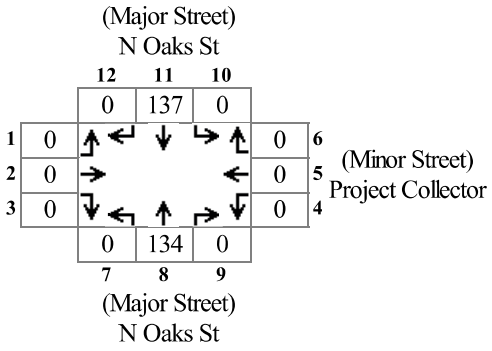
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	992	515	0	0	515	0
Stage 1	515	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	272	560	-	-	1051	-
Stage 1	600	-	-	-	-	-
Stage 2	624	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	272	560	-	-	1051	-
Mov Cap-2 Maneuver	272	-	-	-	-	-
Stage 1	600	-	-	-	-	-
Stage 2	624	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0
HCM LOS	B		

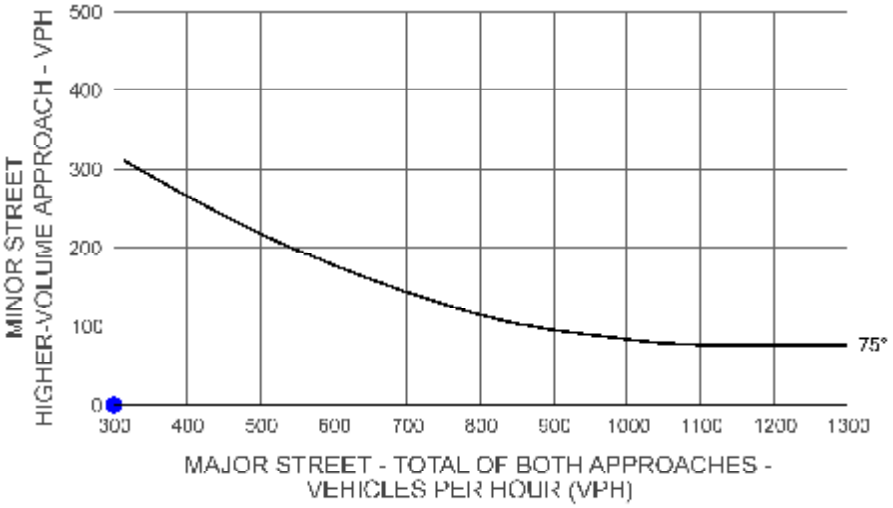
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	560	1051	-
HCM Lane V/C Ratio	-	-	0.078	-	-
HCM Control Delay (s)	-	-	12	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 2

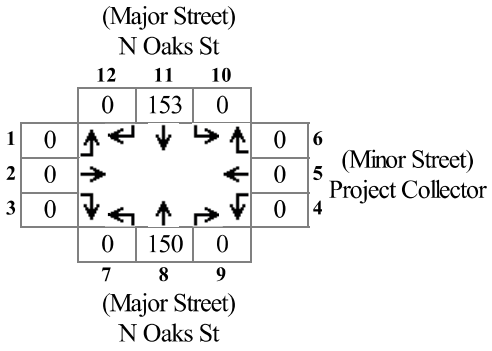


Major Total: 271
Minor High Volume: 0

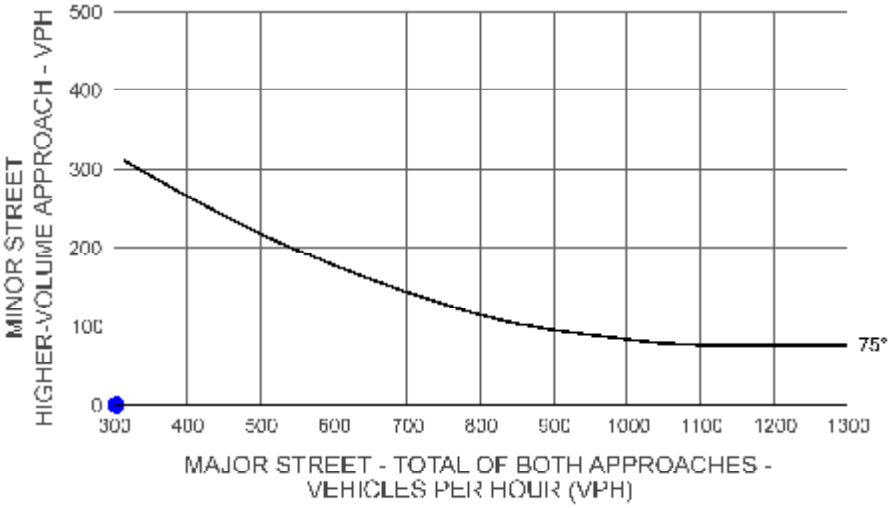


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 2

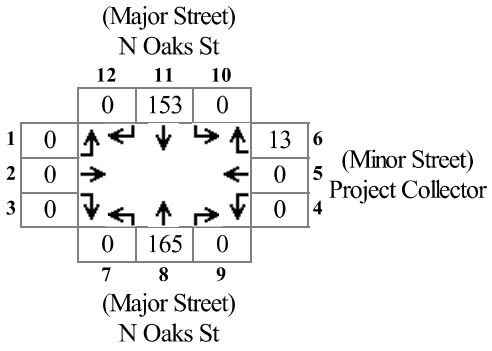


Major Total: 303
Minor High Volume: 0

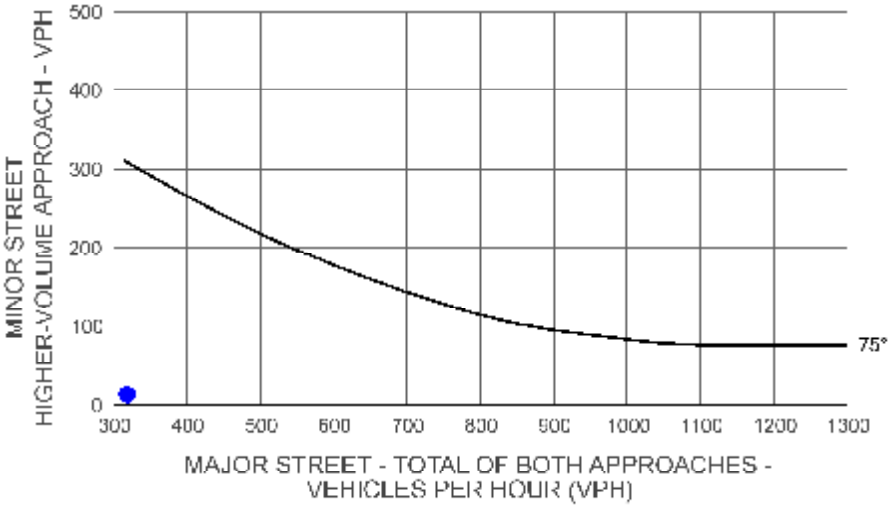


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 2

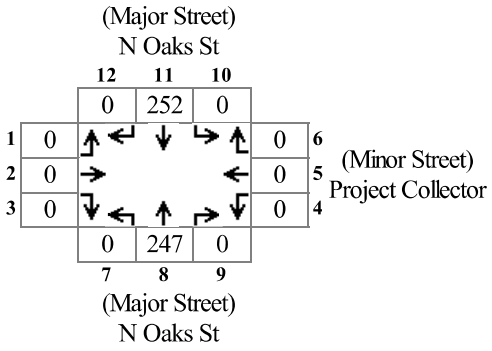


Major Total: 318
Minor High Volume: 13

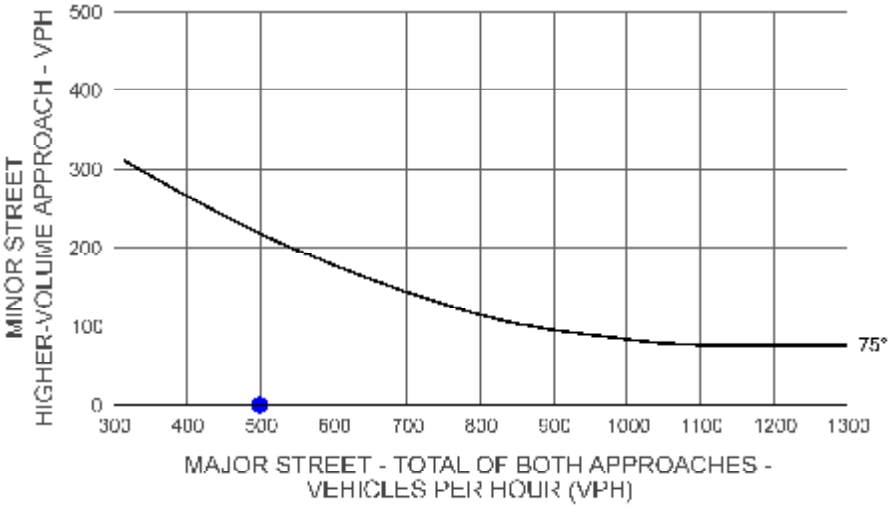


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 2

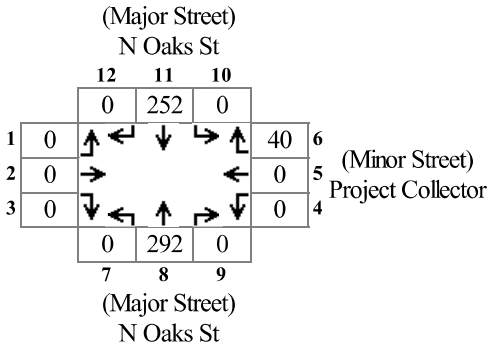


Major Total: 499
Minor High Volume: 0

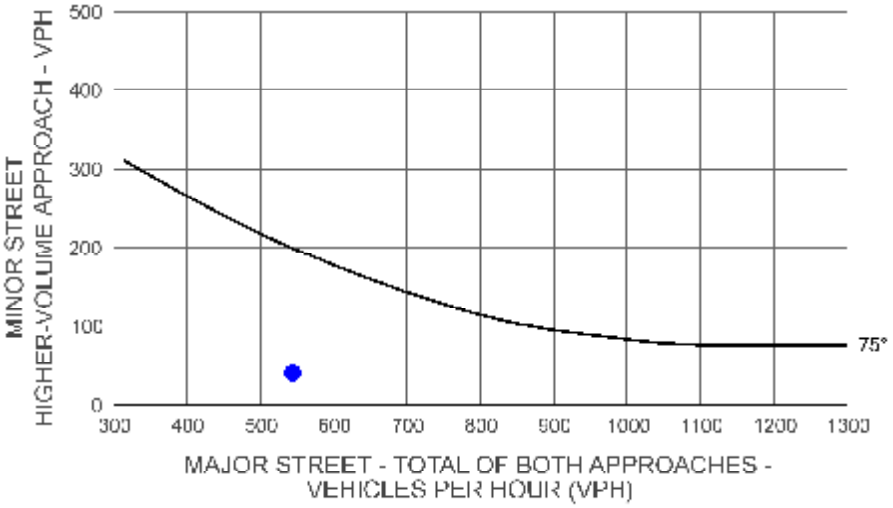


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 2

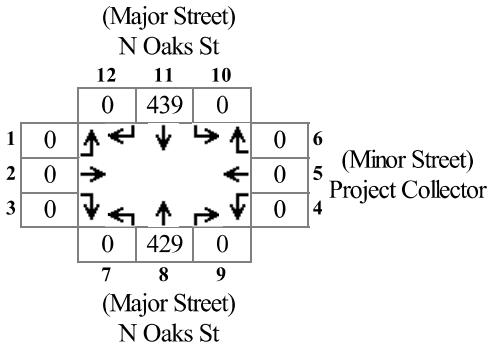


Major Total: 544
Minor High Volume: 40

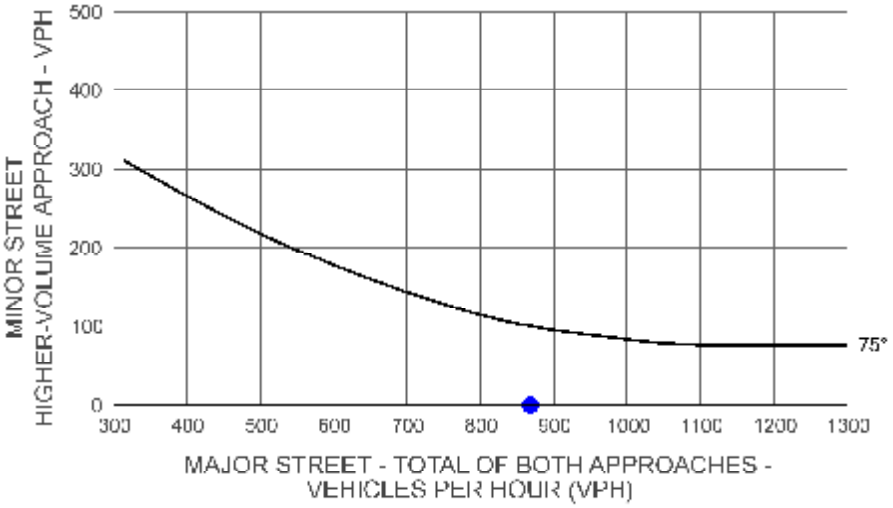


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 2

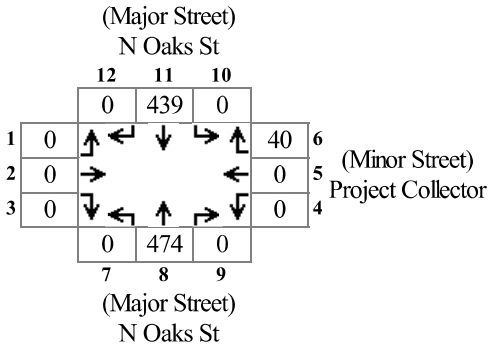


Major Total: 868
Minor High Volume: 0

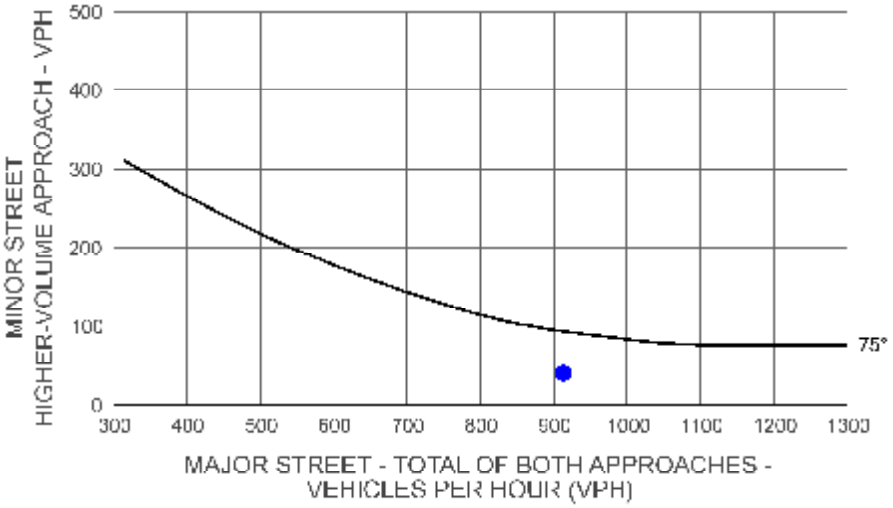


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 2



Major Total: 913
Minor High Volume: 40



Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	0	120	0	0	75
Future Vol, veh/h	0	0	120	0	0	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	130	0	0	82

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	212	130	0	0	130	0
Stage 1	130	-	-	-	-	-
Stage 2	82	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	776	920	-	-	1455	-
Stage 1	896	-	-	-	-	-
Stage 2	941	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	776	920	-	-	1455	-
Mov Cap-2 Maneuver	776	-	-	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	941	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1455	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	0	134	0	0	84
Future Vol, veh/h	0	0	134	0	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	146	0	0	91

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	237	146	0	0	146	0
Stage 1	146	-	-	-	-	-
Stage 2	91	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	751	901	-	-	1436	-
Stage 1	881	-	-	-	-	-
Stage 2	933	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	751	901	-	-	1436	-
Mov Cap-2 Maneuver	751	-	-	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	933	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1436	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	3	137	0	0	84
Future Vol, veh/h	0	3	137	0	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	149	0	0	91

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	240	149	0	0	149	0
Stage 1	149	-	-	-	-	-
Stage 2	91	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	748	898	-	-	1432	-
Stage 1	879	-	-	-	-	-
Stage 2	933	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	748	898	-	-	1432	-
Mov Cap-2 Maneuver	748	-	-	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	933	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	898	1432	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Control Delay (s)	-	-	9	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	0	221	0	0	138
Future Vol, veh/h	0	0	221	0	0	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	240	0	0	150

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	390	240	0	0	240	0
Stage 1	240	-	-	-	-	-
Stage 2	150	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	614	799	-	-	1327	-
Stage 1	800	-	-	-	-	-
Stage 2	878	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	614	799	-	-	1327	-
Mov Cap-2 Maneuver	614	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	878	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1327	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	11	233	0	0	138
Future Vol, veh/h	0	11	233	0	0	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	12	253	0	0	150

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	403	253	0	0	253	0
Stage 1	253	-	-	-	-	-
Stage 2	150	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	603	786	-	-	1312	-
Stage 1	789	-	-	-	-	-
Stage 2	878	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	603	786	-	-	1312	-
Mov Cap-2 Maneuver	603	-	-	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	878	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	786	1312	-
HCM Lane V/C Ratio	-	-	0.015	-	-
HCM Control Delay (s)	-	-	9.7	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	0	384	0	0	240
Future Vol, veh/h	0	0	384	0	0	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	417	0	0	261

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	678	417	0	0	417	0
Stage 1	417	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	418	636	-	-	1142	-
Stage 1	665	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	418	636	-	-	1142	-
Mov Cap-2 Maneuver	418	-	-	-	-	-
Stage 1	665	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1142	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	11	396	0	0	240
Future Vol, veh/h	0	11	396	0	0	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	12	430	0	0	261

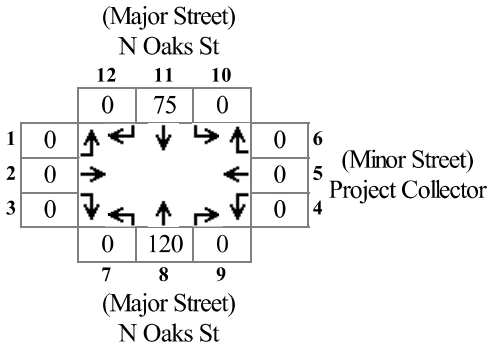
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	691	430	0	0	430	0
Stage 1	430	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	410	625	-	-	1129	-
Stage 1	656	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	410	625	-	-	1129	-
Mov Cap-2 Maneuver	410	-	-	-	-	-
Stage 1	656	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

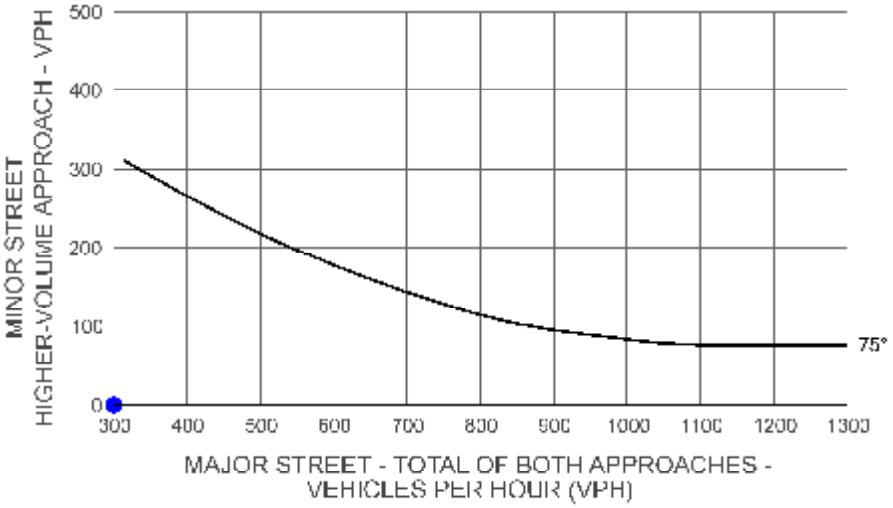
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	625	1129	-
HCM Lane V/C Ratio	-	-	0.019	-	-
HCM Control Delay (s)	-	-	10.9	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 2

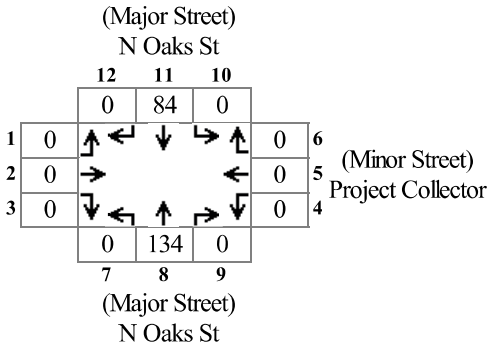


Major Total: 195
Minor High Volume: 0

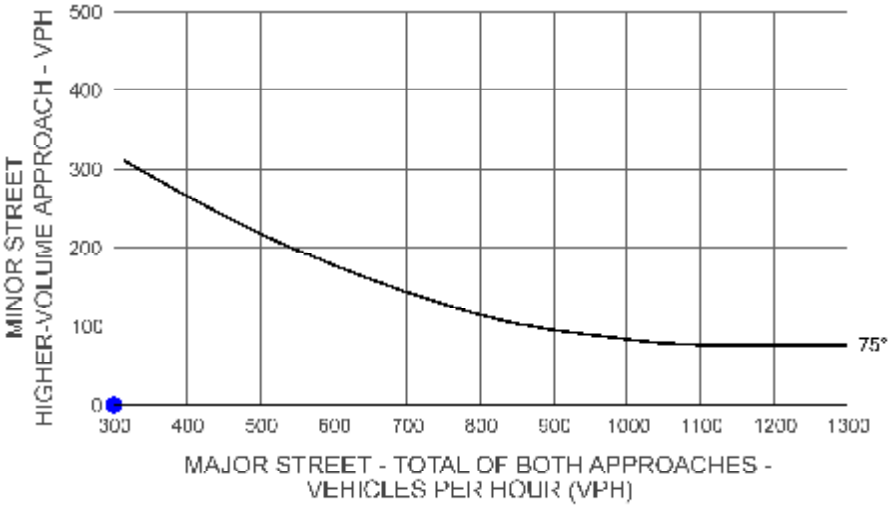


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 2

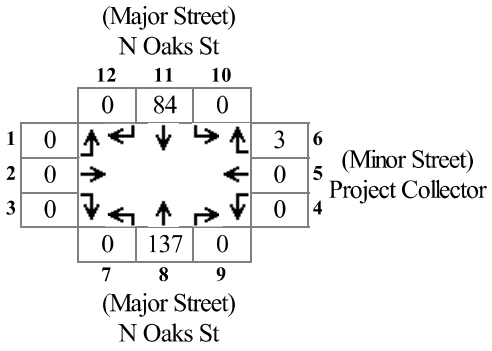


Major Total: 218
Minor High Volume: 0

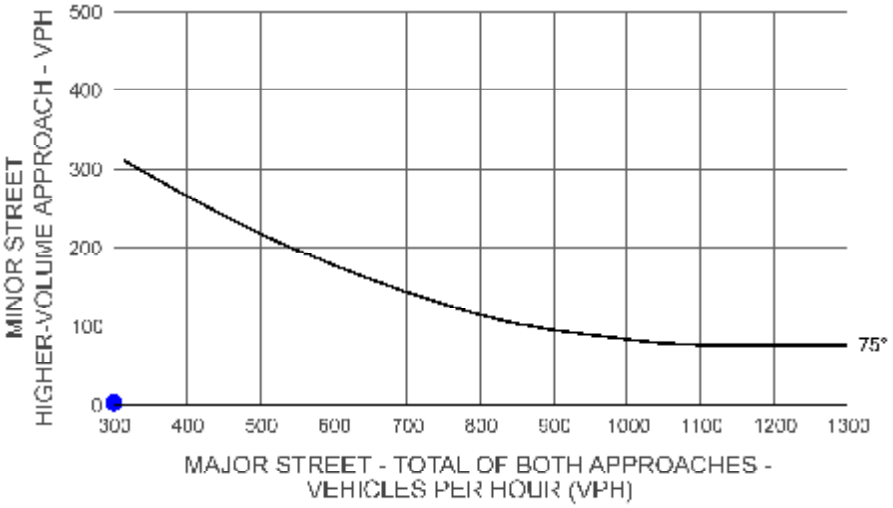


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 2

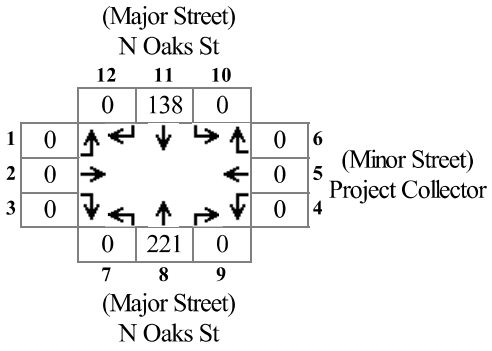


Major Total: 221
Minor High Volume: 3

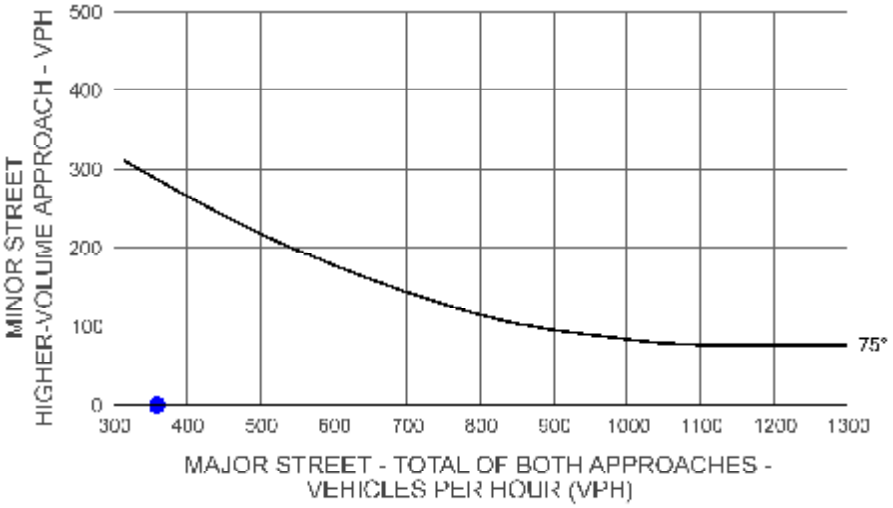


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 2

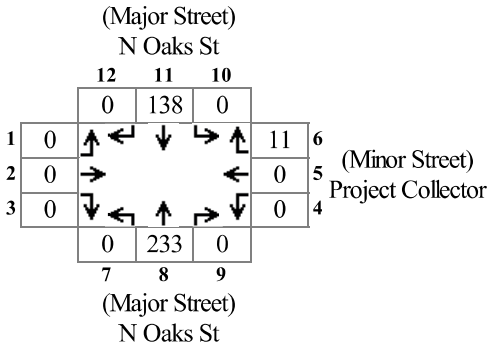


Major Total: 359
Minor High Volume: 0

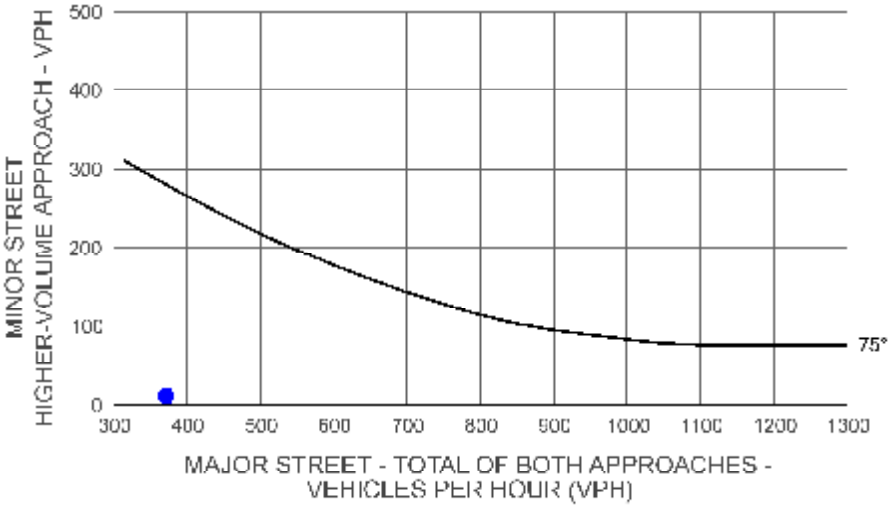


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 2

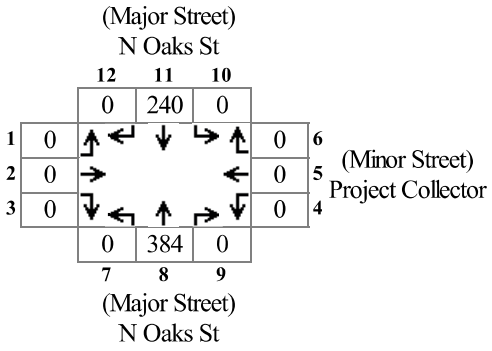


Major Total: 371
Minor High Volume: 11

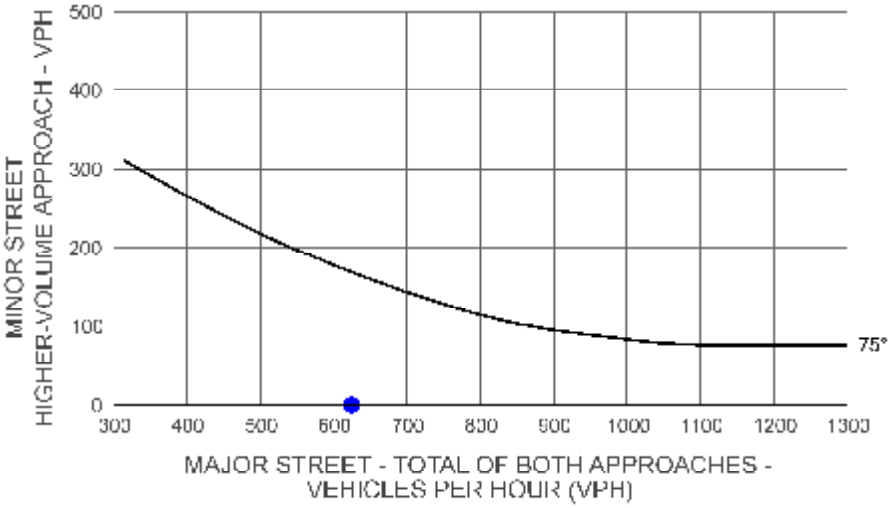


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 2

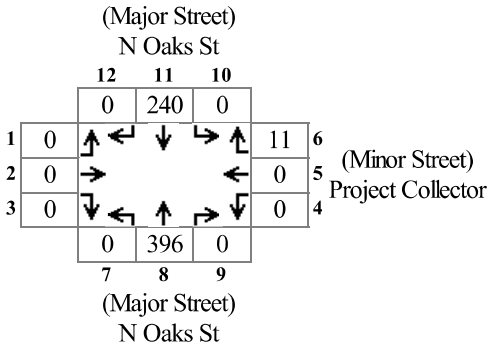


Major Total: 624
Minor High Volume: 0

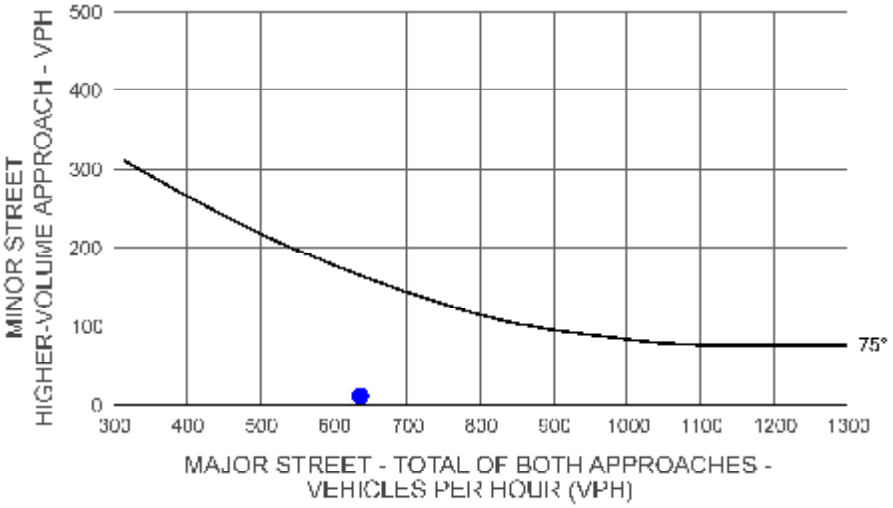


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 2



Major Total: 636
Minor High Volume: 11



Intersection 3
J St & Cartmill Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	66	0	9	0	226	81	11	353	0
Future Volume (veh/h)	0	0	0	66	0	9	0	226	81	11	353	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				72	0	10	0	246	88	12	384	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				177	0	81	2	1490	1141	45	1614	0
Arrive On Green				0.06	0.00	0.06	0.00	0.80	0.80	0.03	0.87	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1426	1634	1863	0
Grp Volume(v), veh/h				72	0	10	0	246	88	12	384	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1426	1634	1863	0
Q Serve(g_s), s				2.3	0.0	0.7	0.0	3.1	1.4	0.7	3.6	0.0
Cycle Q Clear(g_c), s				2.3	0.0	0.7	0.0	3.1	1.4	0.7	3.6	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				177	0	81	2	1490	1141	45	1614	0
V/C Ratio(X)				0.41	0.00	0.12	0.00	0.17	0.08	0.26	0.24	0.00
Avail Cap(c_a), veh/h				708	0	326	90	1490	1141	175	1614	0
HCM Platoon Ratio				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	0.97	0.97	1.00	1.00	0.00
Uniform Delay (d), s/veh				47.0	0.0	46.2	0.0	2.4	2.2	49.0	1.2	0.0
Incr Delay (d2), s/veh				1.5	0.0	0.7	0.0	0.2	0.1	3.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.0	0.0	0.3	0.0	1.7	0.6	0.4	2.0	0.0
LnGrp Delay(d),s/veh				48.5	0.0	46.9	0.0	2.6	2.3	52.1	1.5	0.0
LnGrp LOS				D		D		A	A	D	A	
Approach Vol, veh/h					82			334			396	
Approach Delay, s/veh					48.3			2.5			3.0	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	6.9	86.4			0.0	93.3		9.7
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	9.3	55.3			4.0	60.6		21.3
Max Q Clear Time (g_c+I1), s	2.7	5.1			0.0	5.6		4.3
Green Ext Time (p_c), s	0.0	2.7			0.0	2.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	74	0	10	0	238	85	12	373	0
Future Volume (veh/h)	0	0	0	74	0	10	0	238	85	12	373	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				80	0	11	0	259	92	13	405	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				185	0	85	2	1491	1141	46	1613	0
Arrive On Green				0.06	0.00	0.06	0.00	0.80	0.80	0.03	0.87	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1426	1634	1863	0
Grp Volume(v), veh/h				80	0	11	0	259	92	13	405	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1426	1634	1863	0
Q Serve(g_s), s				2.6	0.0	0.8	0.0	3.4	1.5	0.8	3.9	0.0
Cycle Q Clear(g_c), s				2.6	0.0	0.8	0.0	3.4	1.5	0.8	3.9	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				185	0	85	2	1491	1141	46	1613	0
V/C Ratio(X)				0.43	0.00	0.13	0.00	0.17	0.08	0.28	0.25	0.00
Avail Cap(c_a), veh/h				688	0	316	88	1491	1141	154	1613	0
HCM Platoon Ratio				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	0.97	0.97	1.00	1.00	0.00
Uniform Delay (d), s/veh				48.2	0.0	47.3	0.0	2.5	2.3	50.5	1.2	0.0
Incr Delay (d2), s/veh				1.6	0.0	0.7	0.0	0.2	0.1	3.3	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.2	0.0	0.3	0.0	1.8	0.6	0.4	2.1	0.0
LnGrp Delay(d),s/veh				49.8	0.0	48.0	0.0	2.7	2.4	53.8	1.6	0.0
LnGrp LOS				D		D		A	A	D	A	
Approach Vol, veh/h					91			351			418	
Approach Delay, s/veh					49.6			2.6			3.2	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	7.0	88.8			0.0	95.8		10.2
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	8.3	59.3			4.0	63.6		21.3
Max Q Clear Time (g_c+I1), s	2.8	5.4			0.0	5.9		4.6
Green Ext Time (p_c), s	0.0	2.9			0.0	2.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	91	0	10	0	238	102	12	373	0
Future Volume (veh/h)	0	0	0	91	0	10	0	238	102	12	373	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				99	0	11	0	259	111	13	405	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				212	0	97	2	1468	1124	47	1594	0
Arrive On Green				0.07	0.00	0.07	0.00	0.79	0.79	0.03	0.86	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1426	1634	1863	0
Grp Volume(v), veh/h				99	0	11	0	259	111	13	405	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1426	1634	1863	0
Q Serve(g_s), s				3.1	0.0	0.7	0.0	3.5	1.8	0.8	4.1	0.0
Cycle Q Clear(g_c), s				3.1	0.0	0.7	0.0	3.5	1.8	0.8	4.1	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				212	0	97	2	1468	1124	47	1594	0
V/C Ratio(X)				0.47	0.00	0.11	0.00	0.18	0.10	0.28	0.25	0.00
Avail Cap(c_a), veh/h				739	0	340	90	1468	1124	159	1594	0
HCM Platoon Ratio				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	0.97	0.97	1.00	1.00	0.00
Uniform Delay (d), s/veh				46.3	0.0	45.2	0.0	2.7	2.5	49.0	1.4	0.0
Incr Delay (d2), s/veh				1.6	0.0	0.5	0.0	0.3	0.2	3.2	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.4	0.0	0.3	0.0	1.9	0.8	0.4	2.2	0.0
LnGrp Delay(d),s/veh				47.9	0.0	45.7	0.0	2.9	2.7	52.2	1.8	0.0
LnGrp LOS				D		D		A	A	D	A	
Approach Vol, veh/h					110			370			418	
Approach Delay, s/veh					47.7			2.9			3.3	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	6.9	85.2			0.0	92.1		10.9
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	8.3	55.3			4.0	59.6		22.3
Max Q Clear Time (g_c+I1), s	2.8	5.5			0.0	6.1		5.1
Green Ext Time (p_c), s	0.0	2.9			0.0	2.9		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	122	0	17	0	299	107	15	476	0
Future Volume (veh/h)	0	0	0	122	0	17	0	299	107	15	476	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				133	0	18	0	325	116	16	517	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				237	0	109	1	1485	1137	46	1599	0
Arrive On Green				0.07	0.00	0.07	0.00	0.80	0.80	0.03	0.86	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1426	1634	1863	0
Grp Volume(v), veh/h				133	0	18	0	325	116	16	517	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1426	1634	1863	0
Q Serve(g_s), s				4.9	0.0	1.4	0.0	5.1	2.2	1.2	6.5	0.0
Cycle Q Clear(g_c), s				4.9	0.0	1.4	0.0	5.1	2.2	1.2	6.5	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				237	0	109	1	1485	1137	46	1599	0
V/C Ratio(X)				0.56	0.00	0.17	0.00	0.22	0.10	0.35	0.32	0.00
Avail Cap(c_a), veh/h				660	0	304	78	1485	1137	150	1599	0
HCM Platoon Ratio				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	0.98	0.98	1.00	1.00	0.00
Uniform Delay (d), s/veh				53.6	0.0	52.0	0.0	3.0	2.7	57.3	1.7	0.0
Incr Delay (d2), s/veh				2.1	0.0	0.7	0.0	0.3	0.2	4.5	0.5	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
%ile BackOfQ(50%),veh/ln				2.2	0.0	0.6	0.0	2.8	0.9	0.6	3.5	0.0
LnGrp Delay(d),s/veh				55.7	0.0	52.7	0.0	3.3	2.9	61.8	2.2	0.0
LnGrp LOS				E		D		A	A	E	A	
Approach Vol, veh/h					151			441			533	
Approach Delay, s/veh					55.3			3.2			4.0	
Approach LOS					E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	7.4	99.7			0.0	107.0		13.0
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	9.3	70.3			4.0	75.6		23.3
Max Q Clear Time (g_c+I1), s	3.2	7.1			0.0	8.5		6.9
Green Ext Time (p_c), s	0.0	3.9			0.0	3.9		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	10.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	175	0	17	0	299	161	15	476	0
Future Volume (veh/h)	0	0	0	175	0	17	0	299	161	15	476	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				190	0	18	0	325	175	16	517	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				332	0	153	2	1357	1038	55	1502	0
Arrive On Green				0.10	0.00	0.10	0.00	0.73	0.73	0.03	0.81	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1425	1634	1863	0
Grp Volume(v), veh/h				190	0	18	0	325	175	16	517	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1425	1634	1863	0
Q Serve(g_s), s				5.1	0.0	1.0	0.0	5.2	3.4	0.9	6.7	0.0
Cycle Q Clear(g_c), s				5.1	0.0	1.0	0.0	5.2	3.4	0.9	6.7	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				332	0	153	2	1357	1038	55	1502	0
V/C Ratio(X)				0.57	0.00	0.12	0.00	0.24	0.17	0.29	0.34	0.00
Avail Cap(c_a), veh/h				810	0	373	103	1357	1038	127	1502	0
HCM Platoon Ratio				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	0.97	0.97	1.00	1.00	0.00
Uniform Delay (d), s/veh				38.4	0.0	36.5	0.0	4.0	3.8	42.4	2.3	0.0
Incr Delay (d2), s/veh				1.6	0.0	0.3	0.0	0.4	0.3	2.9	0.6	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
%ile BackOfQ(50%),veh/ln				2.3	0.0	0.4	0.0	2.8	1.4	0.4	3.6	0.0
LnGrp Delay(d),s/veh				39.9	0.0	36.9	0.0	4.4	4.1	45.3	3.0	0.0
LnGrp LOS				D		D		A	A	D	A	
Approach Vol, veh/h					208			500			533	
Approach Delay, s/veh					39.6			4.3			4.2	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	7.0	69.6			0.0	76.6		13.4
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	5.3	46.3			4.0	47.6		21.3
Max Q Clear Time (g_c+I1), s	2.9	7.2			0.0	8.7		7.1
Green Ext Time (p_c), s	0.0	4.1			0.0	4.1		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.2
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	259	0	29	0	385	172	19	625	0
Future Volume (veh/h)	0	0	0	259	0	29	0	385	172	19	625	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				282	0	32	0	418	187	21	679	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				414	0	190	2	1331	1019	57	1470	0
Arrive On Green				0.13	0.00	0.13	0.00	0.71	0.71	0.03	0.79	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1425	1634	1863	0
Grp Volume(v), veh/h				282	0	32	0	418	187	21	679	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1425	1634	1863	0
Q Serve(g_s), s				8.5	0.0	2.0	0.0	8.3	4.3	1.3	12.1	0.0
Cycle Q Clear(g_c), s				8.5	0.0	2.0	0.0	8.3	4.3	1.3	12.1	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				414	0	190	2	1331	1019	57	1470	0
V/C Ratio(X)				0.68	0.00	0.17	0.00	0.31	0.18	0.37	0.46	0.00
Avail Cap(c_a), veh/h				697	0	321	93	1331	1019	114	1470	0
HCM Platoon Ratio				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	0.95	0.95	1.00	1.00	0.00
Uniform Delay (d), s/veh				41.5	0.0	38.6	0.0	5.2	4.7	47.2	3.5	0.0
Incr Delay (d2), s/veh				2.0	0.0	0.4	0.0	0.6	0.4	4.0	1.0	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
%ile BackOfQ(50%),veh/ln				3.8	0.0	0.8	0.0	4.4	1.8	0.6	6.5	0.0
LnGrp Delay(d),s/veh				43.5	0.0	39.1	0.0	5.8	5.1	51.2	4.5	0.0
LnGrp LOS				D		D		A	A	D	A	
Approach Vol, veh/h					314			605			700	
Approach Delay, s/veh					43.0			5.6			5.9	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	7.5	75.5			0.0	82.9		17.1
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	5.3	57.3			4.0	58.6		20.3
Max Q Clear Time (g_c+I1), s	3.3	10.3			0.0	14.1		10.5
Green Ext Time (p_c), s	0.0	5.8			0.0	5.8		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	13.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	312	0	29	0	385	226	19	625	0
Future Volume (veh/h)	0	0	0	312	0	29	0	385	226	19	625	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				339	0	32	0	418	246	21	679	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				471	0	217	2	1298	993	57	1437	0
Arrive On Green				0.15	0.00	0.15	0.00	0.70	0.70	0.03	0.77	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1425	1634	1863	0
Grp Volume(v), veh/h				339	0	32	0	418	246	21	679	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1425	1634	1863	0
Q Serve(g_s), s				10.2	0.0	1.9	0.0	8.8	6.3	1.3	13.1	0.0
Cycle Q Clear(g_c), s				10.2	0.0	1.9	0.0	8.8	6.3	1.3	13.1	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				471	0	217	2	1298	993	57	1437	0
V/C Ratio(X)				0.72	0.00	0.15	0.00	0.32	0.25	0.37	0.47	0.00
Avail Cap(c_a), veh/h				697	0	321	93	1298	993	114	1437	0
HCM Platoon Ratio				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	0.93	0.93	1.00	1.00	0.00
Uniform Delay (d), s/veh				40.6	0.0	37.1	0.0	5.9	5.6	47.2	4.1	0.0
Incr Delay (d2), s/veh				2.1	0.0	0.3	0.0	0.6	0.6	4.0	1.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.6	0.0	0.8	0.0	4.6	2.6	0.6	7.0	0.0
LnGrp Delay(d),s/veh				42.7	0.0	37.4	0.0	6.5	6.1	51.2	5.2	0.0
LnGrp LOS				D		D		A	A	D	A	
Approach Vol, veh/h					371			664			700	
Approach Delay, s/veh					42.2			6.4			6.6	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	7.5	73.7			0.0	81.1		18.9
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	5.3	57.3			4.0	58.6		20.3
Max Q Clear Time (g_c+I1), s	3.3	10.8			0.0	15.1		12.2
Green Ext Time (p_c), s	0.0	6.2			0.0	6.2		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.1
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	73	0	12	0	290	61	7	411	0
Future Volume (veh/h)	0	0	0	73	0	12	0	290	61	7	411	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				79	0	13	0	315	66	8	447	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				199	0	92	2	1447	1108	44	1580	0
Arrive On Green				0.06	0.00	0.06	0.00	0.78	0.78	0.03	0.85	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1426	1634	1863	0
Grp Volume(v), veh/h				79	0	13	0	315	66	8	447	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1426	1634	1863	0
Q Serve(g_s), s				2.2	0.0	0.8	0.0	4.1	1.0	0.4	4.3	0.0
Cycle Q Clear(g_c), s				2.2	0.0	0.8	0.0	4.1	1.0	0.4	4.3	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				199	0	92	2	1447	1108	44	1580	0
V/C Ratio(X)				0.40	0.00	0.14	0.00	0.22	0.06	0.18	0.28	0.00
Avail Cap(c_a), veh/h				775	0	356	103	1447	1108	145	1580	0
HCM Platoon Ratio				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	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				40.5	0.0	39.9	0.0	2.7	2.3	42.8	1.4	0.0
Incr Delay (d2), s/veh				1.3	0.0	0.7	0.0	0.3	0.1	2.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.0	0.0	0.3	0.0	2.2	0.4	0.2	2.3	0.0
LnGrp Delay(d),s/veh				41.8	0.0	40.6	0.0	3.0	2.5	44.8	1.8	0.0
LnGrp LOS				D		D		A	A	D	A	
Approach Vol, veh/h					92			381			455	
Approach Delay, s/veh					41.6			2.9			2.6	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	6.4	73.9			0.0	80.3		9.7
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	6.3	46.3			4.0	48.6		20.3
Max Q Clear Time (g_c+I1), s	2.4	6.1			0.0	6.3		4.2
Green Ext Time (p_c), s	0.0	3.2			0.0	3.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	6.6
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	82	0	13	0	305	64	7	434	0
Future Volume (veh/h)	0	0	0	82	0	13	0	305	64	7	434	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				89	0	14	0	332	70	8	472	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				212	0	98	2	1439	1102	44	1572	0
Arrive On Green				0.07	0.00	0.07	0.00	0.77	0.77	0.03	0.84	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1426	1634	1863	0
Grp Volume(v), veh/h				89	0	14	0	332	70	8	472	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1426	1634	1863	0
Q Serve(g_s), s				2.4	0.0	0.8	0.0	4.4	1.1	0.4	4.8	0.0
Cycle Q Clear(g_c), s				2.4	0.0	0.8	0.0	4.4	1.1	0.4	4.8	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				212	0	98	2	1439	1102	44	1572	0
V/C Ratio(X)				0.42	0.00	0.14	0.00	0.23	0.06	0.18	0.30	0.00
Avail Cap(c_a), veh/h				740	0	340	103	1439	1102	145	1572	0
HCM Platoon Ratio				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	0.99	0.99	1.00	1.00	0.00
Uniform Delay (d), s/veh				40.3	0.0	39.6	0.0	2.8	2.4	42.8	1.5	0.0
Incr Delay (d2), s/veh				1.3	0.0	0.7	0.0	0.4	0.1	2.0	0.5	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
%ile BackOfQ(50%),veh/ln				1.1	0.0	0.3	0.0	2.4	0.4	0.2	2.6	0.0
LnGrp Delay(d),s/veh				41.6	0.0	40.2	0.0	3.2	2.6	44.8	2.0	0.0
LnGrp LOS				D		D		A	A	D	A	
Approach Vol, veh/h					103			402			480	
Approach Delay, s/veh					41.4			3.1			2.7	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	6.4	73.5			0.0	80.0		10.0
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	6.3	47.3			4.0	49.6		19.3
Max Q Clear Time (g_c+I1), s	2.4	6.4			0.0	6.8		4.4
Green Ext Time (p_c), s	0.0	3.4			0.0	3.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	6.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	85	0	13	0	305	70	7	434	0
Future Volume (veh/h)	0	0	0	85	0	13	0	305	70	7	434	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				92	0	14	0	332	76	8	472	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				217	0	100	2	1437	1100	44	1570	0
Arrive On Green				0.07	0.00	0.07	0.00	0.77	0.77	0.03	0.84	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1426	1634	1863	0
Grp Volume(v), veh/h				92	0	14	0	332	76	8	472	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1426	1634	1863	0
Q Serve(g_s), s				2.5	0.0	0.8	0.0	4.5	1.2	0.4	4.8	0.0
Cycle Q Clear(g_c), s				2.5	0.0	0.8	0.0	4.5	1.2	0.4	4.8	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				217	0	100	2	1437	1100	44	1570	0
V/C Ratio(X)				0.42	0.00	0.14	0.00	0.23	0.07	0.18	0.30	0.00
Avail Cap(c_a), veh/h				775	0	356	103	1437	1100	145	1570	0
HCM Platoon Ratio				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	0.99	0.99	1.00	1.00	0.00
Uniform Delay (d), s/veh				40.2	0.0	39.4	0.0	2.9	2.5	42.8	1.5	0.0
Incr Delay (d2), s/veh				1.3	0.0	0.6	0.0	0.4	0.1	2.0	0.5	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
%ile BackOfQ(50%),veh/ln				1.1	0.0	0.3	0.0	2.4	0.5	0.2	2.6	0.0
LnGrp Delay(d),s/veh				41.5	0.0	40.1	0.0	3.2	2.6	44.8	2.0	0.0
LnGrp LOS				D		D		A	A	D	A	
Approach Vol, veh/h					106			408			480	
Approach Delay, s/veh					41.4			3.1			2.7	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	6.4	73.4			0.0	79.9		10.1
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	6.3	46.3			4.0	48.6		20.3
Max Q Clear Time (g_c+I1), s	2.4	6.5			0.0	6.8		4.5
Green Ext Time (p_c), s	0.0	3.4			0.0	3.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	135	0	22	0	383	81	9	555	0
Future Volume (veh/h)	0	0	0	135	0	22	0	383	81	9	555	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				147	0	24	0	416	88	10	603	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				269	0	124	2	1436	1099	43	1558	0
Arrive On Green				0.09	0.00	0.09	0.00	0.77	0.77	0.03	0.84	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1426	1634	1863	0
Grp Volume(v), veh/h				147	0	24	0	416	88	10	603	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1426	1634	1863	0
Q Serve(g_s), s				4.5	0.0	1.6	0.0	6.7	1.5	0.6	8.0	0.0
Cycle Q Clear(g_c), s				4.5	0.0	1.6	0.0	6.7	1.5	0.6	8.0	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				269	0	124	2	1436	1099	43	1558	0
V/C Ratio(X)				0.55	0.00	0.19	0.00	0.29	0.08	0.23	0.39	0.00
Avail Cap(c_a), veh/h				684	0	315	91	1436	1099	112	1558	0
HCM Platoon Ratio				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	0.99	0.99	1.00	1.00	0.00
Uniform Delay (d), s/veh				44.8	0.0	43.4	0.0	3.4	2.9	48.6	2.0	0.0
Incr Delay (d2), s/veh				1.7	0.0	0.8	0.0	0.5	0.1	2.7	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
%ile BackOfQ(50%),veh/ln				2.0	0.0	0.7	0.0	3.6	0.6	0.3	4.3	0.0
LnGrp Delay(d),s/veh				46.5	0.0	44.2	0.0	3.9	3.0	51.4	2.7	0.0
LnGrp LOS				D		D		A	A	D	A	
Approach Vol, veh/h					171			504			613	
Approach Delay, s/veh					46.2			3.8			3.5	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	6.7	82.6			0.0	89.3		12.7
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	5.3	59.3			4.0	60.6		20.3
Max Q Clear Time (g_c+I1), s	2.6	8.7			0.0	10.0		6.5
Green Ext Time (p_c), s	0.0	4.7			0.0	4.7		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.3
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	149	0	22	0	383	96	9	555	0
Future Volume (veh/h)	0	0	0	149	0	22	0	383	96	9	555	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				162	0	24	0	416	104	10	603	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				283	0	130	2	1436	1099	42	1555	0
Arrive On Green				0.09	0.00	0.09	0.00	0.77	0.77	0.03	0.83	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1426	1634	1863	0
Grp Volume(v), veh/h				162	0	24	0	416	104	10	603	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1426	1634	1863	0
Q Serve(g_s), s				5.2	0.0	1.6	0.0	6.9	1.9	0.6	8.3	0.0
Cycle Q Clear(g_c), s				5.2	0.0	1.6	0.0	6.9	1.9	0.6	8.3	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				283	0	130	2	1436	1099	42	1555	0
V/C Ratio(X)				0.57	0.00	0.18	0.00	0.29	0.09	0.24	0.39	0.00
Avail Cap(c_a), veh/h				694	0	319	89	1436	1099	109	1555	0
HCM Platoon Ratio				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	0.99	0.99	1.00	1.00	0.00
Uniform Delay (d), s/veh				45.9	0.0	44.3	0.0	3.6	3.0	50.1	2.1	0.0
Incr Delay (d2), s/veh				1.8	0.0	0.7	0.0	0.5	0.2	2.8	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
%ile BackOfQ(50%),veh/ln				2.3	0.0	0.7	0.0	3.7	0.8	0.3	4.5	0.0
LnGrp Delay(d),s/veh				47.7	0.0	45.0	0.0	4.1	3.1	53.0	2.9	0.0
LnGrp LOS				D		D		A	A	D	A	
Approach Vol, veh/h					186			520			613	
Approach Delay, s/veh					47.4			3.9			3.7	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	6.7	84.9			0.0	91.6		13.4
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	5.3	61.3			4.0	62.6		21.3
Max Q Clear Time (g_c+I1), s	2.6	8.9			0.0	10.3		7.2
Green Ext Time (p_c), s	0.0	4.8			0.0	4.8		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	269	0	39	0	494	126	12	728	0
Future Volume (veh/h)	0	0	0	269	0	39	0	494	126	12	728	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				292	0	42	0	537	137	13	791	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				437	0	201	2	1299	994	51	1440	0
Arrive On Green				0.14	0.00	0.14	0.00	0.70	0.70	0.03	0.77	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1425	1634	1863	0
Grp Volume(v), veh/h				292	0	42	0	537	137	13	791	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1425	1634	1863	0
Q Serve(g_s), s				7.9	0.0	2.3	0.0	11.0	2.9	0.7	15.1	0.0
Cycle Q Clear(g_c), s				7.9	0.0	2.3	0.0	11.0	2.9	0.7	15.1	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				437	0	201	2	1299	994	51	1440	0
V/C Ratio(X)				0.67	0.00	0.21	0.00	0.41	0.14	0.25	0.55	0.00
Avail Cap(c_a), veh/h				694	0	319	103	1299	994	103	1440	0
HCM Platoon Ratio				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	0.98	0.98	1.00	1.00	0.00
Uniform Delay (d), s/veh				36.8	0.0	34.4	0.0	5.8	4.6	42.6	4.0	0.0
Incr Delay (d2), s/veh				1.8	0.0	0.5	0.0	1.0	0.3	2.6	1.5	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
%ile BackOfQ(50%),veh/ln				3.6	0.0	1.0	0.0	5.9	1.2	0.4	8.1	0.0
LnGrp Delay(d),s/veh				38.6	0.0	34.9	0.0	6.7	4.8	45.2	5.5	0.0
LnGrp LOS				D		C		A	A	D	A	
Approach Vol, veh/h					334			674			804	
Approach Delay, s/veh					38.1			6.3			6.2	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	6.8	66.8			0.0	73.6		16.4
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	4.0	50.9			4.0	50.9		18.0
Max Q Clear Time (g_c+I1), s	2.7	13.0			0.0	17.1		9.9
Green Ext Time (p_c), s	0.0	7.2			0.0	7.1		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	283	0	39	0	494	141	12	728	0
Future Volume (veh/h)	0	0	0	283	0	39	0	494	141	12	728	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	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
Adj Sat Flow, veh/h/ln				1716	0	1716	1716	1863	1716	1716	1863	0
Adj Flow Rate, veh/h				308	0	42	0	537	153	13	791	0
Adj No. of Lanes				2	0	1	1	1	1	1	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				453	0	208	2	1290	987	51	1431	0
Arrive On Green				0.14	0.00	0.14	0.00	0.69	0.69	0.03	0.77	0.00
Sat Flow, veh/h				3170	0	1458	1634	1863	1425	1634	1863	0
Grp Volume(v), veh/h				308	0	42	0	537	153	13	791	0
Grp Sat Flow(s),veh/h/ln				1585	0	1458	1634	1863	1425	1634	1863	0
Q Serve(g_s), s				8.3	0.0	2.3	0.0	11.2	3.3	0.7	15.4	0.0
Cycle Q Clear(g_c), s				8.3	0.0	2.3	0.0	11.2	3.3	0.7	15.4	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				453	0	208	2	1290	987	51	1431	0
V/C Ratio(X)				0.68	0.00	0.20	0.00	0.42	0.16	0.25	0.55	0.00
Avail Cap(c_a), veh/h				694	0	319	103	1290	987	103	1431	0
HCM Platoon Ratio				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	0.97	0.97	1.00	1.00	0.00
Uniform Delay (d), s/veh				36.6	0.0	34.0	0.0	6.0	4.8	42.6	4.2	0.0
Incr Delay (d2), s/veh				1.8	0.0	0.5	0.0	1.0	0.3	2.6	1.5	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
%ile BackOfQ(50%),veh/ln				3.7	0.0	1.0	0.0	6.0	1.4	0.4	8.3	0.0
LnGrp Delay(d),s/veh				38.4	0.0	34.5	0.0	6.9	5.1	45.2	5.7	0.0
LnGrp LOS				D		C		A	A	D	A	
Approach Vol, veh/h					350			690			804	
Approach Delay, s/veh					37.9			6.5			6.4	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		8
Phs Duration (G+Y+Rc), s	6.8	66.3			0.0	73.1		16.9
Change Period (Y+Rc), s	5.7	5.7			5.7	5.7		5.7
Max Green Setting (Gmax), s	4.0	50.9			4.0	50.9		18.0
Max Q Clear Time (g_c+I1), s	2.7	13.2			0.0	17.4		10.3
Green Ext Time (p_c), s	0.0	7.3			0.0	7.2		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	12.4
HCM 2010 LOS	B

Intersection 4
J St & E Cartmill Ave



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	130	153	75	92	12
Future Volume (veh/h)	9	130	153	75	92	12
Number	7	4	8	18	1	16
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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	10	141	166	82	100	13
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	43	3024	2794	1151	215	99
Arrive On Green	0.03	0.85	0.26	0.26	0.07	0.07
Sat Flow, veh/h	1634	3632	3632	1458	3170	1458
Grp Volume(v), veh/h	10	141	166	82	100	13
Grp Sat Flow(s),veh/h/ln	1634	1770	1770	1458	1585	1458
Q Serve(g_s), s	0.6	0.6	3.6	4.4	3.1	0.9
Cycle Q Clear(g_c), s	0.6	0.6	3.6	4.4	3.1	0.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	43	3024	2794	1151	215	99
V/C Ratio(X)	0.23	0.05	0.06	0.07	0.46	0.13
Avail Cap(c_a), veh/h	206	3024	2794	1151	985	453
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.1	1.1	9.4	9.6	46.2	45.1
Incr Delay (d2), s/veh	2.8	0.0	0.0	0.1	1.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.3	1.8	4.0	1.4	0.7
LnGrp Delay(d),s/veh	51.9	1.2	9.4	9.8	47.8	45.7
LnGrp LOS	D	A	A	A	D	D
Approach Vol, veh/h		151	248		113	
Approach Delay, s/veh		4.5	9.5		47.5	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				92.0		11.0	6.7	85.3
Change Period (Y+Rc), s				5.7		5.7	5.7	5.7
Max Green Setting (Gmax), s				61.3		30.3	11.3	44.3
Max Q Clear Time (g_c+I1), s				2.6		5.1	2.6	6.4
Green Ext Time (p_c), s				1.6		0.4	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	16.4
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	142	171	84	97	13
Future Volume (veh/h)	10	142	171	84	97	13
Number	7	4	8	18	1	16
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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	11	154	186	91	105	14
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	43	3028	2800	1154	219	101
Arrive On Green	0.03	0.86	1.00	1.00	0.07	0.07
Sat Flow, veh/h	1634	3632	3632	1458	3170	1458
Grp Volume(v), veh/h	11	154	186	91	105	14
Grp Sat Flow(s),veh/h/ln	1634	1770	1770	1458	1585	1458
Q Serve(g_s), s	0.7	0.7	0.0	0.0	3.4	1.0
Cycle Q Clear(g_c), s	0.7	0.7	0.0	0.0	3.4	1.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	43	3028	2800	1154	219	101
V/C Ratio(X)	0.25	0.05	0.07	0.08	0.48	0.14
Avail Cap(c_a), veh/h	231	3028	2800	1154	1008	464
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.6	1.2	0.0	0.0	47.5	46.4
Incr Delay (d2), s/veh	3.0	0.0	0.0	0.1	1.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.4	0.0	2.7	1.5	0.8
LnGrp Delay(d),s/veh	53.6	1.2	0.0	0.1	49.1	47.0
LnGrp LOS	D	A	A	A	D	D
Approach Vol, veh/h		165	277		119	
Approach Delay, s/veh		4.7	0.1		48.9	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				94.7		11.3	6.8	87.9
Change Period (Y+Rc), s				5.7		5.7	5.7	5.7
Max Green Setting (Gmax), s				62.6		32.0	13.3	43.6
Max Q Clear Time (g_c+I1), s				2.7		5.4	2.7	2.0
Green Ext Time (p_c), s				1.8		0.4	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	11.8
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	150	182	101	114	13
Future Volume (veh/h)	10	150	182	101	114	13
Number	7	4	8	18	1	16
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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	11	163	198	110	124	14
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	44	2992	2759	1137	244	112
Arrive On Green	0.03	0.85	0.78	0.78	0.08	0.08
Sat Flow, veh/h	1634	3632	3632	1458	3170	1458
Grp Volume(v), veh/h	11	163	198	110	124	14
Grp Sat Flow(s),veh/h/ln	1634	1770	1770	1458	1585	1458
Q Serve(g_s), s	0.7	0.8	1.3	1.9	3.9	0.9
Cycle Q Clear(g_c), s	0.7	0.8	1.3	1.9	3.9	0.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	44	2992	2759	1137	244	112
V/C Ratio(X)	0.25	0.05	0.07	0.10	0.51	0.12
Avail Cap(c_a), veh/h	206	2992	2759	1137	1037	477
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	49.1	1.3	2.7	2.7	45.7	44.3
Incr Delay (d2), s/veh	2.9	0.0	0.1	0.2	1.6	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	0.3	0.4	0.7	3.9	1.7	0.8
LnGrp Delay(d),s/veh	52.0	1.3	2.7	2.9	47.3	44.8
LnGrp LOS	D	A	A	A	D	D
Approach Vol, veh/h		174	308		138	
Approach Delay, s/veh		4.5	2.8		47.0	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				91.1		11.9	6.8	84.3
Change Period (Y+Rc), s				5.7		5.7	5.7	5.7
Max Green Setting (Gmax), s				59.6		32.0	11.3	42.6
Max Q Clear Time (g_c+I1), s				2.8		5.9	2.7	3.9
Green Ext Time (p_c), s				2.0		0.5	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	215	283	139	124	16
Future Volume (veh/h)	15	215	283	139	124	16
Number	7	4	8	18	1	16
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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	16	234	308	151	135	17
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	46	3034	2817	1161	241	111
Arrive On Green	0.03	0.86	0.80	0.80	0.08	0.08
Sat Flow, veh/h	1634	3632	3632	1458	3170	1458
Grp Volume(v), veh/h	16	234	308	151	135	17
Grp Sat Flow(s),veh/h/ln	1634	1770	1770	1458	1585	1458
Q Serve(g_s), s	1.2	1.2	2.3	2.8	4.9	1.3
Cycle Q Clear(g_c), s	1.2	1.2	2.3	2.8	4.9	1.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	46	3034	2817	1161	241	111
V/C Ratio(X)	0.35	0.08	0.11	0.13	0.56	0.15
Avail Cap(c_a), veh/h	245	3034	2817	1161	925	425
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	57.3	1.3	2.7	2.8	53.5	51.8
Incr Delay (d2), s/veh	4.5	0.0	0.1	0.2	2.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.6	1.1	6.1	2.2	1.1
LnGrp Delay(d),s/veh	61.8	1.4	2.8	3.0	55.5	52.4
LnGrp LOS	E	A	A	A	E	D
Approach Vol, veh/h		250	459		152	
Approach Delay, s/veh		5.2	2.9		55.2	
Approach LOS		A	A		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				106.9		13.1	7.4	99.5
Change Period (Y+Rc), s				5.7		5.7	5.7	5.7
Max Green Setting (Gmax), s				75.3		33.3	16.3	53.3
Max Q Clear Time (g_c+I1), s				3.2		6.9	3.2	4.8
Green Ext Time (p_c), s				3.0		0.6	0.0	3.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	242	317	192	178	16
Future Volume (veh/h)	15	242	317	192	178	16
Number	7	4	8	18	1	16
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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	16	263	345	209	193	17
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	529	2845	1542	635	340	156
Arrive On Green	0.32	0.80	0.44	0.44	0.11	0.11
Sat Flow, veh/h	1634	3632	3632	1458	3170	1458
Grp Volume(v), veh/h	16	263	345	209	193	17
Grp Sat Flow(s),veh/h/ln	1634	1770	1770	1458	1585	1458
Q Serve(g_s), s	0.6	1.4	5.5	5.0	5.2	0.9
Cycle Q Clear(g_c), s	0.6	1.4	5.5	5.0	5.2	0.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	529	2845	1542	635	340	156
V/C Ratio(X)	0.03	0.09	0.22	0.33	0.57	0.11
Avail Cap(c_a), veh/h	529	2845	1542	635	1120	515
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	20.8	1.9	15.9	6.3	38.2	36.3
Incr Delay (d2), s/veh	0.0	0.1	0.3	1.4	1.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.7	2.8	7.1	2.3	0.8
LnGrp Delay(d),s/veh	20.8	1.9	16.2	7.7	39.7	36.6
LnGrp LOS	C	A	B	A	D	D
Approach Vol, veh/h		279	554		210	
Approach Delay, s/veh		3.0	13.0		39.4	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				76.4		13.6	33.2	43.2
Change Period (Y+Rc), s				5.7		5.7	5.7	5.7
Max Green Setting (Gmax), s				48.5		30.1	5.3	37.5
Max Q Clear Time (g_c+I1), s				3.4		7.2	2.6	7.5
Green Ext Time (p_c), s				1.1		0.8	0.3	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	15.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	351	7	14	521	283	2	5	4	183	14	21
Future Volume (veh/h)	23	351	7	14	521	283	2	5	4	183	14	21
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	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	25	382	8	15	566	308	2	5	4	199	15	23
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	2468	52	45	2443	1007	27	46	36	304	236	185
Arrive On Green	0.03	0.70	0.68	0.05	1.00	1.00	0.02	0.05	0.03	0.10	0.13	0.13
Sat Flow, veh/h	1634	3545	74	1634	3539	1458	1634	960	768	3170	1863	1458
Grp Volume(v), veh/h	25	190	200	15	566	308	2	0	9	199	15	23
Grp Sat Flow(s),veh/h/ln	1634	1770	1850	1634	1770	1458	1634	0	1727	1585	1863	1458
Q Serve(g_s), s	1.8	4.4	4.4	1.1	0.0	0.0	0.1	0.0	0.6	7.3	0.9	1.7
Cycle Q Clear(g_c), s	1.8	4.4	4.4	1.1	0.0	0.0	0.1	0.0	0.6	7.3	0.9	1.7
Prop In Lane	1.00		0.04	1.00		1.00	1.00		0.44	1.00		1.00
Lane Grp Cap(c), veh/h	54	1232	1288	45	2443	1007	27	0	82	304	236	185
V/C Ratio(X)	0.46	0.15	0.15	0.34	0.23	0.31	0.08	0.00	0.11	0.66	0.06	0.12
Avail Cap(c_a), veh/h	123	1232	1288	123	2443	1007	95	0	456	502	678	531
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	0.98	0.98	0.98	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	6.2	6.2	55.7	0.0	0.0	58.1	0.0	55.1	52.3	46.1	46.5
Incr Delay (d2), s/veh	6.1	0.3	0.3	4.3	0.2	0.8	1.2	0.0	0.6	2.4	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.2	2.3	0.5	0.1	0.2	0.1	0.0	0.3	3.3	0.4	0.7
LnGrp Delay(d),s/veh	63.0	6.5	6.5	60.0	0.2	0.8	59.3	0.0	55.7	54.7	46.2	46.8
LnGrp LOS	E	A	A	E	A	A	E		E	D	D	D
Approach Vol, veh/h		415			889			11			237	
Approach Delay, s/veh		9.9			1.4			56.3			53.4	
Approach LOS		A			A			E			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	15.5	9.7	7.3	87.5	6.0	19.2	8.0	86.8
Change Period (Y+Rc), s	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Max Green Setting (Gmax), s	17.3	30.0	7.3	42.6	5.3	42.0	7.3	42.6
Max Q Clear Time (g_c+I1), s	9.3	2.6	3.1	6.4	2.1	3.7	3.8	2.0
Green Ext Time (p_c), s	0.5	0.0	0.0	5.8	0.0	1.0	0.0	5.9

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	378	7	14	555	336	2	5	4	237	14	21
Future Volume (veh/h)	23	378	7	14	555	336	2	5	4	237	14	21
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	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	25	411	8	15	603	365	2	5	4	258	15	23
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	2403	47	45	2375	979	27	46	36	365	272	213
Arrive On Green	0.03	0.68	0.66	0.02	0.45	0.45	0.02	0.05	0.03	0.12	0.15	0.15
Sat Flow, veh/h	1634	3551	69	1634	3539	1458	1634	960	768	3170	1863	1458
Grp Volume(v), veh/h	25	205	214	15	603	365	2	0	9	258	15	23
Grp Sat Flow(s),veh/h/ln	1634	1770	1851	1634	1770	1458	1634	0	1727	1585	1863	1458
Q Serve(g_s), s	1.8	5.1	5.1	1.1	12.7	7.2	0.1	0.0	0.6	9.4	0.8	1.6
Cycle Q Clear(g_c), s	1.8	5.1	5.1	1.1	12.7	7.2	0.1	0.0	0.6	9.4	0.8	1.6
Prop In Lane	1.00		0.04	1.00		1.00	1.00		0.44	1.00		1.00
Lane Grp Cap(c), veh/h	54	1198	1252	45	2375	979	27	0	82	365	272	213
V/C Ratio(X)	0.46	0.17	0.17	0.34	0.25	0.37	0.08	0.00	0.11	0.71	0.06	0.11
Avail Cap(c_a), veh/h	123	1198	1252	109	2375	979	95	0	456	555	709	555
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.98	0.98	0.98	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	7.1	7.1	57.8	14.4	2.1	58.1	0.0	55.1	51.1	44.1	44.4
Incr Delay (d2), s/veh	6.1	0.3	0.3	4.3	0.3	1.1	1.2	0.0	0.6	2.5	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.5	2.7	0.5	6.3	3.1	0.1	0.0	0.3	4.2	0.4	0.7
LnGrp Delay(d),s/veh	63.0	7.4	7.4	62.1	14.6	3.2	59.3	0.0	55.7	53.7	44.2	44.7
LnGrp LOS	E	A	A	E	B	A	E		E	D	D	D
Approach Vol, veh/h		444			983			11			296	
Approach Delay, s/veh		10.5			11.1			56.3			52.5	
Approach LOS		B			B			E			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	17.8	9.7	7.3	85.2	6.0	21.6	8.0	84.5
Change Period (Y+Rc), s	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Max Green Setting (Gmax), s	19.3	30.0	6.3	41.6	5.3	44.0	7.3	40.6
Max Q Clear Time (g_c+I1), s	11.4	2.6	3.1	7.1	2.1	3.6	3.8	14.7
Green Ext Time (p_c), s	0.7	0.0	0.0	6.6	0.0	1.2	0.0	6.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.3
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	209	174	85	68	9
Future Volume (veh/h)	7	209	174	85	68	9
Number	7	4	8	18	1	16
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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	8	227	189	92	74	10
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	44	3010	2757	1136	192	89
Arrive On Green	0.03	0.85	0.78	0.78	0.06	0.06
Sat Flow, veh/h	1634	3632	3632	1458	3170	1458
Grp Volume(v), veh/h	8	227	189	92	74	10
Grp Sat Flow(s),veh/h/ln	1634	1770	1770	1458	1585	1458
Q Serve(g_s), s	0.4	0.9	1.1	1.3	2.0	0.6
Cycle Q Clear(g_c), s	0.4	0.9	1.1	1.3	2.0	0.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	44	3010	2757	1136	192	89
V/C Ratio(X)	0.18	0.08	0.07	0.08	0.38	0.11
Avail Cap(c_a), veh/h	163	3010	2757	1136	1117	514
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	42.8	1.1	2.3	2.3	40.7	40.0
Incr Delay (d2), s/veh	2.0	0.0	0.0	0.1	1.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.5	0.5	2.8	0.9	0.5
LnGrp Delay(d),s/veh	44.8	1.1	2.4	2.5	41.9	40.5
LnGrp LOS	D	A	A	A	D	D
Approach Vol, veh/h		235	281		84	
Approach Delay, s/veh		2.6	2.4		41.7	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				80.5		9.5	6.4	74.1
Change Period (Y+Rc), s				5.7		5.7	5.7	5.7
Max Green Setting (Gmax), s				48.6		30.0	7.3	35.6
Max Q Clear Time (g_c+I1), s				2.9		4.0	2.4	3.3
Green Ext Time (p_c), s				2.1		0.3	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	229	195	95	72	10
Future Volume (veh/h)	8	229	195	95	72	10
Number	7	4	8	18	1	16
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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	9	249	212	103	78	11
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	45	3003	2747	1132	199	91
Arrive On Green	0.03	0.85	0.78	0.78	0.06	0.06
Sat Flow, veh/h	1634	3632	3632	1458	3170	1458
Grp Volume(v), veh/h	9	249	212	103	78	11
Grp Sat Flow(s),veh/h/ln	1634	1770	1770	1458	1585	1458
Q Serve(g_s), s	0.5	1.0	1.3	1.5	2.1	0.6
Cycle Q Clear(g_c), s	0.5	1.0	1.3	1.5	2.1	0.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	45	3003	2747	1132	199	91
V/C Ratio(X)	0.20	0.08	0.08	0.09	0.39	0.12
Avail Cap(c_a), veh/h	163	3003	2747	1132	1117	514
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	42.8	1.1	2.4	2.4	40.5	39.8
Incr Delay (d2), s/veh	2.1	0.1	0.1	0.2	1.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.5	0.6	3.2	1.0	0.5
LnGrp Delay(d),s/veh	44.9	1.2	2.5	2.6	41.8	40.4
LnGrp LOS	D	A	A	A	D	D
Approach Vol, veh/h		258	315		89	
Approach Delay, s/veh		2.7	2.5		41.6	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				80.4		9.6	6.5	73.9
Change Period (Y+Rc), s				5.7		5.7	5.7	5.7
Max Green Setting (Gmax), s				48.6		30.0	7.3	35.6
Max Q Clear Time (g_c+I1), s				3.0		4.1	2.5	3.5
Green Ext Time (p_c), s				2.4		0.3	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	7.8
HCM 2010 LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	232	197	98	78	10
Future Volume (veh/h)	8	232	197	98	78	10
Number	7	4	8	18	1	16
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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	9	252	214	107	85	11
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	45	2992	2736	1128	208	96
Arrive On Green	0.03	0.85	0.77	0.77	0.07	0.07
Sat Flow, veh/h	1634	3632	3632	1458	3170	1458
Grp Volume(v), veh/h	9	252	214	107	85	11
Grp Sat Flow(s),veh/h/ln	1634	1770	1770	1458	1585	1458
Q Serve(g_s), s	0.5	1.1	1.3	1.6	2.3	0.6
Cycle Q Clear(g_c), s	0.5	1.1	1.3	1.6	2.3	0.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	45	2992	2736	1128	208	96
V/C Ratio(X)	0.20	0.08	0.08	0.09	0.41	0.11
Avail Cap(c_a), veh/h	145	2992	2736	1128	1117	514
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	42.8	1.2	2.5	2.5	40.4	39.6
Incr Delay (d2), s/veh	2.1	0.1	0.1	0.2	1.3	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	0.2	0.5	0.6	3.3	1.1	0.5
LnGrp Delay(d),s/veh	44.9	1.2	2.5	2.7	41.6	40.1
LnGrp LOS	D	A	A	A	D	D
Approach Vol, veh/h		261	321		96	
Approach Delay, s/veh		2.7	2.6		41.5	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				80.1		9.9	6.5	73.6
Change Period (Y+Rc), s				5.7		5.7	5.7	5.7
Max Green Setting (Gmax), s				48.6		30.0	6.3	36.6
Max Q Clear Time (g_c+I1), s				3.1		4.3	2.5	3.6
Green Ext Time (p_c), s				2.4		0.3	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	8.1
HCM 2010 LOS	A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	345	322	157	92	12
Future Volume (veh/h)	12	345	322	157	92	12
Number	7	4	8	18	1	16
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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	13	375	350	171	100	13
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	47	3020	2780	1145	216	99
Arrive On Green	0.03	0.85	0.79	0.79	0.07	0.07
Sat Flow, veh/h	1634	3632	3632	1458	3170	1458
Grp Volume(v), veh/h	13	375	350	171	100	13
Grp Sat Flow(s),veh/h/ln	1634	1770	1770	1458	1585	1458
Q Serve(g_s), s	0.8	1.8	2.4	2.9	3.1	0.9
Cycle Q Clear(g_c), s	0.8	1.8	2.4	2.9	3.1	0.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	47	3020	2780	1145	216	99
V/C Ratio(X)	0.28	0.12	0.13	0.15	0.46	0.13
Avail Cap(c_a), veh/h	160	3020	2780	1145	988	455
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	48.5	1.2	2.6	2.7	45.7	44.7
Incr Delay (d2), s/veh	3.1	0.1	0.1	0.3	1.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.9	1.2	5.9	1.4	0.7
LnGrp Delay(d),s/veh	51.6	1.3	2.7	2.9	47.3	45.3
LnGrp LOS	D	A	A	A	D	D
Approach Vol, veh/h		388	521		113	
Approach Delay, s/veh		3.0	2.8		47.0	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				91.0		11.0	6.9	84.1
Change Period (Y+Rc), s				5.7		5.7	5.7	5.7
Max Green Setting (Gmax), s				60.5		30.1	8.3	46.5
Max Q Clear Time (g_c+I1), s				3.8		5.1	2.8	4.9
Green Ext Time (p_c), s				4.0		0.4	0.0	4.0

Intersection Summary	
HCM 2010 Ctrl Delay	7.8
HCM 2010 LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	353	331	171	107	12
Future Volume (veh/h)	12	353	331	171	107	12
Number	7	4	8	18	1	16
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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	13	384	360	186	116	13
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	43	3050	2835	1168	222	102
Arrive On Green	0.03	0.86	1.00	1.00	0.07	0.07
Sat Flow, veh/h	1634	3632	3632	1458	3170	1458
Grp Volume(v), veh/h	13	384	360	186	116	13
Grp Sat Flow(s),veh/h/ln	1634	1770	1770	1458	1585	1458
Q Serve(g_s), s	0.9	2.0	0.0	0.0	4.1	1.0
Cycle Q Clear(g_c), s	0.9	2.0	0.0	0.0	4.1	1.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	43	3050	2835	1168	222	102
V/C Ratio(X)	0.30	0.13	0.13	0.16	0.52	0.13
Avail Cap(c_a), veh/h	196	3050	2835	1168	916	421
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.9	1.3	0.0	0.0	52.5	51.1
Incr Delay (d2), s/veh	3.9	0.1	0.1	0.3	1.9	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.0	0.0	6.1	1.9	0.8
LnGrp Delay(d),s/veh	59.8	1.3	0.1	0.3	54.4	51.6
LnGrp LOS	E	A	A	A	D	D
Approach Vol, veh/h		397	546		129	
Approach Delay, s/veh		3.3	0.2		54.1	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				104.8		12.2	7.1	97.7
Change Period (Y+Rc), s				5.7		5.7	5.7	5.7
Max Green Setting (Gmax), s				73.5		32.1	12.3	55.5
Max Q Clear Time (g_c+I1), s				4.0		6.1	2.9	2.0
Green Ext Time (p_c), s				4.2		0.5	0.0	4.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.8
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	552	4	9	580	301	3	6	5	133	9	16
Future Volume (veh/h)	18	552	4	9	580	301	3	6	5	133	9	16
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	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	20	600	4	10	630	327	3	7	5	145	10	17
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	50	2589	17	39	2518	1038	28	48	34	245	200	157
Arrive On Green	0.03	0.72	0.70	0.02	0.71	0.71	0.02	0.05	0.03	0.08	0.11	0.11
Sat Flow, veh/h	1634	3604	24	1634	3539	1458	1634	1012	723	3170	1863	1458
Grp Volume(v), veh/h	20	295	309	10	630	327	3	0	12	145	10	17
Grp Sat Flow(s),veh/h/ln	1634	1770	1859	1634	1770	1458	1634	0	1735	1585	1863	1458
Q Serve(g_s), s	1.4	6.7	6.8	0.7	7.5	4.0	0.2	0.0	0.8	5.3	0.6	1.3
Cycle Q Clear(g_c), s	1.4	6.7	6.8	0.7	7.5	4.0	0.2	0.0	0.8	5.3	0.6	1.3
Prop In Lane	1.00		0.01	1.00		1.00	1.00		0.42	1.00		1.00
Lane Grp Cap(c), veh/h	50	1271	1335	39	2518	1038	28	0	82	245	200	157
V/C Ratio(X)	0.40	0.23	0.23	0.26	0.25	0.32	0.11	0.00	0.15	0.59	0.05	0.11
Avail Cap(c_a), veh/h	136	1271	1335	109	2518	1038	78	0	458	423	652	510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.98	0.98	0.98	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.1	5.7	5.7	57.6	6.1	1.0	58.0	0.0	55.2	53.5	48.1	48.4
Incr Delay (d2), s/veh	5.2	0.4	0.4	3.4	0.2	0.8	1.6	0.0	0.8	2.3	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.4	3.6	0.4	3.7	1.8	0.1	0.0	0.4	2.4	0.3	0.5
LnGrp Delay(d),s/veh	62.3	6.1	6.1	61.0	6.3	1.8	59.7	0.0	56.0	55.8	48.2	48.7
LnGrp LOS	E	A	A	E	A	A	E		E	E	D	D
Approach Vol, veh/h		624			967			15			172	
Approach Delay, s/veh		7.9			5.4			56.7			54.7	
Approach LOS		A			A			E			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	13.3	9.7	6.8	90.2	6.1	16.9	7.6	89.4
Change Period (Y+Rc), s	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Max Green Setting (Gmax), s	14.3	30.0	6.3	46.6	4.0	40.3	8.3	44.6
Max Q Clear Time (g_c+I1), s	7.3	2.8	2.7	8.8	2.2	3.3	3.4	9.5
Green Ext Time (p_c), s	0.3	0.0	0.0	7.7	0.0	0.7	0.0	7.6

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	560	4	9	589	315	3	6	5	148	9	16
Future Volume (veh/h)	18	560	4	9	589	315	3	6	5	148	9	16
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	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	20	609	4	10	640	342	3	7	5	161	10	17
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	2459	16	42	2389	984	32	55	39	271	224	175
Arrive On Green	0.03	0.68	0.67	0.03	0.67	0.67	0.02	0.05	0.04	0.09	0.12	0.12
Sat Flow, veh/h	1634	3605	24	1634	3539	1458	1634	1012	723	3170	1863	1458
Grp Volume(v), veh/h	20	299	314	10	640	342	3	0	12	161	10	17
Grp Sat Flow(s),veh/h/ln	1634	1770	1859	1634	1770	1458	1634	0	1735	1585	1863	1458
Q Serve(g_s), s	1.3	6.8	6.8	0.6	7.5	4.2	0.2	0.0	0.7	5.1	0.5	1.1
Cycle Q Clear(g_c), s	1.3	6.8	6.8	0.6	7.5	4.2	0.2	0.0	0.7	5.1	0.5	1.1
Prop In Lane	1.00		0.01	1.00		1.00	1.00		0.42	1.00		1.00
Lane Grp Cap(c), veh/h	54	1207	1268	42	2389	984	32	0	94	271	224	175
V/C Ratio(X)	0.37	0.25	0.25	0.24	0.27	0.35	0.09	0.00	0.13	0.60	0.04	0.10
Avail Cap(c_a), veh/h	109	1207	1268	93	2389	984	93	0	524	362	669	524
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.7	6.4	6.4	50.1	6.8	1.2	50.6	0.0	47.6	46.3	40.9	41.1
Incr Delay (d2), s/veh	4.2	0.5	0.5	2.8	0.3	1.0	1.3	0.0	0.6	2.1	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.4	3.6	0.3	3.7	1.9	0.1	0.0	0.3	2.3	0.3	0.5
LnGrp Delay(d),s/veh	53.9	6.9	6.9	52.9	7.0	2.1	51.9	0.0	48.2	48.4	40.9	41.4
LnGrp LOS	D	A	A	D	A	A	D		D	D	D	D
Approach Vol, veh/h		633			992			15			188	
Approach Delay, s/veh		8.3			5.8			48.9			47.3	
Approach LOS		A			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	13.0	9.7	6.7	75.6	6.0	16.6	7.5	74.9
Change Period (Y+Rc), s	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Max Green Setting (Gmax), s	10.3	30.0	4.3	37.6	4.3	36.0	5.3	36.6
Max Q Clear Time (g_c+I1), s	7.1	2.7	2.6	8.8	2.2	3.1	3.3	9.5
Green Ext Time (p_c), s	0.2	0.0	0.0	7.6	0.0	0.7	0.0	7.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Intersection 5
N Oaks St/M St & E Cartmill Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	154	49	321	180	84	21	22	257	114	28	33
Future Volume (veh/h)	24	154	49	321	180	84	21	22	257	114	28	33
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	26	167	53	349	196	91	23	24	279	124	30	36
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	1223	359	750	2601	699	51	418	322	219	200	240
Arrive On Green	0.04	0.31	0.31	0.40	0.85	0.82	0.03	0.22	0.22	0.07	0.26	0.25
Sat Flow, veh/h	1634	3887	1140	3170	5085	1420	1634	1863	1438	3170	763	916
Grp Volume(v), veh/h	26	144	76	349	196	91	23	24	279	124	0	66
Grp Sat Flow(s),veh/h/ln	1634	1695	1637	1585	1695	1420	1634	1863	1438	1585	0	1679
Q Serve(g_s), s	1.6	3.1	3.4	8.4	0.6	0.9	1.4	1.0	19.2	3.9	0.0	3.1
Cycle Q Clear(g_c), s	1.6	3.1	3.4	8.4	0.6	0.9	1.4	1.0	19.2	3.9	0.0	3.1
Prop In Lane	1.00		0.70	1.00		1.00	1.00		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	65	1066	515	750	2601	699	51	418	322	219	0	440
V/C Ratio(X)	0.40	0.13	0.15	0.47	0.08	0.13	0.45	0.06	0.87	0.57	0.00	0.15
Avail Cap(c_a), veh/h	95	1066	515	750	2601	699	84	505	390	268	0	510
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.3	25.3	25.4	26.3	3.7	2.2	49.0	31.4	38.5	46.4	0.0	29.5
Incr Delay (d2), s/veh	3.9	0.3	0.6	0.4	0.1	0.4	6.0	0.1	15.8	2.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.5	1.6	3.7	0.3	0.4	0.7	0.5	9.0	1.8	0.0	1.5
LnGrp Delay(d),s/veh	52.2	25.5	26.0	26.8	3.8	2.5	55.1	31.5	54.3	48.7	0.0	29.6
LnGrp LOS	D	C	C	C	A	A	E	C	D	D		C
Approach Vol, veh/h		246			636			326			190	
Approach Delay, s/veh		28.5			16.2			52.6			42.1	
Approach LOS		C			B			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	11.1	27.1	28.4	36.4	7.2	31.0	8.1	56.7
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	7.4	26.6	16.0	30.4	4.0	30.0	4.0	42.4
Max Q Clear Time (g_c+I1), s	5.9	21.2	10.4	5.4	3.4	5.1	3.6	2.9
Green Ext Time (p_c), s	0.1	0.6	1.4	0.8	0.0	0.7	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	30.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	172	55	351	197	92	21	22	260	115	28	33
Future Volume (veh/h)	27	172	55	351	197	92	21	22	260	115	28	33
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	29	187	60	382	214	100	23	24	283	125	30	36
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	1184	352	790	2274	607	50	420	324	218	201	241
Arrive On Green	0.22	0.61	0.61	0.25	0.45	0.43	0.03	0.23	0.23	0.07	0.26	0.25
Sat Flow, veh/h	1634	3874	1151	3170	5085	1418	1634	1863	1438	3170	763	916
Grp Volume(v), veh/h	29	162	85	382	214	100	23	24	283	125	0	66
Grp Sat Flow(s),veh/h/ln	1634	1695	1634	1585	1695	1418	1634	1863	1438	1585	0	1680
Q Serve(g_s), s	1.5	2.2	2.4	10.9	2.6	4.6	1.5	1.1	20.1	4.1	0.0	3.2
Cycle Q Clear(g_c), s	1.5	2.2	2.4	10.9	2.6	4.6	1.5	1.1	20.1	4.1	0.0	3.2
Prop In Lane	1.00		0.70	1.00		1.00	1.00		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	176	1036	500	790	2274	607	50	420	324	218	0	442
V/C Ratio(X)	0.16	0.16	0.17	0.48	0.09	0.16	0.46	0.06	0.87	0.57	0.00	0.15
Avail Cap(c_a), veh/h	176	1036	500	790	2274	607	82	489	377	263	0	496
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.7	14.7	14.8	34.0	16.9	18.6	50.5	32.2	39.6	47.8	0.0	30.2
Incr Delay (d2), s/veh	0.4	0.3	0.7	0.5	0.1	0.6	6.3	0.1	17.7	2.4	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.0	1.1	4.8	1.2	1.9	0.8	0.6	9.5	1.8	0.0	1.5
LnGrp Delay(d),s/veh	38.2	15.0	15.5	34.4	17.0	19.2	56.8	32.3	57.3	50.2	0.0	30.4
LnGrp LOS	D	B	B	C	B	B	E	C	E	D		C
Approach Vol, veh/h		276			696			330			191	
Approach Delay, s/veh		17.6			26.9			55.4			43.4	
Approach LOS		B			C			E			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	11.3	27.9	30.4	36.4	7.3	31.9	15.4	51.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	7.5	26.5	19.0	30.4	4.0	30.0	4.0	45.4
Max Q Clear Time (g_c+I1), s	6.1	22.1	12.9	4.4	3.5	5.2	3.5	6.6
Green Ext Time (p_c), s	0.1	0.5	0.9	0.9	0.0	0.7	0.1	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	197	55	361	225	92	21	22	267	115	28	33
Future Volume (veh/h)	27	197	55	361	225	92	21	22	267	115	28	33
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	29	214	60	392	245	100	23	24	290	125	30	36
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	127	1125	296	908	2494	671	340	421	325	211	64	76
Arrive On Green	0.08	0.28	0.28	0.29	0.49	0.47	0.21	0.23	0.23	0.07	0.08	0.07
Sat Flow, veh/h	1634	3994	1050	3170	5085	1419	1634	1863	1438	3170	755	906
Grp Volume(v), veh/h	29	179	95	392	245	100	23	24	290	125	0	66
Grp Sat Flow(s),veh/h/ln	1634	1695	1654	1585	1695	1419	1634	1863	1438	1585	0	1661
Q Serve(g_s), s	1.9	4.6	5.0	11.6	3.0	4.6	1.3	1.2	22.5	4.4	0.0	4.4
Cycle Q Clear(g_c), s	1.9	4.6	5.0	11.6	3.0	4.6	1.3	1.2	22.5	4.4	0.0	4.4
Prop In Lane	1.00		0.63	1.00		1.00	1.00		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	127	955	466	908	2494	671	340	421	325	211	0	140
V/C Ratio(X)	0.23	0.19	0.20	0.43	0.10	0.15	0.07	0.06	0.89	0.59	0.00	0.47
Avail Cap(c_a), veh/h	127	955	466	908	2494	671	340	444	343	254	0	452
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.8	31.3	31.5	33.4	15.7	17.2	36.5	34.9	43.1	52.2	0.0	50.6
Incr Delay (d2), s/veh	0.9	0.4	1.0	0.3	0.1	0.5	0.1	0.1	23.4	2.7	0.0	2.5
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	0.9	2.2	2.4	5.1	1.4	1.9	0.6	0.6	11.1	2.0	0.0	2.1
LnGrp Delay(d),s/veh	50.7	31.8	32.4	33.7	15.8	17.6	36.6	34.9	66.6	54.8	0.0	53.0
LnGrp LOS	D	C	C	C	B	B	D	C	E	D		D
Approach Vol, veh/h		303			737			337			191	
Approach Delay, s/veh		33.8			25.6			62.3			54.2	
Approach LOS		C			C			E			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	11.6	30.0	37.0	36.4	28.0	13.7	13.0	60.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	7.9	26.1	28.0	30.4	4.0	30.0	4.0	54.4
Max Q Clear Time (g_c+I1), s	6.4	24.5	13.6	7.0	3.3	6.4	3.9	6.6
Green Ext Time (p_c), s	0.1	0.2	1.5	1.0	0.0	0.2	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	38.5
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	285	91	526	295	138	22	23	271	120	30	35
Future Volume (veh/h)	44	285	91	526	295	138	22	23	271	120	30	35
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	48	310	99	572	321	150	24	25	295	130	33	38
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	104	1051	317	947	2581	697	48	423	327	214	207	239
Arrive On Green	0.06	0.27	0.27	0.30	0.51	0.49	0.03	0.23	0.23	0.07	0.27	0.25
Sat Flow, veh/h	1634	3859	1163	3170	5085	1420	1634	1863	1438	3170	782	901
Grp Volume(v), veh/h	48	270	139	572	321	150	24	25	295	130	0	71
Grp Sat Flow(s),veh/h/ln	1634	1695	1631	1585	1695	1420	1634	1863	1438	1585	0	1683
Q Serve(g_s), s	3.4	7.5	8.1	18.4	3.9	7.2	1.7	1.3	23.7	4.7	0.0	3.9
Cycle Q Clear(g_c), s	3.4	7.5	8.1	18.4	3.9	7.2	1.7	1.3	23.7	4.7	0.0	3.9
Prop In Lane	1.00		0.71	1.00		1.00	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	104	923	444	947	2581	697	48	423	327	214	0	446
V/C Ratio(X)	0.46	0.29	0.31	0.60	0.12	0.22	0.50	0.06	0.90	0.61	0.00	0.16
Avail Cap(c_a), veh/h	104	923	444	947	2581	697	73	424	327	253	0	446
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)	0.99	0.99	0.99	0.98	0.98	0.98	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.8	34.2	34.4	35.7	15.4	17.3	56.9	36.0	44.7	54.0	0.0	33.8
Incr Delay (d2), s/veh	3.2	0.8	1.8	1.1	0.1	0.7	7.9	0.1	26.8	3.1	0.0	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	1.6	3.6	3.9	8.2	1.9	3.0	0.9	0.7	11.9	2.2	0.0	1.8
LnGrp Delay(d),s/veh	57.0	35.0	36.3	36.8	15.5	17.9	64.8	36.1	71.5	57.0	0.0	34.0
LnGrp LOS	E	D	D	D	B	B	E	D	E	E		C
Approach Vol, veh/h		457			1043			344			201	
Approach Delay, s/veh		37.7			27.5			68.4			48.9	
Approach LOS		D			C			E			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	12.0	31.0	39.5	36.4	7.5	35.6	11.5	64.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	8.2	25.8	32.0	30.4	4.0	30.0	4.0	58.4
Max Q Clear Time (g_c+I1), s	6.7	25.7	20.4	10.1	3.7	5.9	5.4	9.2
Green Ext Time (p_c), s	0.1	0.0	2.2	1.5	0.0	0.7	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	38.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	366	91	556	382	138	22	23	295	120	30	35
Future Volume (veh/h)	44	366	91	556	382	138	22	23	295	120	30	35
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	48	398	99	604	415	150	24	25	321	130	33	38
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	103	1102	264	965	2602	703	338	419	324	213	66	76
Arrive On Green	0.06	0.27	0.27	0.51	0.85	0.83	0.21	0.22	0.22	0.07	0.09	0.07
Sat Flow, veh/h	1634	4081	977	3170	5085	1420	1634	1863	1438	3170	774	891
Grp Volume(v), veh/h	48	328	169	604	415	150	24	25	321	130	0	71
Grp Sat Flow(s),veh/h/ln	1634	1695	1668	1585	1695	1420	1634	1863	1438	1585	0	1665
Q Serve(g_s), s	3.4	9.4	9.9	16.5	1.6	2.7	1.4	1.3	26.7	4.8	0.0	4.9
Cycle Q Clear(g_c), s	3.4	9.4	9.9	16.5	1.6	2.7	1.4	1.3	26.7	4.8	0.0	4.9
Prop In Lane	1.00		0.59	1.00		1.00	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	103	915	450	965	2602	703	338	419	324	213	0	142
V/C Ratio(X)	0.47	0.36	0.38	0.63	0.16	0.21	0.07	0.06	0.99	0.61	0.00	0.50
Avail Cap(c_a), veh/h	103	915	450	965	2602	703	338	419	324	254	0	434
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.97	0.97	0.97	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.3	35.4	35.6	24.6	4.4	5.5	38.3	36.5	46.4	54.4	0.0	52.8
Incr Delay (d2), s/veh	3.2	1.1	2.4	1.2	0.1	0.7	0.1	0.1	47.8	3.1	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	4.5	4.8	7.3	0.8	1.1	0.6	0.7	14.9	2.2	0.0	2.4
LnGrp Delay(d),s/veh	57.5	36.5	37.9	25.8	4.5	6.2	38.4	36.6	94.2	57.5	0.0	55.4
LnGrp LOS	E	D	D	C	A	A	D	D	F	E		E
Approach Vol, veh/h		545			1169			370			201	
Approach Delay, s/veh		38.8			15.7			86.7			56.8	
Approach LOS		D			B			F			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	31.0	40.5	36.4	28.8	14.3	11.5	65.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	8.3	25.7	33.0	30.4	4.0	30.0	4.0	59.4
Max Q Clear Time (g_c+I1), s	6.8	28.7	18.5	11.9	3.4	6.9	5.4	4.7
Green Ext Time (p_c), s	0.1	0.0	2.5	1.9	0.0	0.2	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	36.3
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	501	191	890	513	216	55	24	333	127	31	37
Future Volume (veh/h)	77	501	191	890	513	216	55	24	333	127	31	37
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	84	545	208	967	558	235	60	26	362	138	34	40
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	983	363	925	2560	691	356	444	343	211	67	78
Arrive On Green	0.12	0.54	0.54	0.49	0.84	0.81	0.22	0.24	0.24	0.07	0.09	0.08
Sat Flow, veh/h	1634	3639	1345	3170	5085	1420	1634	1863	1438	3170	764	899
Grp Volume(v), veh/h	84	506	247	967	558	235	60	26	362	138	0	74
Grp Sat Flow(s),veh/h/ln	1634	1695	1595	1585	1695	1420	1634	1863	1438	1585	0	1664
Q Serve(g_s), s	6.1	11.8	12.4	35.0	2.6	3.6	3.6	1.3	28.6	5.1	0.0	5.1
Cycle Q Clear(g_c), s	6.1	11.8	12.4	35.0	2.6	3.6	3.6	1.3	28.6	5.1	0.0	5.1
Prop In Lane	1.00		0.84	1.00		1.00	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	95	915	431	925	2560	691	356	444	343	211	0	145
V/C Ratio(X)	0.88	0.55	0.57	1.05	0.22	0.34	0.17	0.06	1.06	0.65	0.00	0.51
Avail Cap(c_a), veh/h	95	915	431	925	2560	691	356	444	343	211	0	434
HCM Platoon Ratio	2.00	2.00	2.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.6	22.9	23.0	30.8	5.0	3.1	38.1	35.3	45.7	54.6	0.0	52.7
Incr Delay (d2), s/veh	54.6	2.3	5.3	41.1	0.2	1.2	0.2	0.1	64.2	7.0	0.0	2.8
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	4.2	5.6	6.0	20.5	1.2	1.6	1.6	0.7	17.5	2.4	0.0	2.5
LnGrp Delay(d),s/veh	107.1	25.2	28.3	71.9	5.1	4.4	38.3	35.4	109.9	61.6	0.0	55.4
LnGrp LOS	F	C	C	F	A	A	D	D	F	E		E
Approach Vol, veh/h		837			1760			448			212	
Approach Delay, s/veh		34.3			41.7			96.0			59.5	
Approach LOS		C			D			F			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	12.0	32.6	39.0	36.4	30.1	14.5	11.0	64.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	6.7	27.3	33.0	30.4	4.0	30.0	5.0	58.4
Max Q Clear Time (g_c+I1), s	7.1	30.6	37.0	14.4	5.6	7.1	8.1	5.6
Green Ext Time (p_c), s	0.0	0.0	0.0	2.9	0.0	0.2	0.0	11.1

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												
Traffic Volume (veh/h)	77	582	191	920	600	216	55	24	357	127	31	37
Future Volume (veh/h)	77	582	191	920	600	216	55	24	357	127	31	37
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	84	633	208	1000	652	235	60	26	388	138	34	40
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	1023	329	925	2560	691	356	447	345	206	67	78
Arrive On Green	0.02	0.09	0.09	0.49	0.84	0.81	0.22	0.24	0.24	0.06	0.09	0.08
Sat Flow, veh/h	1634	3790	1219	3170	5085	1420	1634	1863	1438	3170	764	899
Grp Volume(v), veh/h	84	565	276	1000	652	235	60	26	388	138	0	74
Grp Sat Flow(s),veh/h/ln	1634	1695	1620	1585	1695	1420	1634	1863	1438	1585	0	1664
Q Serve(g_s), s	6.2	19.3	19.8	35.0	3.1	3.7	3.6	1.3	28.8	5.1	0.0	5.1
Cycle Q Clear(g_c), s	6.2	19.3	19.8	35.0	3.1	3.7	3.6	1.3	28.8	5.1	0.0	5.1
Prop In Lane	1.00		0.75	1.00		1.00	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	95	915	437	925	2560	691	356	447	345	206	0	145
V/C Ratio(X)	0.88	0.62	0.63	1.08	0.25	0.34	0.17	0.06	1.12	0.67	0.00	0.51
Avail Cap(c_a), veh/h	95	915	437	925	2560	691	356	447	345	206	0	434
HCM Platoon Ratio	0.33	0.33	0.33	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	0.87	0.87	0.87	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	58.4	48.7	48.9	30.8	5.0	3.2	38.1	35.1	45.6	54.8	0.0	52.7
Incr Delay (d2), s/veh	53.9	3.0	6.4	52.5	0.2	1.2	0.2	0.1	86.4	8.1	0.0	2.8
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	4.2	9.4	9.7	21.9	1.4	1.6	1.6	0.7	19.7	2.5	0.0	2.5
LnGrp Delay(d),s/veh	112.3	51.6	55.3	83.3	5.2	4.3	38.3	35.2	132.0	62.9	0.0	55.4
LnGrp LOS	F	D	E	F	A	A	D	D	F	E		E
Approach Vol, veh/h		925			1887			474			212	
Approach Delay, s/veh		58.2			46.5			114.8			60.3	
Approach LOS		E			D			F			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	11.8	32.8	39.0	36.4	30.1	14.5	11.0	64.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	6.5	27.5	33.0	30.4	4.0	30.0	5.0	58.4
Max Q Clear Time (g_c+I1), s	7.1	30.8	37.0	21.8	5.6	7.1	8.2	5.7
Green Ext Time (p_c), s	0.0	0.0	0.0	2.5	0.0	0.2	0.0	12.4

Intersection Summary	
HCM 2010 Ctrl Delay	59.7
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	582	191	920	600	216	55	24	357	127	31	37
Future Volume (veh/h)	77	582	191	920	600	216	55	24	357	127	31	37
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		0.98	1.00		0.97	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	84	633	208	1000	652	235	60	26	388	138	34	40
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	1011	325	1521	2560	691	77	103	770	206	137	87
Arrive On Green	0.08	0.09	0.09	0.80	0.84	0.81	0.05	0.06	0.06	0.07	0.07	0.06
Sat Flow, veh/h	1634	3790	1219	3170	5085	1420	1634	1863	1429	3170	1863	1397
Grp Volume(v), veh/h	84	565	276	1000	652	235	60	26	388	138	34	40
Grp Sat Flow(s),veh/h/ln	1634	1695	1620	1585	1695	1420	1634	1863	1429	1585	1863	1397
Q Serve(g_s), s	5.8	19.3	19.8	15.9	3.1	5.1	4.4	1.6	0.0	5.1	2.1	3.3
Cycle Q Clear(g_c), s	5.8	19.3	19.8	15.9	3.1	5.1	4.4	1.6	0.0	5.1	2.1	3.3
Prop In Lane	1.00		0.75	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	397	904	432	1521	2560	691	77	103	770	206	137	87
V/C Ratio(X)	0.21	0.62	0.64	0.66	0.25	0.34	0.78	0.25	0.50	0.67	0.25	0.46
Avail Cap(c_a), veh/h	397	904	432	1521	2560	691	77	447	1034	206	486	349
HCM Platoon Ratio	0.33	0.33	0.33	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	0.87	0.87	0.87	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	48.9	49.1	7.8	5.0	6.2	56.6	54.3	18.1	54.8	52.5	54.3
Incr Delay (d2), s/veh	0.2	3.1	6.7	0.9	0.2	1.2	40.0	1.3	0.5	8.1	0.9	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	9.5	9.7	6.9	1.4	2.1	2.8	0.9	8.3	2.5	1.1	1.4
LnGrp Delay(d),s/veh	44.7	52.0	55.9	8.7	5.2	7.4	96.6	55.6	18.6	62.9	53.4	58.0
LnGrp LOS	D	D	E	A	A	A	F	E	B	E	D	E
Approach Vol, veh/h		925			1887			474			212	
Approach Delay, s/veh		52.5			7.3			30.5			60.5	
Approach LOS		D			A			C			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	11.8	10.6	61.6	36.0	9.6	12.8	33.2	64.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	6.5	27.5	33.4	30.0	4.0	30.0	5.0	58.4
Max Q Clear Time (g_c+I1), s	7.1	3.6	17.9	21.8	6.4	5.3	7.8	7.1
Green Ext Time (p_c), s	0.0	1.7	4.7	2.4	0.0	0.2	0.0	4.3

Intersection Summary	
HCM 2010 Ctrl Delay	25.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	219	28	197	211	104	35	37	392	70	20	21
Future Volume (veh/h)	26	219	28	197	211	104	35	37	392	70	20	21
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	28	238	30	214	229	113	38	40	426	76	22	23
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	1801	220	340	2213	590	444	554	427	159	61	64
Arrive On Green	0.07	0.39	0.39	0.11	0.44	0.42	0.27	0.30	0.30	0.05	0.08	0.06
Sat Flow, veh/h	1634	4582	561	3170	5085	1418	1634	1863	1439	3170	816	853
Grp Volume(v), veh/h	28	174	94	214	229	113	38	40	426	76	0	45
Grp Sat Flow(s),veh/h/ln	1634	1695	1752	1585	1695	1418	1634	1863	1439	1585	0	1668
Q Serve(g_s), s	1.7	3.5	3.6	6.8	2.8	4.0	1.8	1.6	31.0	2.4	0.0	2.7
Cycle Q Clear(g_c), s	1.7	3.5	3.6	6.8	2.8	4.0	1.8	1.6	31.0	2.4	0.0	2.7
Prop In Lane	1.00		0.32	1.00		1.00	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	106	1332	689	340	2213	590	444	554	427	159	0	126
V/C Ratio(X)	0.26	0.13	0.14	0.63	0.10	0.19	0.09	0.07	1.00	0.48	0.00	0.36
Avail Cap(c_a), veh/h	106	1332	689	574	2213	590	444	554	427	184	0	497
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.7	20.4	20.4	44.9	17.5	11.0	28.5	26.5	36.8	48.5	0.0	46.5
Incr Delay (d2), s/veh	1.3	0.2	0.4	1.9	0.1	0.7	0.1	0.1	42.6	2.2	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.7	1.8	3.1	1.3	1.7	0.8	0.8	17.3	1.1	0.0	1.3
LnGrp Delay(d),s/veh	48.0	20.6	20.8	46.8	17.6	11.7	28.6	26.6	79.4	50.7	0.0	48.2
LnGrp LOS	D	C	C	D	B	B	C	C	E	D		D
Approach Vol, veh/h		296			556			504			121	
Approach Delay, s/veh		23.3			27.6			71.4			49.8	
Approach LOS		C			C			E			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	9.3	35.2	15.3	45.3	32.6	11.9	10.8	49.7
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.8	29.9	17.0	30.7	4.7	30.0	4.0	43.7
Max Q Clear Time (g_c+I1), s	4.4	33.0	8.8	5.6	3.8	4.7	3.7	6.0
Green Ext Time (p_c), s	0.0	0.0	0.5	1.1	0.2	0.1	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	43.5
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	245	31	216	231	114	35	37	396	71	20	21
Future Volume (veh/h)	29	245	31	216	231	114	35	37	396	71	20	21
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	32	266	34	235	251	124	38	40	430	77	22	23
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	1793	223	363	2247	600	66	541	418	160	249	260
Arrive On Green	0.06	0.39	0.39	0.11	0.44	0.42	0.04	0.29	0.29	0.05	0.30	0.29
Sat Flow, veh/h	1634	4573	568	3170	5085	1418	1634	1863	1439	3170	827	864
Grp Volume(v), veh/h	32	195	105	235	251	124	38	40	430	77	0	45
Grp Sat Flow(s),veh/h/ln	1634	1695	1751	1585	1695	1418	1634	1863	1439	1585	0	1691
Q Serve(g_s), s	2.0	3.9	4.1	7.4	3.0	4.3	2.4	1.6	30.5	2.5	0.0	2.0
Cycle Q Clear(g_c), s	2.0	3.9	4.1	7.4	3.0	4.3	2.4	1.6	30.5	2.5	0.0	2.0
Prop In Lane	1.00		0.32	1.00		1.00	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	106	1330	687	363	2247	600	66	541	418	160	0	508
V/C Ratio(X)	0.30	0.15	0.15	0.65	0.11	0.21	0.57	0.07	1.03	0.48	0.00	0.09
Avail Cap(c_a), veh/h	106	1330	687	604	2247	600	82	541	418	184	0	508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.8	20.6	20.6	44.5	17.2	10.7	49.5	27.0	37.2	48.5	0.0	26.6
Incr Delay (d2), s/veh	1.6	0.2	0.5	1.9	0.1	0.8	7.7	0.1	51.7	2.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.9	2.0	3.4	1.4	1.8	1.2	0.9	18.1	1.1	0.0	1.0
LnGrp Delay(d),s/veh	48.4	20.8	21.1	46.4	17.3	11.5	57.1	27.1	88.9	50.7	0.0	26.7
LnGrp LOS	D	C	C	D	B	B	E	C	F	D		C
Approach Vol, veh/h		332			610			508			122	
Approach Delay, s/veh		23.6			27.3			81.7			41.9	
Approach LOS		C			C			F			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	9.3	34.5	16.0	45.2	8.2	35.6	10.8	50.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.8	29.2	18.0	30.4	4.0	30.0	4.0	44.4
Max Q Clear Time (g_c+I1), s	4.5	32.5	9.4	6.1	4.4	4.0	4.0	6.3
Green Ext Time (p_c), s	0.0	0.0	0.6	1.2	0.0	2.2	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	45.2
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	254	31	218	237	114	35	37	399	71	20	21
Future Volume (veh/h)	29	254	31	218	237	114	35	37	399	71	20	21
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	32	276	34	237	258	124	38	40	434	77	22	23
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	1799	216	365	2247	600	434	541	418	160	61	64
Arrive On Green	0.06	0.39	0.39	0.12	0.44	0.42	0.27	0.29	0.29	0.05	0.08	0.06
Sat Flow, veh/h	1634	4594	551	3170	5085	1418	1634	1863	1439	3170	816	853
Grp Volume(v), veh/h	32	202	108	237	258	124	38	40	434	77	0	45
Grp Sat Flow(s),veh/h/ln	1634	1695	1754	1585	1695	1418	1634	1863	1439	1585	0	1668
Q Serve(g_s), s	2.0	4.0	4.2	7.5	3.1	4.3	1.8	1.6	30.5	2.5	0.0	2.7
Cycle Q Clear(g_c), s	2.0	4.0	4.2	7.5	3.1	4.3	1.8	1.6	30.5	2.5	0.0	2.7
Prop In Lane	1.00		0.31	1.00		1.00	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	106	1327	687	365	2247	600	434	541	418	160	0	126
V/C Ratio(X)	0.30	0.15	0.16	0.65	0.11	0.21	0.09	0.07	1.04	0.48	0.00	0.36
Avail Cap(c_a), veh/h	106	1327	687	604	2247	600	434	541	418	184	0	497
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.8	20.7	20.7	44.4	17.2	10.7	29.0	27.0	37.2	48.5	0.0	46.5
Incr Delay (d2), s/veh	1.6	0.2	0.5	1.9	0.1	0.8	0.1	0.1	54.4	2.2	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.9	2.1	3.4	1.5	1.8	0.8	0.9	18.4	1.1	0.0	1.3
LnGrp Delay(d),s/veh	48.4	20.9	21.2	46.4	17.3	11.5	29.1	27.1	91.6	50.7	0.0	48.2
LnGrp LOS	D	C	C	D	B	B	C	C	F	D		D
Approach Vol, veh/h		342			619			512			122	
Approach Delay, s/veh		23.6			27.3			81.9			49.8	
Approach LOS		C			C			F			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	9.3	34.5	16.1	45.1	31.9	11.9	10.8	50.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.8	29.2	18.0	30.4	4.0	30.0	4.0	44.4
Max Q Clear Time (g_c+I1), s	4.5	32.5	9.5	6.2	3.8	4.7	4.0	6.3
Green Ext Time (p_c), s	0.0	0.0	0.6	1.3	0.0	0.1	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	45.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	405	52	323	346	171	37	39	414	74	21	22
Future Volume (veh/h)	48	405	52	323	346	171	37	39	414	74	21	22
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	52	440	57	351	376	186	40	42	450	80	23	24
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	89	1343	170	720	2376	637	421	528	408	156	61	64
Arrive On Green	0.05	0.29	0.29	0.23	0.47	0.45	0.26	0.28	0.28	0.05	0.07	0.06
Sat Flow, veh/h	1634	4559	579	3170	5085	1419	1634	1863	1439	3170	816	852
Grp Volume(v), veh/h	52	325	172	351	376	186	40	42	450	80	0	47
Grp Sat Flow(s),veh/h/ln	1634	1695	1748	1585	1695	1419	1634	1863	1439	1585	0	1668
Q Serve(g_s), s	3.4	8.2	8.5	10.6	4.7	9.1	2.0	1.8	31.2	2.7	0.0	3.0
Cycle Q Clear(g_c), s	3.4	8.2	8.5	10.6	4.7	9.1	2.0	1.8	31.2	2.7	0.0	3.0
Prop In Lane	1.00		0.33	1.00		1.00	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	89	999	515	720	2376	637	421	528	408	156	0	125
V/C Ratio(X)	0.58	0.33	0.33	0.49	0.16	0.29	0.09	0.08	1.10	0.51	0.00	0.38
Avail Cap(c_a), veh/h	89	999	515	720	2376	637	421	528	408	156	0	475
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)	0.99	0.99	0.99	0.98	0.98	0.98	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.8	30.3	30.4	36.9	16.9	19.2	31.1	28.9	39.4	51.0	0.0	48.8
Incr Delay (d2), s/veh	9.3	0.9	1.7	0.5	0.1	1.1	0.1	0.1	75.3	2.9	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.0	4.3	4.7	2.2	3.7	0.9	0.9	20.9	1.3	0.0	1.4
LnGrp Delay(d),s/veh	60.1	31.1	32.1	37.4	17.0	20.4	31.2	28.9	114.7	53.9	0.0	50.6
LnGrp LOS	E	C	C	D	B	C	C	C	F	D		D
Approach Vol, veh/h		549			913			532			127	
Approach Delay, s/veh		34.2			25.5			101.7			52.7	
Approach LOS		C			C			F			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	9.4	35.2	29.0	36.4	32.4	12.2	10.0	55.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.1	29.9	23.0	30.4	4.0	30.0	4.0	49.4
Max Q Clear Time (g_c+I1), s	4.7	33.2	12.6	10.5	4.0	5.0	5.4	11.1
Green Ext Time (p_c), s	0.0	0.0	1.2	1.9	0.0	0.1	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	48.5
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	428	52	331	369	171	37	39	421	74	21	22
Future Volume (veh/h)	48	428	52	331	369	171	37	39	421	74	21	22
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	52	465	57	360	401	186	40	42	458	80	23	24
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	1271	153	867	2538	684	392	498	385	144	60	62
Arrive On Green	0.10	0.55	0.55	0.46	0.83	0.81	0.24	0.27	0.27	0.05	0.07	0.06
Sat Flow, veh/h	1634	4590	553	3170	5085	1420	1634	1863	1438	3170	816	852
Grp Volume(v), veh/h	52	341	181	360	401	186	40	42	458	80	0	47
Grp Sat Flow(s),veh/h/ln	1634	1695	1753	1585	1695	1420	1634	1863	1438	1585	0	1668
Q Serve(g_s), s	3.6	6.6	6.8	8.9	1.8	3.8	2.2	2.0	31.3	2.9	0.0	3.2
Cycle Q Clear(g_c), s	3.6	6.6	6.8	8.9	1.8	3.8	2.2	2.0	31.3	2.9	0.0	3.2
Prop In Lane	1.00		0.32	1.00		1.00	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	84	939	485	867	2538	684	392	498	385	144	0	122
V/C Ratio(X)	0.62	0.36	0.37	0.42	0.16	0.27	0.10	0.08	1.19	0.56	0.00	0.39
Avail Cap(c_a), veh/h	84	939	485	867	2538	684	392	498	385	144	0	446
HCM Platoon Ratio	2.00	2.00	2.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.4	20.3	20.4	25.5	5.0	6.3	34.6	32.1	42.8	54.7	0.0	52.1
Incr Delay (d2), s/veh	13.1	1.1	2.2	0.3	0.1	1.0	0.1	0.1	108.7	4.7	0.0	2.0
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	1.9	3.1	3.6	3.9	0.8	1.6	1.0	1.0	24.0	1.4	0.0	1.5
LnGrp Delay(d),s/veh	64.5	21.4	22.6	25.8	5.2	7.2	34.8	32.2	151.5	59.4	0.0	54.1
LnGrp LOS	E	C	C	C	A	A	C	C	F	E		D
Approach Vol, veh/h		574			947			540			127	
Approach Delay, s/veh		25.7			13.4			133.6			57.4	
Approach LOS		C			B			F			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	9.3	35.3	36.0	36.4	32.1	12.5	10.0	62.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	30.0	30.0	30.4	4.0	30.0	4.0	56.4
Max Q Clear Time (g_c+I1), s	4.9	33.3	10.9	8.8	4.2	5.2	5.6	5.8
Green Ext Time (p_c), s	0.0	0.0	1.6	2.0	0.0	0.1	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	48.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	712	111	549	575	267	47	28	325	68	19	20
Future Volume (veh/h)	84	712	111	549	575	267	47	28	325	68	19	20
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	91	774	121	597	625	290	51	30	353	74	21	22
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	1367	212	690	2233	596	404	507	391	157	60	63
Arrive On Green	0.09	0.31	0.31	0.22	0.44	0.42	0.25	0.27	0.27	0.05	0.07	0.06
Sat Flow, veh/h	1634	4430	687	3170	5085	1418	1634	1863	1438	3170	814	853
Grp Volume(v), veh/h	91	591	304	597	625	290	51	30	353	74	0	43
Grp Sat Flow(s),veh/h/ln	1634	1695	1727	1585	1695	1418	1634	1863	1438	1585	0	1667
Q Serve(g_s), s	5.7	15.3	15.5	19.1	8.3	11.8	2.5	1.3	24.9	2.4	0.0	2.6
Cycle Q Clear(g_c), s	5.7	15.3	15.5	19.1	8.3	11.8	2.5	1.3	24.9	2.4	0.0	2.6
Prop In Lane	1.00		0.40	1.00		1.00	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	142	1046	533	690	2233	596	404	507	391	157	0	124
V/C Ratio(X)	0.64	0.56	0.57	0.87	0.28	0.49	0.13	0.06	0.90	0.47	0.00	0.35
Avail Cap(c_a), veh/h	187	1046	533	690	2233	596	404	543	419	181	0	497
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)	0.97	0.97	0.97	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.3	30.4	30.5	39.6	18.8	12.5	30.7	28.3	36.9	48.6	0.0	46.5
Incr Delay (d2), s/veh	4.5	2.1	4.3	10.7	0.3	2.7	0.1	0.0	21.5	2.2	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	7.4	8.0	9.4	3.9	5.0	1.2	0.6	12.2	1.1	0.0	1.2
LnGrp Delay(d),s/veh	50.9	32.5	34.7	50.3	19.1	15.2	30.9	28.3	58.3	50.8	0.0	48.2
LnGrp LOS	D	C	C	D	B	B	C	C	E	D		D
Approach Vol, veh/h		986			1512			434			117	
Approach Delay, s/veh		34.9			30.7			53.0			49.8	
Approach LOS		C			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	9.2	32.6	26.9	36.4	30.0	11.8	13.2	50.1
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.7	29.3	18.0	30.4	4.0	30.0	10.0	38.4
Max Q Clear Time (g_c+I1), s	4.4	26.9	21.1	17.5	4.5	4.6	7.7	13.8
Green Ext Time (p_c), s	0.0	0.4	0.0	3.2	0.0	0.1	0.0	7.6

Intersection Summary	
HCM 2010 Ctrl Delay	36.0
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	735	111	557	598	267	47	28	332	68	19	20
Future Volume (veh/h)	84	735	111	557	598	267	47	28	332	68	19	20
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		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	91	799	121	605	650	290	51	30	361	74	21	22
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	1202	181	945	2560	691	374	469	362	149	57	60
Arrive On Green	0.06	0.27	0.27	0.50	0.84	0.81	0.23	0.25	0.25	0.05	0.07	0.06
Sat Flow, veh/h	1634	4451	669	3170	5085	1420	1634	1863	1438	3170	814	852
Grp Volume(v), veh/h	91	607	313	605	650	290	51	30	361	74	0	43
Grp Sat Flow(s),veh/h/ln	1634	1695	1729	1585	1695	1420	1634	1863	1438	1585	0	1666
Q Serve(g_s), s	6.6	19.1	19.3	16.9	3.1	7.0	3.0	1.5	30.1	2.7	0.0	3.0
Cycle Q Clear(g_c), s	6.6	19.1	19.3	16.9	3.1	7.0	3.0	1.5	30.1	2.7	0.0	3.0
Prop In Lane	1.00		0.39	1.00		1.00	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	106	915	467	945	2560	691	374	469	362	149	0	117
V/C Ratio(X)	0.86	0.66	0.67	0.64	0.25	0.42	0.14	0.06	1.00	0.50	0.00	0.37
Avail Cap(c_a), veh/h	106	915	467	945	2560	691	374	469	362	169	0	435
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.6	39.0	39.0	25.4	5.0	6.4	36.8	34.2	44.9	55.8	0.0	53.6
Incr Delay (d2), s/veh	45.8	3.6	7.2	1.4	0.2	1.8	0.2	0.1	46.6	2.5	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	9.4	10.1	7.5	1.4	3.0	1.4	0.8	16.6	1.3	0.0	1.4
LnGrp Delay(d),s/veh	101.3	42.6	46.2	26.8	5.2	8.2	37.0	34.2	91.4	58.3	0.0	55.5
LnGrp LOS	F	D	D	C	A	A	D	C	F	E		E
Approach Vol, veh/h		1011			1545			442			117	
Approach Delay, s/veh		49.0			14.2			81.3			57.3	
Approach LOS		D			B			F			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	9.6	34.2	39.8	36.4	31.4	12.4	11.8	64.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	5.1	28.9	33.0	30.4	4.0	30.0	5.0	58.4
Max Q Clear Time (g_c+I1), s	4.7	32.1	18.9	21.3	5.0	5.0	8.6	9.0
Green Ext Time (p_c), s	0.0	0.0	2.6	2.8	0.0	0.1	0.0	4.6

Intersection Summary	
HCM 2010 Ctrl Delay	36.6
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	735	111	557	598	267	47	28	332	68	19	20
Future Volume (veh/h)	84	735	111	557	598	267	47	28	332	68	19	20
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		0.98	1.00		0.97	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1716	1716	1863	1750
Adj Flow Rate, veh/h	91	799	121	605	650	290	51	30	361	74	21	22
Adj No. of Lanes	1	3	0	2	3	1	1	1	1	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	407	1202	181	1530	2560	691	72	105	776	183	57	60
Arrive On Green	0.25	0.27	0.27	0.81	0.84	0.81	0.04	0.06	0.06	0.06	0.07	0.06
Sat Flow, veh/h	1634	4451	669	3170	5085	1420	1634	1863	1429	3170	814	852
Grp Volume(v), veh/h	91	607	313	605	650	290	51	30	361	74	0	43
Grp Sat Flow(s),veh/h/ln	1634	1695	1729	1585	1695	1420	1634	1863	1429	1585	0	1666
Q Serve(g_s), s	5.3	19.1	19.3	6.5	3.1	7.0	3.7	1.9	0.0	2.7	0.0	3.0
Cycle Q Clear(g_c), s	5.3	19.1	19.3	6.5	3.1	7.0	3.7	1.9	0.0	2.7	0.0	3.0
Prop In Lane	1.00		0.39	1.00		1.00	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	407	915	467	1530	2560	691	72	105	776	183	0	117
V/C Ratio(X)	0.22	0.66	0.67	0.40	0.25	0.42	0.71	0.29	0.47	0.40	0.00	0.37
Avail Cap(c_a), veh/h	407	915	467	1530	2560	691	72	469	1055	183	0	435
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.8	39.0	39.0	6.7	5.0	6.4	56.6	54.3	17.4	54.5	0.0	53.6
Incr Delay (d2), s/veh	0.3	3.6	7.2	0.2	0.2	1.8	27.0	1.5	0.4	1.4	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	9.4	10.1	2.8	1.4	3.0	2.2	1.0	7.4	1.2	0.0	1.4
LnGrp Delay(d),s/veh	36.1	42.6	46.2	6.8	5.2	8.2	83.5	55.8	17.8	56.0	0.0	55.5
LnGrp LOS	D	D	D	A	A	A	F	E	B	E		E
Approach Vol, veh/h		1011			1545			442			117	
Approach Delay, s/veh		43.1			6.4			28.0			55.8	
Approach LOS		D			A			C			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	10.9	10.8	61.9	36.4	9.3	12.4	33.9	64.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	5.1	28.9	33.0	30.4	4.0	30.0	5.0	58.4
Max Q Clear Time (g_c+I1), s	4.7	3.9	8.5	21.3	5.7	5.0	7.3	9.0
Green Ext Time (p_c), s	0.0	1.6	3.1	2.8	0.0	0.1	0.0	4.6

Intersection Summary	
HCM 2010 Ctrl Delay	23.2
HCM 2010 LOS	C

Intersection 6
SR 99 SB Off Ramp & E Cartmill Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	467	74	79	469	0	0	0	0	115	1	114
Future Volume (veh/h)	0	467	74	79	469	0	0	0	0	115	1	114
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	1900	1716
Adj Flow Rate, veh/h	0	508	80	86	510	0				125	1	124
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	3770	1081	190	4272	0				261	0	211
Arrive On Green	0.00	0.24	0.24	0.06	0.84	0.00				0.08	0.08	0.08
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	508	80	86	510	0				125	0	124
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	8.0	4.3	2.7	1.8	0.0				3.9	0.0	4.8
Cycle Q Clear(g_c), s	0.0	8.0	4.3	2.7	1.8	0.0				3.9	0.0	4.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3770	1081	190	4272	0				261	0	211
V/C Ratio(X)	0.00	0.13	0.07	0.45	0.12	0.00				0.48	0.00	0.59
Avail Cap(c_a), veh/h	0	3770	1081	554	4272	0				893	0	723
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.91	0.91	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.1	11.7	46.8	1.5	0.0				45.2	0.0	45.6
Incr Delay (d2), s/veh	0.0	0.1	0.1	1.7	0.1	0.0				1.4	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.8	1.8	1.2	0.9	0.0				1.8	0.0	1.8
LnGrp Delay(d),s/veh	0.0	13.2	11.8	48.5	1.5	0.0				46.5	0.0	48.2
LnGrp LOS		B	B	D	A					D		D
Approach Vol, veh/h		588			596						249	
Approach Delay, s/veh		13.0			8.3						47.3	
Approach LOS		B			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			10.2	80.4		12.5		90.5
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			16.3	42.3		28.4		64.3
Max Q Clear Time (g_c+I1), s			4.7	10.0		6.8		3.8
Green Ext Time (p_c), s			0.2	5.3		1.1		5.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	511	81	86	513	0	0	0	0	125	1	124
Future Volume (veh/h)	0	511	81	86	513	0	0	0	0	125	1	124
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	1900	1716
Adj Flow Rate, veh/h	0	555	88	93	558	0				136	1	135
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	3729	1069	199	4246	0				277	0	224
Arrive On Green	0.00	0.73	0.73	0.06	0.83	0.00				0.09	0.08	0.09
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	555	88	93	558	0				136	0	135
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	3.4	1.8	2.9	2.1	0.0				4.2	0.0	5.2
Cycle Q Clear(g_c), s	0.0	3.4	1.8	2.9	2.1	0.0				4.2	0.0	5.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3729	1069	199	4246	0				277	0	224
V/C Ratio(X)	0.00	0.15	0.08	0.47	0.13	0.00				0.49	0.00	0.60
Avail Cap(c_a), veh/h	0	3729	1069	585	4246	0				893	0	723
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.91	0.91	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	4.1	3.9	46.6	1.6	0.0				44.8	0.0	45.3
Incr Delay (d2), s/veh	0.0	0.1	0.1	1.7	0.1	0.0				1.3	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.6	0.7	1.3	1.0	0.0				1.9	0.0	1.9
LnGrp Delay(d),s/veh	0.0	4.2	4.0	48.3	1.6	0.0				46.2	0.0	47.9
LnGrp LOS		A	A	D	A					D		D
Approach Vol, veh/h		643			651						271	
Approach Delay, s/veh		4.2			8.3						47.0	
Approach LOS		A			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			10.5	79.5		13.0		90.0
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			17.3	41.3		28.4		64.3
Max Q Clear Time (g_c+I1), s			4.9	5.4		7.2		4.1
Green Ext Time (p_c), s			0.2	6.0		1.2		6.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	543	81	197	551	0	0	0	0	276	1	124
Future Volume (veh/h)	0	543	81	197	551	0	0	0	0	276	1	124
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	1900	1716
Adj Flow Rate, veh/h	0	590	88	214	599	0				300	1	135
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	3270	938	336	4007	0				426	0	345
Arrive On Green	0.00	0.64	0.64	0.14	1.00	0.00				0.13	0.13	0.13
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	590	88	214	599	0				300	0	135
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	4.8	2.4	6.6	0.0	0.0				9.3	0.0	4.9
Cycle Q Clear(g_c), s	0.0	4.8	2.4	6.6	0.0	0.0				9.3	0.0	4.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3270	938	336	4007	0				426	0	345
V/C Ratio(X)	0.00	0.18	0.09	0.64	0.15	0.00				0.70	0.00	0.39
Avail Cap(c_a), veh/h	0	3270	938	769	4007	0				954	0	772
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.91	0.91	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.4	7.0	42.4	0.0	0.0				42.6	0.0	40.7
Incr Delay (d2), s/veh	0.0	0.1	0.2	2.0	0.1	0.0				2.1	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	2.3	1.0	3.0	0.0	0.0				4.2	0.0	1.8
LnGrp Delay(d),s/veh	0.0	7.5	7.2	44.3	0.1	0.0				44.8	0.0	41.5
LnGrp LOS		A	A	D	A					D		D
Approach Vol, veh/h		678			813						435	
Approach Delay, s/veh		7.5			11.7						43.7	
Approach LOS		A			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			14.9	70.2		17.8		85.2
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			23.3	33.3		30.4		62.3
Max Q Clear Time (g_c+I1), s			8.6	6.8		11.3		2.0
Green Ext Time (p_c), s			0.7	6.2		1.9		6.7

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	766	121	130	769	0	0	0	0	184	2	182
Future Volume (veh/h)	0	766	121	130	769	0	0	0	0	184	2	182
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	1900	1716
Adj Flow Rate, veh/h	0	833	132	141	836	0				200	2	198
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	3633	1042	238	4184	0				351	0	284
Arrive On Green	0.00	0.71	0.71	0.15	1.00	0.00				0.11	0.11	0.11
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	833	132	141	836	0				200	0	198
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	6.7	3.4	5.0	0.0	0.0				7.2	0.0	8.9
Cycle Q Clear(g_c), s	0.0	6.7	3.4	5.0	0.0	0.0				7.2	0.0	8.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3633	1042	238	4184	0				351	0	284
V/C Ratio(X)	0.00	0.23	0.13	0.59	0.20	0.00				0.57	0.00	0.70
Avail Cap(c_a), veh/h	0	3633	1042	581	4184	0				792	0	642
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.91	0.91	0.98	0.98	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.9	5.4	49.3	0.0	0.0				50.7	0.0	51.4
Incr Delay (d2), s/veh	0.0	0.1	0.2	2.3	0.1	0.0				1.5	0.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.1	1.4	2.2	0.0	0.0				3.2	0.0	3.3
LnGrp Delay(d),s/veh	0.0	6.0	5.6	51.6	0.1	0.0				52.1	0.0	54.5
LnGrp LOS		A	A	D	A					D		D
Approach Vol, veh/h		965			977						398	
Approach Delay, s/veh		5.9			7.5						53.3	
Approach LOS		A			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			13.0	89.7		17.3		102.7
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			20.3	54.3		29.4		80.3
Max Q Clear Time (g_c+I1), s			7.0	8.7		10.9		2.0
Green Ext Time (p_c), s			0.4	10.9		1.7		11.3

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												
Traffic Volume (veh/h)	0	871	121	474	886	0	0	0	0	684	2	182
Future Volume (veh/h)	0	871	121	474	886	0	0	0	0	684	2	182
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	1900	1716
Adj Flow Rate, veh/h	0	947	132	515	963	0				743	2	198
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2195	629	610	3343	0				875	0	708
Arrive On Green	0.00	0.86	0.86	0.38	1.00	0.00				0.28	0.27	0.28
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	947	132	515	963	0				743	0	198
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	4.9	1.8	17.8	0.0	0.0				26.6	0.0	7.3
Cycle Q Clear(g_c), s	0.0	4.9	1.8	17.8	0.0	0.0				26.6	0.0	7.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2195	629	610	3343	0				875	0	708
V/C Ratio(X)	0.00	0.43	0.21	0.84	0.29	0.00				0.85	0.00	0.28
Avail Cap(c_a), veh/h	0	2195	629	819	3343	0				1109	0	898
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.90	0.90	0.95	0.95	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.0	4.8	35.3	0.0	0.0				41.1	0.0	34.1
Incr Delay (d2), s/veh	0.0	0.6	0.7	5.9	0.2	0.0				5.2	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	2.2	0.8	8.2	0.1	0.0				12.3	0.0	2.6
LnGrp Delay(d),s/veh	0.0	5.6	5.5	41.1	0.2	0.0				46.3	0.0	34.3
LnGrp LOS		A	A	D	A					D		C
Approach Vol, veh/h		1079			1478						941	
Approach Delay, s/veh		5.5			14.5						43.7	
Approach LOS		A			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			27.1	55.8		37.1		82.9
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			29.3	33.3		41.4		68.3
Max Q Clear Time (g_c+I1), s			19.8	6.9		28.6		2.0
Green Ext Time (p_c), s			1.6	11.3		3.9		14.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1227	216	253	1289	0	0	0	0	379	2	311
Future Volume (veh/h)	0	1227	216	253	1289	0	0	0	0	379	2	311
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	1900	1716
Adj Flow Rate, veh/h	0	1334	235	275	1401	0				412	2	338
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2288	656	878	3866	0				549	0	444
Arrive On Green	0.00	0.90	0.90	0.55	1.00	0.00				0.17	0.17	0.17
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	1334	235	275	1401	0				412	0	338
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	6.6	2.9	5.6	0.0	0.0				14.8	0.0	15.0
Cycle Q Clear(g_c), s	0.0	6.6	2.9	5.6	0.0	0.0				14.8	0.0	15.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2288	656	878	3866	0				549	0	444
V/C Ratio(X)	0.00	0.58	0.36	0.31	0.36	0.00				0.75	0.00	0.76
Avail Cap(c_a), veh/h	0	2288	656	878	3866	0				819	0	663
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.85	0.85	0.96	0.96	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	3.6	3.4	20.6	0.0	0.0				47.1	0.0	47.2
Incr Delay (d2), s/veh	0.0	0.9	1.3	0.2	0.3	0.0				2.1	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	1.3	2.5	0.1	0.0				6.6	0.0	5.5
LnGrp Delay(d),s/veh	0.0	4.6	4.7	20.8	0.3	0.0				49.3	0.0	50.1
LnGrp LOS		A	A	C	A					D		D
Approach Vol, veh/h		1569			1676						750	
Approach Delay, s/veh		4.6			3.6						49.7	
Approach LOS		A			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			37.2	58.0		24.8		95.2
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			21.3	52.3		30.4		79.3
Max Q Clear Time (g_c+I1), s			7.6	8.6		17.0		2.0
Green Ext Time (p_c), s			6.8	9.3		3.1		10.7

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1332	216	597	1406	0	0	0	0	879	2	311
Future Volume (veh/h)	0	1332	216	597	1406	0	0	0	0	879	2	311
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	1900	1716
Adj Flow Rate, veh/h	0	1448	235	649	1528	0				955	2	338
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1748	501	719	3071	0				1044	0	846
Arrive On Green	0.00	0.69	0.69	0.45	1.00	0.00				0.33	0.32	0.33
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	1448	235	649	1528	0				955	0	338
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	24.8	8.9	22.7	0.0	0.0				34.7	0.0	12.2
Cycle Q Clear(g_c), s	0.0	24.8	8.9	22.7	0.0	0.0				34.7	0.0	12.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1748	501	719	3071	0				1044	0	846
V/C Ratio(X)	0.00	0.83	0.47	0.90	0.50	0.00				0.91	0.00	0.40
Avail Cap(c_a), veh/h	0	1748	501	763	3071	0				1083	0	877
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.82	0.82	0.84	0.84	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.2	13.7	31.6	0.0	0.0				38.6	0.0	31.1
Incr Delay (d2), s/veh	0.0	3.9	2.6	11.8	0.5	0.0				11.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.9	3.9	10.9	0.1	0.0				16.8	0.0	4.4
LnGrp Delay(d),s/veh	0.0	20.1	16.3	43.4	0.5	0.0				50.2	0.0	31.4
LnGrp LOS		C	B	D	A					D		C
Approach Vol, veh/h		1683			2177						1293	
Approach Delay, s/veh		19.5			13.3						45.2	
Approach LOS		B			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			31.2	45.2		43.5		76.5
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			27.2	36.4		40.4		69.3
Max Q Clear Time (g_c+I1), s			24.7	26.8		36.7		2.0
Green Ext Time (p_c), s			0.8	8.3		2.2		33.8

Intersection Summary	
HCM 2010 Ctrl Delay	23.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	593	82	83	417	0	0	0	0	55	0	92
Future Volume (veh/h)	0	593	82	83	417	0	0	0	0	55	0	92
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	0	1716
Adj Flow Rate, veh/h	0	645	89	90	453	0				60	0	100
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	3717	1066	202	4267	0				228	0	185
Arrive On Green	0.00	0.73	0.73	0.13	1.00	0.00				0.07	0.00	0.07
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	645	89	90	453	0				60	0	100
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	3.5	1.6	2.4	0.0	0.0				1.6	0.0	3.4
Cycle Q Clear(g_c), s	0.0	3.5	1.6	2.4	0.0	0.0				1.6	0.0	3.4
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3717	1066	202	4267	0				228	0	185
V/C Ratio(X)	0.00	0.17	0.08	0.44	0.11	0.00				0.26	0.00	0.54
Avail Cap(c_a), veh/h	0	3717	1066	528	4267	0				845	0	684
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.86	0.86	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	3.7	3.5	37.8	0.0	0.0				39.5	0.0	40.3
Incr Delay (d2), s/veh	0.0	0.1	0.1	1.5	0.0	0.0				0.6	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.6	0.7	1.1	0.0	0.0				0.7	0.0	1.3
LnGrp Delay(d),s/veh	0.0	3.8	3.6	39.3	0.0	0.0				40.1	0.0	42.8
LnGrp LOS		A	A	D	A					D		D
Approach Vol, veh/h		734			543						160	
Approach Delay, s/veh		3.8			6.6						41.8	
Approach LOS		A			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			9.7	69.8		10.5		79.5
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			13.3	37.3		23.4		56.3
Max Q Clear Time (g_c+I1), s			4.4	5.5		5.4		2.0
Green Ext Time (p_c), s			0.2	5.8		0.6		6.0

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	649	90	91	456	0	0	0	0	60	0	100
Future Volume (veh/h)	0	649	90	91	456	0	0	0	0	60	0	100
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	0	1716
Adj Flow Rate, veh/h	0	705	98	99	496	0				65	0	109
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	2204	632	1132	4245	0				242	0	196
Arrive On Green	0.00	0.43	0.43	0.71	1.00	0.00				0.08	0.00	0.08
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	705	98	99	496	0				65	0	109
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	8.2	3.7	0.9	0.0	0.0				1.7	0.0	3.7
Cycle Q Clear(g_c), s	0.0	8.2	3.7	0.9	0.0	0.0				1.7	0.0	3.7
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2204	632	1132	4245	0				242	0	196
V/C Ratio(X)	0.00	0.32	0.16	0.09	0.12	0.00				0.27	0.00	0.56
Avail Cap(c_a), veh/h	0	2204	632	1132	4245	0				845	0	684
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.86	0.86	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.8	15.5	8.4	0.0	0.0				39.2	0.0	40.1
Incr Delay (d2), s/veh	0.0	0.3	0.5	0.0	0.1	0.0				0.6	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.9	1.5	0.4	0.0	0.0				0.8	0.0	1.4
LnGrp Delay(d),s/veh	0.0	17.1	15.9	8.4	0.1	0.0				39.8	0.0	42.6
LnGrp LOS		B	B	A	A					D		D
Approach Vol, veh/h		803			595						174	
Approach Delay, s/veh		17.0			1.4						41.5	
Approach LOS		B			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			36.1	43.0		10.9		79.1
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			13.3	37.3		23.4		56.3
Max Q Clear Time (g_c+I1), s			2.9	10.2		5.7		2.0
Green Ext Time (p_c), s			1.9	3.7		0.7		2.7

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	661	90	115	464	0	0	0	0	117	0	100
Future Volume (veh/h)	0	661	90	115	464	0	0	0	0	117	0	100
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	0	1716
Adj Flow Rate, veh/h	0	718	98	125	504	0				127	0	109
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	3598	1032	251	4227	0				253	0	205
Arrive On Green	0.00	0.71	0.71	0.11	1.00	0.00				0.08	0.00	0.08
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	718	98	125	504	0				127	0	109
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	4.3	1.9	3.4	0.0	0.0				3.5	0.0	3.7
Cycle Q Clear(g_c), s	0.0	4.3	1.9	3.4	0.0	0.0				3.5	0.0	3.7
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3598	1032	251	4227	0				253	0	205
V/C Ratio(X)	0.00	0.20	0.09	0.50	0.12	0.00				0.50	0.00	0.53
Avail Cap(c_a), veh/h	0	3598	1032	704	4227	0				845	0	684
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.87	0.87	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	4.5	4.1	38.6	0.0	0.0				39.7	0.0	39.8
Incr Delay (d2), s/veh	0.0	0.1	0.2	1.5	0.1	0.0				1.5	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.0	0.8	1.5	0.0	0.0				1.6	0.0	1.4
LnGrp Delay(d),s/veh	0.0	4.6	4.3	40.1	0.1	0.0				41.2	0.0	41.9
LnGrp LOS		A	A	D	A					D		D
Approach Vol, veh/h		816			629						236	
Approach Delay, s/veh		4.6			8.0						41.5	
Approach LOS		A			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			11.1	67.7		11.2		78.8
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			18.3	32.3		23.4		56.3
Max Q Clear Time (g_c+I1), s			5.4	6.3		5.7		2.0
Green Ext Time (p_c), s			0.3	6.4		0.9		7.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	973	134	136	684	0	0	0	0	88	0	147
Future Volume (veh/h)	0	973	134	136	684	0	0	0	0	88	0	147
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	0	1716
Adj Flow Rate, veh/h	0	1058	146	148	743	0				96	0	160
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	3579	1026	264	4202	0				302	0	245
Arrive On Green	0.00	0.70	0.70	0.08	0.83	0.00				0.10	0.00	0.10
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	1058	146	148	743	0				96	0	160
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	7.9	3.4	4.6	3.0	0.0				2.9	0.0	6.1
Cycle Q Clear(g_c), s	0.0	7.9	3.4	4.6	3.0	0.0				2.9	0.0	6.1
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3579	1026	264	4202	0				302	0	245
V/C Ratio(X)	0.00	0.30	0.14	0.56	0.18	0.00				0.32	0.00	0.65
Avail Cap(c_a), veh/h	0	3579	1026	528	4202	0				746	0	604
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.88	0.88	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.6	5.0	45.0	1.8	0.0				43.0	0.0	44.5
Incr Delay (d2), s/veh	0.0	0.2	0.3	1.8	0.1	0.0				0.6	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.7	1.4	2.1	1.4	0.0				1.3	0.0	2.3
LnGrp Delay(d),s/veh	0.0	5.8	5.2	46.8	1.9	0.0				43.6	0.0	47.5
LnGrp LOS		A	A	D	A					D		D
Approach Vol, veh/h		1204			891						256	
Approach Delay, s/veh		5.8			9.4						46.0	
Approach LOS		A			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			12.5	75.8		13.7		88.3
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			15.3	47.3		23.4		68.3
Max Q Clear Time (g_c+I1), s			6.6	9.9		8.1		5.0
Green Ext Time (p_c), s			0.3	11.9		1.0		12.8

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1003	134	228	715	0	0	0	0	228	0	147
Future Volume (veh/h)	0	1003	134	228	715	0	0	0	0	228	0	147
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	0	1716
Adj Flow Rate, veh/h	0	1090	146	248	777	0				248	0	160
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	2260	648	1082	4170	0				354	0	286
Arrive On Green	0.00	0.89	0.89	0.68	1.00	0.00				0.11	0.00	0.11
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	1090	146	248	777	0				248	0	160
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	4.9	1.6	3.4	0.0	0.0				8.8	0.0	6.9
Cycle Q Clear(g_c), s	0.0	4.9	1.6	3.4	0.0	0.0				8.8	0.0	6.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2260	648	1082	4170	0				354	0	286
V/C Ratio(X)	0.00	0.48	0.23	0.23	0.19	0.00				0.70	0.00	0.56
Avail Cap(c_a), veh/h	0	2260	648	1082	4170	0				704	0	570
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.86	0.86	0.98	0.98	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	3.9	3.7	12.8	0.0	0.0				50.1	0.0	49.2
Incr Delay (d2), s/veh	0.0	0.6	0.7	0.1	0.1	0.0				2.5	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.3	0.7	1.5	0.0	0.0				4.0	0.0	2.5
LnGrp Delay(d),s/veh	0.0	4.5	4.4	12.9	0.1	0.0				52.6	0.0	50.9
LnGrp LOS		A	A	B	A					D		D
Approach Vol, veh/h		1236			1025						408	
Approach Delay, s/veh		4.5			3.2						52.0	
Approach LOS		A			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			43.9	56.0		17.1		99.9
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			25.3	50.3		25.4		81.3
Max Q Clear Time (g_c+I1), s			5.4	6.9		10.8		2.0
Green Ext Time (p_c), s			4.5	6.6		1.6		5.1

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1543	229	246	1125	0	0	0	0	197	0	245
Future Volume (veh/h)	0	1543	229	246	1125	0	0	0	0	197	0	245
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	0	1716
Adj Flow Rate, veh/h	0	1677	249	267	1223	0				214	0	266
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	3302	947	372	4068	0				423	0	343
Arrive On Green	0.00	0.65	0.65	0.12	0.80	0.00				0.13	0.00	0.13
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	1677	249	267	1223	0				214	0	266
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	20.7	8.7	9.7	7.6	0.0				7.5	0.0	12.0
Cycle Q Clear(g_c), s	0.0	20.7	8.7	9.7	7.6	0.0				7.5	0.0	12.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3302	947	372	4068	0				423	0	343
V/C Ratio(X)	0.00	0.51	0.26	0.72	0.30	0.00				0.51	0.00	0.78
Avail Cap(c_a), veh/h	0	3302	947	555	4068	0				581	0	471
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.88	0.88	0.96	0.96	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.0	8.9	51.1	3.2	0.0				48.3	0.0	50.3
Incr Delay (d2), s/veh	0.0	0.5	0.6	2.5	0.2	0.0				0.9	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	9.8	3.6	4.4	3.6	0.0				3.4	0.0	4.5
LnGrp Delay(d),s/veh	0.0	11.5	9.5	53.6	3.3	0.0				49.3	0.0	55.8
LnGrp LOS		B	A	D	A					D		E
Approach Vol, veh/h		1926			1490						480	
Approach Delay, s/veh		11.2			12.3						52.9	
Approach LOS		B			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			18.1	81.9		20.0		100.0
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			19.3	63.3		21.4		88.3
Max Q Clear Time (g_c+I1), s			11.7	22.7		14.0		9.6
Green Ext Time (p_c), s			0.6	25.3		1.4		34.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1573	229	338	1156	0	0	0	0	337	0	245
Future Volume (veh/h)	0	1573	229	338	1156	0	0	0	0	337	0	245
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1716	1716	1863	0				1716	0	1716
Adj Flow Rate, veh/h	0	1710	249	367	1257	0				366	0	266
Adj No. of Lanes	0	3	1	2	3	0				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	3054	876	476	3987	0				473	0	383
Arrive On Green	0.00	1.00	1.00	0.15	0.78	0.00				0.15	0.00	0.15
Sat Flow, veh/h	0	5253	1458	3170	5253	0				3170	0	2567
Grp Volume(v), veh/h	0	1710	249	367	1257	0				366	0	266
Grp Sat Flow(s),veh/h/ln	0	1695	1458	1585	1695	0				1585	0	1283
Q Serve(g_s), s	0.0	0.0	0.0	13.4	8.5	0.0				13.3	0.0	11.8
Cycle Q Clear(g_c), s	0.0	0.0	0.0	13.4	8.5	0.0				13.3	0.0	11.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3054	876	476	3987	0				473	0	383
V/C Ratio(X)	0.00	0.56	0.28	0.77	0.32	0.00				0.77	0.00	0.69
Avail Cap(c_a), veh/h	0	3054	876	660	3987	0				634	0	513
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.84	0.84	0.96	0.96	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	49.0	3.7	0.0				49.1	0.0	48.4
Incr Delay (d2), s/veh	0.0	0.6	0.7	3.6	0.2	0.0				4.2	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	6.1	4.0	0.0				6.1	0.0	4.3
LnGrp Delay(d),s/veh	0.0	0.6	0.7	52.6	3.9	0.0				53.3	0.0	51.0
LnGrp LOS		A	A	D	A					D		D
Approach Vol, veh/h		1959			1624						632	
Approach Delay, s/veh		0.6			14.9						52.3	
Approach LOS		A			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			22.0	76.1		21.9		98.1
Change Period (Y+Rc), s			5.7	5.7		4.6		5.7
Max Green Setting (Gmax), s			23.3	57.3		23.4		86.3
Max Q Clear Time (g_c+I1), s			15.4	2.0		15.3		10.5
Green Ext Time (p_c), s			1.0	31.0		2.0		35.8

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Intersection 7
SR 99 NB Off Ramp & E Cartmill Ave

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	474	106	0	469	78	120
Future Volume (veh/h)	474	106	0	469	78	120
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	515	115	0	510	85	130
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3492	762	0	4248	268	217
Arrive On Green	0.84	0.82	0.00	0.84	0.08	0.08
Sat Flow, veh/h	4347	912	0	5421	3170	2567
Grp Volume(v), veh/h	415	215	0	510	85	130
Grp Sat Flow(s),veh/h/ln	1695	1702	0	1695	1585	1283
Q Serve(g_s), s	2.3	2.5	0.0	1.8	2.5	4.9
Cycle Q Clear(g_c), s	2.3	2.5	0.0	1.8	2.5	4.9
Prop In Lane		0.54	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2832	1422	0	4248	268	217
V/C Ratio(X)	0.15	0.15	0.00	0.12	0.32	0.60
Avail Cap(c_a), veh/h	2832	1422	0	4248	1078	873
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.00	0.99	1.00	1.00
Uniform Delay (d), s/veh	1.5	1.6	0.0	1.5	43.1	44.1
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.1	0.7	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.2	0.0	0.9	1.1	1.8
LnGrp Delay(d),s/veh	1.7	1.9	0.0	1.6	43.7	46.8
LnGrp LOS	A	A		A	D	D
Approach Vol, veh/h	630			510	215	
Approach Delay, s/veh	1.7			1.6	45.6	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		12.5		87.5				87.5
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		33.4		56.3				56.3
Max Q Clear Time (g_c+I1), s		6.9		4.5				3.8
Green Ext Time (p_c), s		1.0		5.5				5.5

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	519	116	0	500	86	132
Future Volume (veh/h)	519	116	0	500	86	132
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	564	126	0	543	93	143
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3491	765	0	4251	281	227
Arrive On Green	0.84	0.82	0.00	1.00	0.09	0.09
Sat Flow, veh/h	4344	915	0	5421	3170	2567
Grp Volume(v), veh/h	456	234	0	543	93	143
Grp Sat Flow(s),veh/h/ln	1695	1701	0	1695	1585	1283
Q Serve(g_s), s	2.7	2.9	0.0	0.0	2.9	5.7
Cycle Q Clear(g_c), s	2.7	2.9	0.0	0.0	2.9	5.7
Prop In Lane		0.54	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2834	1422	0	4251	281	227
V/C Ratio(X)	0.16	0.16	0.00	0.13	0.33	0.63
Avail Cap(c_a), veh/h	2834	1422	0	4251	1077	872
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.00	0.99	1.00	1.00
Uniform Delay (d), s/veh	1.6	1.8	0.0	0.0	45.4	46.6
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.1	0.7	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.5	0.0	0.0	1.3	2.1
LnGrp Delay(d),s/veh	1.8	2.0	0.0	0.1	46.0	49.5
LnGrp LOS	A	A		A	D	D
Approach Vol, veh/h	690			543	236	
Approach Delay, s/veh	1.8			0.1	48.1	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		13.4		92.6				92.6
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		35.4		60.3				60.3
Max Q Clear Time (g_c+I1), s		7.7		4.9				2.0
Green Ext Time (p_c), s		1.1		6.1				6.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	702	116	0	649	86	239
Future Volume (veh/h)	702	116	0	649	86	239
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	763	126	0	705	93	260
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3451	565	0	3985	440	356
Arrive On Green	1.00	1.00	0.00	1.00	0.14	0.14
Sat Flow, veh/h	4572	721	0	5421	3170	2567
Grp Volume(v), veh/h	586	303	0	705	93	260
Grp Sat Flow(s),veh/h/ln	1695	1735	0	1695	1585	1283
Q Serve(g_s), s	0.0	0.0	0.0	0.0	2.7	10.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	2.7	10.0
Prop In Lane		0.42	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2656	1360	0	3985	440	356
V/C Ratio(X)	0.22	0.22	0.00	0.18	0.21	0.73
Avail Cap(c_a), veh/h	2656	1360	0	3985	1139	922
HCM Platoon Ratio	2.00	2.00	1.00	2.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	0.88	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	39.4	42.5
Incr Delay (d2), s/veh	0.2	0.4	0.0	0.1	0.2	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.0	0.0	1.2	3.7
LnGrp Delay(d),s/veh	0.2	0.4	0.0	0.1	39.6	45.4
LnGrp LOS	A	A		A	D	D
Approach Vol, veh/h	889			705	353	
Approach Delay, s/veh	0.2			0.1	43.9	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		18.3		84.7				84.7
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		36.4		56.3				56.3
Max Q Clear Time (g_c+I1), s		12.0		2.0				2.0
Green Ext Time (p_c), s		1.7		8.7				8.7

Intersection Summary	
HCM 2010 Ctrl Delay	8.1
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	777	174	0	669	131	201
Future Volume (veh/h)	777	174	0	669	131	201
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	845	189	0	727	142	218
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3396	755	0	4147	374	303
Arrive On Green	1.00	1.00	0.00	1.00	0.12	0.12
Sat Flow, veh/h	4332	926	0	5421	3170	2567
Grp Volume(v), veh/h	687	347	0	727	142	218
Grp Sat Flow(s),veh/h/ln	1695	1699	0	1695	1585	1283
Q Serve(g_s), s	0.0	0.0	0.0	0.0	5.0	9.8
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	5.0	9.8
Prop In Lane		0.54	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2765	1386	0	4147	374	303
V/C Ratio(X)	0.25	0.25	0.00	0.18	0.38	0.72
Avail Cap(c_a), veh/h	2765	1386	0	4147	1004	813
HCM Platoon Ratio	2.00	2.00	1.00	2.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	0.98	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	48.9	51.0
Incr Delay (d2), s/veh	0.2	0.4	0.0	0.1	0.6	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.2	0.0	0.0	2.2	3.6
LnGrp Delay(d),s/veh	0.2	0.4	0.0	0.1	49.5	54.3
LnGrp LOS	A	A		A	D	D
Approach Vol, veh/h	1034			727	360	
Approach Delay, s/veh	0.3			0.1	52.4	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		18.1		101.9				101.9
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		37.4		72.3				72.3
Max Q Clear Time (g_c+I1), s		11.8		2.0				2.0
Green Ext Time (p_c), s		1.7		10.4				10.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1382	174	0	1130	131	552
Future Volume (veh/h)	1382	174	0	1130	131	552
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	1502	189	0	1228	142	600
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3019	379	0	3355	868	702
Arrive On Green	1.00	1.00	0.00	1.00	0.27	0.27
Sat Flow, veh/h	4744	575	0	5421	3170	2567
Grp Volume(v), veh/h	1112	579	0	1228	142	600
Grp Sat Flow(s),veh/h/ln	1695	1761	0	1695	1585	1283
Q Serve(g_s), s	0.0	0.0	0.0	0.0	4.1	26.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	4.1	26.6
Prop In Lane		0.33	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2236	1162	0	3355	868	702
V/C Ratio(X)	0.50	0.50	0.00	0.37	0.16	0.85
Avail Cap(c_a), veh/h	2236	1162	0	3355	1242	1005
HCM Platoon Ratio	2.00	2.00	1.00	2.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.00	0.47	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	33.1	41.3
Incr Delay (d2), s/veh	0.6	1.2	0.0	0.1	0.1	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.4	0.0	0.0	1.8	9.9
LnGrp Delay(d),s/veh	0.6	1.2	0.0	0.1	33.2	46.4
LnGrp LOS	A	A		A	C	D
Approach Vol, veh/h	1691			1228	742	
Approach Delay, s/veh	0.8			0.1	43.9	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		36.8		83.2				83.2
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		46.4		63.3				63.3
Max Q Clear Time (g_c+I1), s		28.6		2.0				2.0
Green Ext Time (p_c), s		3.6		26.4				26.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.3
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1342	273	0	1041	225	420
Future Volume (veh/h)	1342	273	0	1041	225	420
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	1459	297	0	1132	245	457
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3034	616	0	3638	691	559
Arrive On Green	1.00	1.00	0.00	1.00	0.22	0.22
Sat Flow, veh/h	4408	861	0	5421	3170	2567
Grp Volume(v), veh/h	1166	590	0	1132	245	457
Grp Sat Flow(s),veh/h/ln	1695	1711	0	1695	1585	1283
Q Serve(g_s), s	0.0	0.0	0.0	0.0	7.9	20.3
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	7.9	20.3
Prop In Lane		0.50	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2426	1224	0	3638	691	559
V/C Ratio(X)	0.48	0.48	0.00	0.31	0.35	0.82
Avail Cap(c_a), veh/h	2426	1224	0	3638	1030	834
HCM Platoon Ratio	2.00	2.00	1.00	2.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	0.00	0.66	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	39.8	44.7
Incr Delay (d2), s/veh	0.6	1.1	0.0	0.1	0.3	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.4	0.0	0.0	3.5	7.5
LnGrp Delay(d),s/veh	0.6	1.1	0.0	0.1	40.1	48.7
LnGrp LOS	A	A		A	D	D
Approach Vol, veh/h	1756			1132	702	
Approach Delay, s/veh	0.7			0.1	45.7	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		30.1		89.9				89.9
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		38.4		71.3				71.3
Max Q Clear Time (g_c+I1), s		22.3		2.0				2.0
Green Ext Time (p_c), s		3.2		27.2				27.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.3
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1947	273	0	1502	225	771
Future Volume (veh/h)	1947	273	0	1502	225	771
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	2116	297	0	1633	245	838
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	2603	358	0	2928	1134	918
Arrive On Green	1.00	1.00	0.00	1.00	0.36	0.36
Sat Flow, veh/h	4688	623	0	5421	3170	2567
Grp Volume(v), veh/h	1577	836	0	1633	245	838
Grp Sat Flow(s),veh/h/ln	1695	1753	0	1695	1585	1283
Q Serve(g_s), s	0.0	0.0	0.0	0.0	6.5	37.4
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	6.5	37.4
Prop In Lane		0.36	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	1952	1009	0	2928	1134	918
V/C Ratio(X)	0.81	0.83	0.00	0.56	0.22	0.91
Avail Cap(c_a), veh/h	1952	1009	0	2928	1215	984
HCM Platoon Ratio	2.00	2.00	1.00	2.00	1.00	1.00
Upstream Filter(I)	0.36	0.36	0.00	0.09	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	26.8	36.8
Incr Delay (d2), s/veh	1.4	3.0	0.0	0.1	0.1	12.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.8	0.0	0.0	2.8	14.7
LnGrp Delay(d),s/veh	1.4	3.0	0.0	0.1	26.9	48.8
LnGrp LOS	A	A		A	C	D
Approach Vol, veh/h	2413			1633	1083	
Approach Delay, s/veh	1.9			0.1	43.9	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		46.9		73.1				73.1
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		45.4		64.3				64.3
Max Q Clear Time (g_c+I1), s		39.4		2.0				2.0
Green Ext Time (p_c), s		2.9		46.5				46.5

Intersection Summary	
HCM 2010 Ctrl Delay	10.2
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	504	143	0	427	73	55
Future Volume (veh/h)	504	143	0	427	73	55
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	548	155	0	464	79	60
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3379	933	0	4333	187	151
Arrive On Green	1.00	1.00	0.00	1.00	0.06	0.06
Sat Flow, veh/h	4133	1095	0	5421	3170	2567
Grp Volume(v), veh/h	467	236	0	464	79	60
Grp Sat Flow(s),veh/h/ln	1695	1670	0	1695	1585	1283
Q Serve(g_s), s	0.0	0.0	0.0	0.0	2.2	2.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	2.2	2.0
Prop In Lane		0.66	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2889	1423	0	4333	187	151
V/C Ratio(X)	0.16	0.17	0.00	0.11	0.42	0.40
Avail Cap(c_a), veh/h	2889	1423	0	4333	951	770
HCM Platoon Ratio	2.00	2.00	1.00	2.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	40.9	40.8
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.0	1.5	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.0	1.0	0.8
LnGrp Delay(d),s/veh	0.1	0.2	0.0	0.0	42.4	42.5
LnGrp LOS	A	A		A	D	D
Approach Vol, veh/h	703			464	139	
Approach Delay, s/veh	0.2			0.0	42.4	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		9.3		80.7				80.7
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		26.4		53.3				53.3
Max Q Clear Time (g_c+I1), s		4.2		2.0				2.0
Green Ext Time (p_c), s		0.5		5.7				5.7

Intersection Summary	
HCM 2010 Ctrl Delay	4.6
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	551	156	0	455	80	60
Future Volume (veh/h)	551	156	0	455	80	60
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	599	170	0	495	87	65
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3360	935	0	4318	197	159
Arrive On Green	1.00	1.00	0.00	1.00	0.06	0.06
Sat Flow, veh/h	4126	1101	0	5421	3170	2567
Grp Volume(v), veh/h	511	258	0	495	87	65
Grp Sat Flow(s),veh/h/ln	1695	1668	0	1695	1585	1283
Q Serve(g_s), s	0.0	0.0	0.0	0.0	2.4	2.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	2.4	2.2
Prop In Lane		0.66	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2878	1417	0	4318	197	159
V/C Ratio(X)	0.18	0.18	0.00	0.11	0.44	0.41
Avail Cap(c_a), veh/h	2878	1417	0	4318	951	770
HCM Platoon Ratio	2.00	2.00	1.00	2.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.00	0.99	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	40.7	40.6
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.1	1.6	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.0	0.0	1.1	0.8
LnGrp Delay(d),s/veh	0.1	0.3	0.0	0.1	42.3	42.3
LnGrp LOS	A	A		A	D	D
Approach Vol, veh/h	769			495	152	
Approach Delay, s/veh	0.2			0.1	42.3	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		9.6		80.4				80.4
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		26.4		53.3				53.3
Max Q Clear Time (g_c+I1), s		4.4		2.0				2.0
Green Ext Time (p_c), s		0.6		6.3				6.3

Intersection Summary	
HCM 2010 Ctrl Delay	4.7
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	620	156	0	487	80	100
Future Volume (veh/h)	620	156	0	487	80	100
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	674	170	0	529	87	109
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3381	841	0	4231	251	203
Arrive On Green	1.00	1.00	0.00	0.83	0.08	0.08
Sat Flow, veh/h	4232	1011	0	5421	3170	2567
Grp Volume(v), veh/h	561	283	0	529	87	109
Grp Sat Flow(s),veh/h/ln	1695	1684	0	1695	1585	1283
Q Serve(g_s), s	0.0	0.0	0.0	1.8	2.3	3.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.8	2.3	3.7
Prop In Lane		0.60	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2821	1401	0	4231	251	203
V/C Ratio(X)	0.20	0.20	0.00	0.13	0.35	0.54
Avail Cap(c_a), veh/h	2821	1401	0	4231	1057	856
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.00	0.98	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	1.4	39.2	39.9
Incr Delay (d2), s/veh	0.2	0.3	0.0	0.1	0.8	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.0	0.8	1.1	1.4
LnGrp Delay(d),s/veh	0.2	0.3	0.0	1.5	40.1	42.0
LnGrp LOS	A	A		A	D	D
Approach Vol, veh/h	844			529	196	
Approach Delay, s/veh	0.2			1.5	41.2	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		11.1		78.9				78.9
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		29.4		50.3				50.3
Max Q Clear Time (g_c+I1), s		5.7		2.0				3.8
Green Ext Time (p_c), s		0.8		7.0				7.0

Intersection Summary	
HCM 2010 Ctrl Delay	5.8
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	827	235	0	609	122	92
Future Volume (veh/h)	827	235	0	609	122	92
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	899	255	0	662	133	100
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3391	958	0	4374	227	183
Arrive On Green	0.86	0.85	0.00	0.86	0.07	0.07
Sat Flow, veh/h	4110	1114	0	5421	3170	2567
Grp Volume(v), veh/h	773	381	0	662	133	100
Grp Sat Flow(s),veh/h/ln	1695	1666	0	1695	1585	1283
Q Serve(g_s), s	4.8	5.2	0.0	2.4	4.8	4.4
Cycle Q Clear(g_c), s	4.8	5.2	0.0	2.4	4.8	4.4
Prop In Lane		0.67	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2916	1433	0	4374	227	183
V/C Ratio(X)	0.26	0.27	0.00	0.15	0.59	0.55
Avail Cap(c_a), veh/h	2916	1433	0	4374	813	658
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.00	0.98	1.00	1.00
Uniform Delay (d), s/veh	1.5	1.6	0.0	1.3	52.6	52.5
Incr Delay (d2), s/veh	0.2	0.4	0.0	0.1	2.4	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	2.2	2.5	0.0	1.1	2.2	1.6
LnGrp Delay(d),s/veh	1.7	2.0	0.0	1.4	55.1	55.0
LnGrp LOS	A	A		A	E	D
Approach Vol, veh/h	1154			662	233	
Approach Delay, s/veh	1.8			1.4	55.0	
Approach LOS	A			A	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		12.4		104.6				104.6
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		29.4		77.3				77.3
Max Q Clear Time (g_c+I1), s		6.8		7.2				4.4
Green Ext Time (p_c), s		1.0		11.0				11.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	997	235	0	733	122	190
Future Volume (veh/h)	997	235	0	733	122	190
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	1084	255	0	797	133	207
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3368	792	0	4163	358	290
Arrive On Green	1.00	1.00	0.00	1.00	0.11	0.11
Sat Flow, veh/h	4282	967	0	5421	3170	2567
Grp Volume(v), veh/h	893	446	0	797	133	207
Grp Sat Flow(s),veh/h/ln	1695	1692	0	1695	1585	1283
Q Serve(g_s), s	0.0	0.0	0.0	0.0	4.5	9.1
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	4.5	9.1
Prop In Lane		0.57	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2775	1385	0	4163	358	290
V/C Ratio(X)	0.32	0.32	0.00	0.19	0.37	0.71
Avail Cap(c_a), veh/h	2775	1385	0	4163	867	702
HCM Platoon Ratio	1.33	1.33	1.00	2.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.00	0.90	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	48.0	50.1
Incr Delay (d2), s/veh	0.3	0.6	0.0	0.1	0.6	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.2	0.0	0.0	2.0	3.4
LnGrp Delay(d),s/veh	0.3	0.6	0.0	0.1	48.7	53.3
LnGrp LOS	A	A		A	D	D
Approach Vol, veh/h	1339			797	340	
Approach Delay, s/veh	0.4			0.1	51.5	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		17.2		99.8				99.8
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		31.4		75.3				75.3
Max Q Clear Time (g_c+I1), s		11.1		2.0				2.0
Green Ext Time (p_c), s		1.5		14.8				14.8

Intersection Summary	
HCM 2010 Ctrl Delay	7.3
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1376	368	0	917	206	211
Future Volume (veh/h)	1376	368	0	917	206	211
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	1496	400	0	997	224	229
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3244	861	0	4121	390	315
Arrive On Green	1.00	1.00	0.00	1.00	0.12	0.12
Sat Flow, veh/h	4171	1062	0	5421	3170	2567
Grp Volume(v), veh/h	1265	631	0	997	224	229
Grp Sat Flow(s),veh/h/ln	1695	1675	0	1695	1585	1283
Q Serve(g_s), s	0.0	0.0	0.0	0.0	8.0	10.3
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	8.0	10.3
Prop In Lane		0.63	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2748	1358	0	4121	390	315
V/C Ratio(X)	0.46	0.46	0.00	0.24	0.58	0.73
Avail Cap(c_a), veh/h	2748	1358	0	4121	713	577
HCM Platoon Ratio	2.00	2.00	1.00	2.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.00	0.89	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	49.7	50.7
Incr Delay (d2), s/veh	0.5	1.0	0.0	0.1	1.3	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.4	0.0	0.0	3.6	3.8
LnGrp Delay(d),s/veh	0.5	1.0	0.0	0.1	51.0	53.9
LnGrp LOS	A	A		A	D	D
Approach Vol, veh/h	1896			997	453	
Approach Delay, s/veh	0.6			0.1	52.5	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		18.7		101.3				101.3
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		26.4		83.3				83.3
Max Q Clear Time (g_c+I1), s		12.3		2.0				2.0
Green Ext Time (p_c), s		1.8		29.0				29.0

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1546	368	0	1041	206	309
Future Volume (veh/h)	1546	368	0	1041	206	309
Number	4	14	3	8	5	12
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	1750	0	1863	1716	1716
Adj Flow Rate, veh/h	1680	400	0	1132	224	336
Adj No. of Lanes	3	0	0	3	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	2
Cap, veh/h	3102	729	0	3833	539	436
Arrive On Green	0.75	0.74	0.00	1.00	0.17	0.17
Sat Flow, veh/h	4283	967	0	5421	3170	2567
Grp Volume(v), veh/h	1380	700	0	1132	224	336
Grp Sat Flow(s),veh/h/ln	1695	1692	0	1695	1585	1283
Q Serve(g_s), s	17.7	18.8	0.0	0.0	6.6	13.1
Cycle Q Clear(g_c), s	17.7	18.8	0.0	0.0	6.6	13.1
Prop In Lane		0.57	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2555	1276	0	3833	539	436
V/C Ratio(X)	0.54	0.55	0.00	0.30	0.42	0.77
Avail Cap(c_a), veh/h	2555	1276	0	3833	815	660
HCM Platoon Ratio	1.00	1.00	1.00	2.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.00	0.36	1.00	1.00
Uniform Delay (d), s/veh	5.4	5.7	0.0	0.0	38.9	41.6
Incr Delay (d2), s/veh	0.6	1.3	0.0	0.1	0.5	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	9.2	0.0	0.0	2.9	4.9
LnGrp Delay(d),s/veh	6.0	7.0	0.0	0.1	39.4	44.7
LnGrp LOS	A	A		A	D	D
Approach Vol, veh/h	2080			1132	560	
Approach Delay, s/veh	6.3			0.1	42.6	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		21.9		83.1				83.1
Change Period (Y+Rc), s		4.6		5.7				5.7
Max Green Setting (Gmax), s		26.4		68.3				68.3
Max Q Clear Time (g_c+I1), s		15.1		20.8				2.0
Green Ext Time (p_c), s		2.1		28.4				33.6

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A

Intersection 8
N Oaks St & E Cartmill Ave



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	104	485	447	24	64	83
Future Volume (veh/h)	104	485	447	24	64	83
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	113	527	486	26	70	90
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	702	2792	1629	453	88	113
Arrive On Green	0.43	0.79	0.32	0.32	0.13	0.13
Sat Flow, veh/h	1634	3632	5253	1415	660	848
Grp Volume(v), veh/h	113	527	486	26	161	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1415	1517	0
Q Serve(g_s), s	4.4	3.8	7.4	1.3	10.6	0.0
Cycle Q Clear(g_c), s	4.4	3.8	7.4	1.3	10.6	0.0
Prop In Lane	1.00			1.00	0.43	0.56
Lane Grp Cap(c), veh/h	702	2792	1629	453	203	0
V/C Ratio(X)	0.16	0.19	0.30	0.06	0.79	0.00
Avail Cap(c_a), veh/h	702	2792	1629	453	471	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.0	2.7	26.3	24.2	43.4	0.0
Incr Delay (d2), s/veh	0.1	0.1	0.5	0.2	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	2.0	1.9	3.5	0.5	4.8	0.0
LnGrp Delay(d),s/veh	18.1	2.8	26.8	24.5	50.3	0.0
LnGrp LOS	B	A	C	C	D	
Approach Vol, veh/h		640	512		161	
Approach Delay, s/veh		5.5	26.7		50.3	
Approach LOS		A	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				85.2		17.8	48.2	37.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				61.0		31.4	24.0	31.0
Max Q Clear Time (g_c+I1), s				5.8		12.6	6.4	9.4
Green Ext Time (p_c), s				2.8		0.5	2.5	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	19.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	111	517	477	26	72	93
Future Volume (veh/h)	111	517	477	26	72	93
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	121	562	518	28	78	101
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	718	2757	1535	427	96	124
Arrive On Green	0.88	1.00	0.30	0.30	0.15	0.14
Sat Flow, veh/h	1634	3632	5253	1414	657	851
Grp Volume(v), veh/h	121	562	518	28	180	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1414	1517	0
Q Serve(g_s), s	1.1	0.0	8.4	1.5	12.2	0.0
Cycle Q Clear(g_c), s	1.1	0.0	8.4	1.5	12.2	0.0
Prop In Lane	1.00			1.00	0.43	0.56
Lane Grp Cap(c), veh/h	718	2757	1535	427	221	0
V/C Ratio(X)	0.17	0.20	0.34	0.07	0.81	0.00
Avail Cap(c_a), veh/h	718	2757	1535	427	487	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.7	0.0	28.8	26.4	44.1	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.6	0.3	7.1	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	0.5	0.1	4.0	0.6	5.5	0.0
LnGrp Delay(d),s/veh	3.8	0.2	29.4	26.6	51.2	0.0
LnGrp LOS	A	A	C	C	D	
Approach Vol, veh/h		683	546		180	
Approach Delay, s/veh		0.8	29.2		51.2	
Approach LOS		A	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				86.6		19.4	50.6	36.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				62.0		33.4	26.0	30.0
Max Q Clear Time (g_c+I1), s				2.0		14.2	3.1	10.4
Green Ext Time (p_c), s				3.0		0.6	2.8	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	401	517	477	73	120	382
Future Volume (veh/h)	401	517	477	73	120	382
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	436	562	518	79	130	415
Adj No. of Lanes	1	2	3	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	614	2155	987	273	512	449
Arrive On Green	0.75	1.00	0.19	0.19	0.31	0.31
Sat Flow, veh/h	1634	3632	5253	1405	1634	1458
Grp Volume(v), veh/h	436	562	518	79	130	415
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1405	1634	1458
Q Serve(g_s), s	14.6	0.0	9.4	4.9	6.1	28.4
Cycle Q Clear(g_c), s	14.6	0.0	9.4	4.9	6.1	28.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	614	2155	987	273	512	449
V/C Ratio(X)	0.71	0.26	0.52	0.29	0.25	0.92
Avail Cap(c_a), veh/h	614	2155	987	273	587	515
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.8	0.0	37.2	35.4	26.4	34.5
Incr Delay (d2), s/veh	3.7	0.3	2.0	2.7	0.3	21.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	0.1	4.6	2.1	2.8	22.6
LnGrp Delay(d),s/veh	13.5	0.3	39.2	38.1	26.6	55.6
LnGrp LOS	B	A	D	D	C	E
Approach Vol, veh/h		998	597		545	
Approach Delay, s/veh		6.1	39.1		48.7	
Approach LOS		A	D		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				66.7		36.3	42.7	24.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				56.0		36.4	32.0	18.0
Max Q Clear Time (g_c+I1), s				2.0		30.4	16.6	11.4
Green Ext Time (p_c), s				4.6		1.3	3.8	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	26.1
HCM 2010 LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	148	692	638	34	118	153
Future Volume (veh/h)	148	692	638	34	118	153
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	161	752	693	37	128	166
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	212	2525	2799	782	145	188
Arrive On Green	0.17	0.95	0.18	0.18	0.22	0.21
Sat Flow, veh/h	1634	3632	5253	1421	659	854
Grp Volume(v), veh/h	161	752	693	37	295	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1421	1518	0
Q Serve(g_s), s	11.3	1.8	14.0	2.6	22.6	0.0
Cycle Q Clear(g_c), s	11.3	1.8	14.0	2.6	22.6	0.0
Prop In Lane	1.00			1.00	0.43	0.56
Lane Grp Cap(c), veh/h	212	2525	2799	782	334	0
V/C Ratio(X)	0.76	0.30	0.25	0.05	0.88	0.00
Avail Cap(c_a), veh/h	381	2525	2799	782	569	0
HCM Platoon Ratio	1.33	1.33	0.33	0.33	1.00	1.00
Upstream Filter(I)	0.97	0.97	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.9	0.9	27.8	23.1	45.5	0.0
Incr Delay (d2), s/veh	5.3	0.3	0.2	0.1	8.7	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	5.4	0.8	6.6	1.0	10.3	0.0
LnGrp Delay(d),s/veh	53.2	1.2	28.0	23.2	54.2	0.0
LnGrp LOS	D	A	C	C	D	
Approach Vol, veh/h		913	730		295	
Approach Delay, s/veh		10.4	27.8		54.2	
Approach LOS		B	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				89.6		30.4	19.6	70.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				65.0		44.4	26.0	33.0
Max Q Clear Time (g_c+I1), s				3.8		24.6	13.3	16.0
Green Ext Time (p_c), s				8.2		1.2	0.4	6.4

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1104	692	638	189	267	1045
Future Volume (veh/h)	1104	692	638	189	267	1045
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	1200	752	693	205	290	1136
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	531	1858	848	234	122	480
Arrive On Green	0.11	0.17	0.06	0.06	0.41	0.40
Sat Flow, veh/h	1634	3632	5253	1401	300	1174
Grp Volume(v), veh/h	1200	752	693	205	1427	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1401	1475	0
Q Serve(g_s), s	39.0	22.7	16.2	17.4	49.0	0.0
Cycle Q Clear(g_c), s	39.0	22.7	16.2	17.4	49.0	0.0
Prop In Lane	1.00			1.00	0.20	0.80
Lane Grp Cap(c), veh/h	531	1858	848	234	602	0
V/C Ratio(X)	2.26	0.40	0.82	0.88	2.37	0.00
Avail Cap(c_a), veh/h	531	1858	848	234	602	0
HCM Platoon Ratio	0.33	0.33	0.33	0.33	1.00	1.00
Upstream Filter(I)	0.78	0.78	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.6	32.9	54.9	55.5	35.7	0.0
Incr Delay (d2), s/veh	571.6	0.5	8.6	34.1	621.2	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	102.0	11.3	8.3	9.0	123.9	0.0
LnGrp Delay(d),s/veh	625.1	33.4	63.5	89.6	657.0	0.0
LnGrp LOS	F	C	E	F	F	
Approach Vol, veh/h		1952	898		1427	
Approach Delay, s/veh		397.2	69.5		657.0	
Approach LOS		F	E		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				67.0		53.0	43.0	24.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				61.0		48.4	37.0	18.0
Max Q Clear Time (g_c+I1), s				24.7		51.0	41.0	19.4
Green Ext Time (p_c), s				14.7		0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	415.0
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	213	1168	1093	98	254	271
Future Volume (veh/h)	213	1168	1093	98	254	271
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	232	1270	1188	107	276	295
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	273	1906	1721	479	291	311
Arrive On Green	0.33	1.00	0.11	0.11	0.39	0.39
Sat Flow, veh/h	1634	3632	5253	1415	737	788
Grp Volume(v), veh/h	232	1270	1188	107	572	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1415	1527	0
Q Serve(g_s), s	15.9	0.0	27.0	8.3	43.5	0.0
Cycle Q Clear(g_c), s	15.9	0.0	27.0	8.3	43.5	0.0
Prop In Lane	1.00			1.00	0.48	0.52
Lane Grp Cap(c), veh/h	273	1906	1721	479	603	0
V/C Ratio(X)	0.85	0.67	0.69	0.22	0.95	0.00
Avail Cap(c_a), veh/h	300	1906	1721	479	649	0
HCM Platoon Ratio	2.00	2.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	0.82	0.82	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	38.6	0.0	47.2	38.9	35.3	0.0
Incr Delay (d2), s/veh	16.2	1.5	2.3	1.1	22.7	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	8.3	0.4	13.1	3.4	22.1	0.0
LnGrp Delay(d),s/veh	54.8	1.5	49.5	40.0	58.0	0.0
LnGrp LOS	D	A	D	D	E	
Approach Vol, veh/h		1502	1295		572	
Approach Delay, s/veh		9.8	48.7		58.0	
Approach LOS		A	D		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				68.6		51.4	24.0	44.6
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				59.0		50.4	20.0	33.0
Max Q Clear Time (g_c+I1), s				2.0		45.5	17.9	29.0
Green Ext Time (p_c), s				21.4		1.3	0.2	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	32.9
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1169	1168	1093	253	403	1163
Future Volume (veh/h)	1169	1168	1093	253	403	1163
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	1271	1270	1188	275	438	1264
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	477	1799	932	257	162	468
Arrive On Green	0.49	0.85	0.06	0.06	0.43	0.42
Sat Flow, veh/h	1634	3632	5253	1404	382	1102
Grp Volume(v), veh/h	1271	1270	1188	275	1703	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1404	1485	0
Q Serve(g_s), s	35.0	16.2	22.0	22.0	51.0	0.0
Cycle Q Clear(g_c), s	35.0	16.2	22.0	22.0	51.0	0.0
Prop In Lane	1.00			1.00	0.26	0.74
Lane Grp Cap(c), veh/h	477	1799	932	257	631	0
V/C Ratio(X)	2.67	0.71	1.27	1.07	2.70	0.00
Avail Cap(c_a), veh/h	477	1799	932	257	631	0
HCM Platoon Ratio	1.67	1.67	0.33	0.33	1.00	1.00
Upstream Filter(I)	0.40	0.40	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.8	5.7	56.4	56.4	34.7	0.0
Incr Delay (d2), s/veh	752.5	1.0	131.8	75.4	768.8	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	115.3	7.6	21.7	13.9	155.6	0.0
LnGrp Delay(d),s/veh	783.3	6.6	188.2	131.8	803.5	0.0
LnGrp LOS	F	A	F	F	F	
Approach Vol, veh/h		2541	1463		1703	
Approach Delay, s/veh		395.1	177.6		803.5	
Approach LOS		F	F		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				65.0		55.0	39.0	26.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				59.0		50.4	33.0	20.0
Max Q Clear Time (g_c+I1), s				18.2		53.0	37.0	24.0
Green Ext Time (p_c), s				22.7		0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	461.2
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1169	1168	1093	253	403	1163
Future Volume (veh/h)	1169	1168	1093	253	403	1163
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	1271	1270	1188	275	438	1264
Adj No. of Lanes	2	2	3	1	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1366	2646	1416	393	559	1495
Arrive On Green	0.43	0.75	0.28	0.28	0.18	0.17
Sat Flow, veh/h	3170	3632	5253	1412	3170	2567
Grp Volume(v), veh/h	1271	1270	1188	275	438	1264
Grp Sat Flow(s),veh/h/ln	1585	1770	1695	1412	1585	1283
Q Serve(g_s), s	40.0	14.8	23.1	18.3	13.9	17.9
Cycle Q Clear(g_c), s	40.0	14.8	23.1	18.3	13.9	17.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	1366	2646	1416	393	559	1495
V/C Ratio(X)	0.93	0.48	0.84	0.70	0.78	0.85
Avail Cap(c_a), veh/h	1389	2646	1416	393	559	1495
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.40	0.40	0.24	0.24	1.00	1.00
Uniform Delay (d), s/veh	28.4	5.2	35.7	33.9	41.3	18.0
Incr Delay (d2), s/veh	5.2	0.3	1.5	2.5	7.2	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.5	7.1	11.0	7.4	6.6	26.9
LnGrp Delay(d),s/veh	33.6	5.5	37.2	36.4	48.6	22.7
LnGrp LOS	C	A	D	D	D	C
Approach Vol, veh/h		2541	1463		1702	
Approach Delay, s/veh		19.5	37.1		29.4	
Approach LOS		B	D		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				82.5		22.5	49.3	33.2
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				76.5		17.9	44.0	26.5
Max Q Clear Time (g_c+I1), s				16.8		19.9	42.0	25.1
Green Ext Time (p_c), s				24.1		0.0	1.3	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	27.0
HCM 2010 LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	99	457	424	38	19	57
Future Volume (veh/h)	99	457	424	38	19	57
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	108	497	461	41	21	62
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	167	2919	3449	965	32	95
Arrive On Green	0.20	1.00	0.68	0.68	0.09	0.08
Sat Flow, veh/h	1634	3632	5253	1422	370	1093
Grp Volume(v), veh/h	108	497	461	41	84	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1422	1481	0
Q Serve(g_s), s	5.5	0.0	2.9	0.9	5.0	0.0
Cycle Q Clear(g_c), s	5.5	0.0	2.9	0.9	5.0	0.0
Prop In Lane	1.00			1.00	0.25	0.74
Lane Grp Cap(c), veh/h	167	2919	3449	965	128	0
V/C Ratio(X)	0.65	0.17	0.13	0.04	0.66	0.00
Avail Cap(c_a), veh/h	418	2919	3449	965	411	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.3	0.0	5.1	4.8	40.0	0.0
Incr Delay (d2), s/veh	4.2	0.1	0.1	0.1	5.6	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	2.6	0.1	1.3	0.4	2.2	0.0
LnGrp Delay(d),s/veh	38.5	0.1	5.2	4.9	45.6	0.0
LnGrp LOS	D	A	A	A	D	
Approach Vol, veh/h		605	502		84	
Approach Delay, s/veh		7.0	5.2		45.6	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				78.2		11.8	13.2	65.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				55.0		24.4	21.0	28.0
Max Q Clear Time (g_c+I1), s				2.0		7.0	7.5	4.9
Green Ext Time (p_c), s				4.8		0.2	0.2	4.4

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	106	487	452	41	21	64
Future Volume (veh/h)	106	487	452	41	21	64
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	115	529	491	45	23	70
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	719	2894	1695	472	34	103
Arrive On Green	0.88	1.00	0.11	0.11	0.09	0.09
Sat Flow, veh/h	1634	3632	5253	1415	362	1102
Grp Volume(v), veh/h	115	529	491	45	94	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1415	1480	0
Q Serve(g_s), s	0.9	0.0	8.0	2.6	5.5	0.0
Cycle Q Clear(g_c), s	0.9	0.0	8.0	2.6	5.5	0.0
Prop In Lane	1.00			1.00	0.24	0.74
Lane Grp Cap(c), veh/h	719	2894	1695	472	138	0
V/C Ratio(X)	0.16	0.18	0.29	0.10	0.68	0.00
Avail Cap(c_a), veh/h	719	2894	1695	472	411	0
HCM Platoon Ratio	2.00	2.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	0.99	0.99	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.1	0.0	30.3	27.8	39.7	0.0
Incr Delay (d2), s/veh	0.1	0.1	0.4	0.4	5.7	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	0.4	0.1	3.8	1.1	2.5	0.0
LnGrp Delay(d),s/veh	3.2	0.1	30.7	28.2	45.5	0.0
LnGrp LOS	A	A	C	C	D	
Approach Vol, veh/h		644	536		94	
Approach Delay, s/veh		0.7	30.5		45.5	
Approach LOS		A	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				77.6		12.4	43.6	34.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				55.0		24.4	21.0	28.0
Max Q Clear Time (g_c+I1), s				2.0		7.5	2.9	10.0
Green Ext Time (p_c), s				2.8		0.3	2.5	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	215	487	452	58	31	126
Future Volume (veh/h)	215	487	452	58	31	126
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	234	529	491	63	34	137
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	864	2743	1048	290	42	170
Arrive On Green	0.53	0.78	0.21	0.21	0.14	0.14
Sat Flow, veh/h	1634	3632	5253	1407	291	1173
Grp Volume(v), veh/h	234	529	491	63	172	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1407	1473	0
Q Serve(g_s), s	7.9	4.0	8.5	3.7	11.3	0.0
Cycle Q Clear(g_c), s	7.9	4.0	8.5	3.7	11.3	0.0
Prop In Lane	1.00			1.00	0.20	0.80
Lane Grp Cap(c), veh/h	864	2743	1048	290	214	0
V/C Ratio(X)	0.27	0.19	0.47	0.22	0.81	0.00
Avail Cap(c_a), veh/h	864	2743	1048	290	448	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.9	3.0	34.9	33.0	41.6	0.0
Incr Delay (d2), s/veh	0.2	0.2	1.5	1.7	7.0	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	3.5	2.0	4.1	1.6	5.0	0.0
LnGrp Delay(d),s/veh	13.1	3.1	36.4	34.7	48.6	0.0
LnGrp LOS	B	A	D	C	D	
Approach Vol, veh/h		763	554		172	
Approach Delay, s/veh		6.2	36.2		48.6	
Approach LOS		A	D		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				81.5		18.5	56.9	24.6
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				59.6		29.8	35.0	18.6
Max Q Clear Time (g_c+I1), s				6.0		13.3	9.9	10.5
Green Ext Time (p_c), s				3.3		0.6	3.2	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	141	652	605	54	35	105
Future Volume (veh/h)	141	652	605	54	35	105
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	153	709	658	59	38	114
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	684	2800	1695	472	48	144
Arrive On Green	0.42	0.79	0.33	0.33	0.13	0.12
Sat Flow, veh/h	1634	3632	5253	1415	368	1104
Grp Volume(v), veh/h	153	709	658	59	153	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1415	1482	0
Q Serve(g_s), s	6.1	5.3	10.1	3.0	10.2	0.0
Cycle Q Clear(g_c), s	6.1	5.3	10.1	3.0	10.2	0.0
Prop In Lane	1.00			1.00	0.25	0.75
Lane Grp Cap(c), veh/h	684	2800	1695	472	193	0
V/C Ratio(X)	0.22	0.25	0.39	0.13	0.79	0.00
Avail Cap(c_a), veh/h	684	2800	1695	472	407	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.0	2.8	26.0	23.7	43.2	0.0
Incr Delay (d2), s/veh	0.2	0.2	0.7	0.5	7.1	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	2.8	2.6	4.8	1.2	4.6	0.0
LnGrp Delay(d),s/veh	19.2	3.0	26.7	24.2	50.3	0.0
LnGrp LOS	B	A	C	C	D	
Approach Vol, veh/h		862	717		153	
Approach Delay, s/veh		5.9	26.5		50.3	
Approach LOS		A	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				84.7		17.3	46.7	38.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				64.0		27.4	26.0	32.0
Max Q Clear Time (g_c+I1), s				7.3		12.2	8.1	12.1
Green Ext Time (p_c), s				4.0		0.5	3.5	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	409	652	605	97	75	345
Future Volume (veh/h)	409	652	605	97	75	345
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	445	709	658	105	82	375
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	609	2136	1000	276	86	395
Arrive On Green	0.75	1.00	0.20	0.20	0.33	0.32
Sat Flow, veh/h	1634	3632	5253	1406	263	1204
Grp Volume(v), veh/h	445	709	658	105	458	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1406	1471	0
Q Serve(g_s), s	17.8	0.0	14.0	7.6	35.6	0.0
Cycle Q Clear(g_c), s	17.8	0.0	14.0	7.6	35.6	0.0
Prop In Lane	1.00			1.00	0.18	0.82
Lane Grp Cap(c), veh/h	609	2136	1000	276	482	0
V/C Ratio(X)	0.73	0.33	0.66	0.38	0.95	0.00
Avail Cap(c_a), veh/h	609	2136	1000	276	490	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.6	0.0	43.4	40.8	38.6	0.0
Incr Delay (d2), s/veh	4.2	0.4	3.4	3.9	28.1	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	8.5	0.1	6.8	3.2	18.1	0.0
LnGrp Delay(d),s/veh	15.8	0.4	46.8	44.7	66.7	0.0
LnGrp LOS	B	A	D	D	E	
Approach Vol, veh/h		1154	763		458	
Approach Delay, s/veh		6.3	46.5		66.7	
Approach LOS		A	D		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				74.6		42.4	47.6	27.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				68.0		38.4	41.0	21.0
Max Q Clear Time (g_c+I1), s				2.0		37.6	19.8	16.0
Green Ext Time (p_c), s				5.6		0.2	5.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	30.9
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	200	1037	973	108	92	186
Future Volume (veh/h)	200	1037	973	108	92	186
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	217	1127	1058	117	100	202
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	556	2502	1695	472	112	226
Arrive On Green	0.68	1.00	0.11	0.11	0.23	0.22
Sat Flow, veh/h	1634	3632	5253	1415	494	999
Grp Volume(v), veh/h	217	1127	1058	117	303	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1415	1498	0
Q Serve(g_s), s	6.9	0.0	23.9	9.1	23.6	0.0
Cycle Q Clear(g_c), s	6.9	0.0	23.9	9.1	23.6	0.0
Prop In Lane	1.00			1.00	0.33	0.67
Lane Grp Cap(c), veh/h	556	2502	1695	472	339	0
V/C Ratio(X)	0.39	0.45	0.62	0.25	0.89	0.00
Avail Cap(c_a), veh/h	556	2502	1695	472	474	0
HCM Platoon Ratio	2.00	2.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	0.87	0.87	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.7	0.0	46.2	39.6	45.2	0.0
Incr Delay (d2), s/veh	0.4	0.5	1.7	1.3	14.8	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	3.1	0.2	11.5	3.7	11.2	0.0
LnGrp Delay(d),s/veh	14.1	0.5	48.0	40.9	60.0	0.0
LnGrp LOS	B	A	D	D	E	
Approach Vol, veh/h		1344	1175		303	
Approach Delay, s/veh		2.7	47.3		60.0	
Approach LOS		A	D		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				88.8		31.2	44.8	44.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				72.0		37.4	28.0	38.0
Max Q Clear Time (g_c+I1), s				2.0		25.6	8.9	25.9
Green Ext Time (p_c), s				7.4		1.0	6.1	4.4

Intersection Summary	
HCM 2010 Ctrl Delay	27.4
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	468	1037	973	151	132	426
Future Volume (veh/h)	468	1037	973	151	132	426
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1863	1716	1716	1750
Adj Flow Rate, veh/h	509	1127	1058	164	143	463
Adj No. of Lanes	1	2	3	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	514	2090	1211	336	116	377
Arrive On Green	0.63	1.00	0.08	0.08	0.33	0.33
Sat Flow, veh/h	1634	3632	5253	1410	349	1130
Grp Volume(v), veh/h	509	1127	1058	164	607	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1695	1410	1481	0
Q Serve(g_s), s	32.2	0.0	21.6	11.7	35.0	0.0
Cycle Q Clear(g_c), s	32.2	0.0	21.6	11.7	35.0	0.0
Prop In Lane	1.00			1.00	0.24	0.76
Lane Grp Cap(c), veh/h	514	2090	1211	336	494	0
V/C Ratio(X)	0.99	0.54	0.87	0.49	1.23	0.00
Avail Cap(c_a), veh/h	514	2090	1211	336	494	0
HCM Platoon Ratio	2.00	2.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	0.80	0.80	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.4	0.0	46.8	42.2	35.2	0.0
Incr Delay (d2), s/veh	33.1	0.8	8.9	5.0	120.1	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	18.7	0.2	11.2	5.0	30.7	0.0
LnGrp Delay(d),s/veh	52.4	0.8	55.7	47.3	155.4	0.0
LnGrp LOS	D	A	E	D	F	
Approach Vol, veh/h		1636	1222		607	
Approach Delay, s/veh		16.9	54.6		155.4	
Approach LOS		B	D		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				66.0		39.0	37.0	29.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				60.0		34.4	31.0	23.0
Max Q Clear Time (g_c+I1), s				2.0		37.0	34.2	23.6
Green Ext Time (p_c), s				18.0		0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	54.4
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	468	1037	973	151	132	426
Future Volume (veh/h)	468	1037	973	151	132	426
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	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	1716	1863	1863	1716	1716	1716
Adj Flow Rate, veh/h	509	1127	1058	164	143	463
Adj No. of Lanes	2	2	3	1	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	630	2591	2519	703	608	939
Arrive On Green	0.40	1.00	0.50	0.50	0.19	0.19
Sat Flow, veh/h	3170	3632	5253	1420	3170	2567
Grp Volume(v), veh/h	509	1127	1058	164	143	463
Grp Sat Flow(s),veh/h/ln	1585	1770	1695	1420	1585	1283
Q Serve(g_s), s	15.0	0.0	13.9	6.9	4.0	14.7
Cycle Q Clear(g_c), s	15.0	0.0	13.9	6.9	4.0	14.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	630	2591	2519	703	608	939
V/C Ratio(X)	0.81	0.43	0.42	0.23	0.24	0.49
Avail Cap(c_a), veh/h	996	2591	2519	703	1057	1302
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	0.94	0.94	1.00	1.00
Uniform Delay (d), s/veh	29.9	0.0	16.9	15.1	35.9	25.8
Incr Delay (d2), s/veh	2.2	0.4	0.5	0.7	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.2	6.6	2.8	1.8	11.0
LnGrp Delay(d),s/veh	32.0	0.4	17.4	15.9	36.1	26.2
LnGrp LOS	C	A	B	B	D	C
Approach Vol, veh/h		1636	1222		606	
Approach Delay, s/veh		10.3	17.2		28.5	
Approach LOS		B	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				80.9		24.1	24.9	56.0
Change Period (Y+Rc), s				6.0		4.6	6.0	6.0
Max Green Setting (Gmax), s				60.0		34.4	31.0	23.0
Max Q Clear Time (g_c+I1), s				2.0		16.7	17.0	15.9
Green Ext Time (p_c), s				18.0		2.9	1.9	5.4

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B

Intersection 9
Retherford St & E Cartmill Ave

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	422	125	28	396	73	30
Future Vol, veh/h	422	125	28	396	73	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	459	136	30	430	79	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	595	0	1018	527
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	491	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	981	-	263	551
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	615	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	981	-	252	551
Mov Cap-2 Maneuver	-	-	-	-	252	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	590	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	24.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	299	-	-	981	-
HCM Lane V/C Ratio	0.374	-	-	0.031	-
HCM Control Delay (s)	24.1	-	-	8.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	450	133	30	422	76	31
Future Vol, veh/h	450	133	30	422	76	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	489	145	33	459	83	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	634	0	1085	561
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	524	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	949	-	240	527
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	594	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	949	-	229	527
Mov Cap-2 Maneuver	-	-	-	-	229	-
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	566	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	27.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	274	-	-	949	-
HCM Lane V/C Ratio	0.424	-	-	0.034	-
HCM Control Delay (s)	27.5	-	-	8.9	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	498	133	30	469	76	31
Future Vol, veh/h	498	133	30	469	76	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	541	145	33	510	83	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	686	0	1189	614
Stage 1	-	-	-	-	614	-
Stage 2	-	-	-	-	575	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	908	-	208	492
Stage 1	-	-	-	-	540	-
Stage 2	-	-	-	-	563	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	908	-	197	492
Mov Cap-2 Maneuver	-	-	-	-	197	-
Stage 1	-	-	-	-	540	-
Stage 2	-	-	-	-	534	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	33.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	238	-	-	908	-
HCM Lane V/C Ratio	0.489	-	-	0.036	-
HCM Control Delay (s)	33.8	-	-	9.1	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	7.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	602	178	40	565	88	36
Future Vol, veh/h	602	178	40	565	88	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	654	193	43	614	96	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	848	0	1452	751
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	701	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	790	-	144	411
Stage 1	-	-	-	-	466	-
Stage 2	-	-	-	-	492	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	790	-	132	411
Mov Cap-2 Maneuver	-	-	-	-	132	-
Stage 1	-	-	-	-	466	-
Stage 2	-	-	-	-	451	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	85.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	164	-	-	790	-
HCM Lane V/C Ratio	0.822	-	-	0.055	-
HCM Control Delay (s)	85.5	-	-	9.8	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	5.5	-	-	0.2	-

Intersection	
Int Delay, s/veh	18.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	751	178	40	720	88	36
Future Vol, veh/h	751	178	40	720	88	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	816	193	43	783	96	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1010	0	1783	913
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	870	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	686	-	~ 90	331
Stage 1	-	-	-	-	391	-
Stage 2	-	-	-	-	410	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	686	-	~ 80	331
Mov Cap-2 Maneuver	-	-	-	-	~ 80	-
Stage 1	-	-	-	-	391	-
Stage 2	-	-	-	-	364	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	268.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	103	-	-	686	-
HCM Lane V/C Ratio	1.309	-	-	0.063	-
HCM Control Delay (s)	268.8	-	-	10.6	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	9.4	-	-	0.2	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	450.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	1036	303	85	991	157	71
Future Vol, veh/h	1036	303	85	991	157	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1126	329	92	1077	171	77

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1455	0	2553	1291
Stage 1	-	-	-	-	1291	-
Stage 2	-	-	-	-	1262	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	465	-	~ 29	199
Stage 1	-	-	-	-	258	-
Stage 2	-	-	-	-	266	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	465	-	~ 15	199
Mov Cap-2 Maneuver	-	-	-	-	~ 15	-
Stage 1	-	-	-	-	258	-
Stage 2	-	-	-	-	~ 135	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	$ 5217.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	21	-	-	465	-
HCM Lane V/C Ratio	11.801	-	-	0.199	-
HCM Control Delay (s)	$ 5217.6	-	-	14.7	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	31.3	-	-	0.7	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1278

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	1185	303	85	1146	157	71
Future Vol, veh/h	1185	303	85	1146	157	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1288	329	92	1246	171	77

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1617	0	2883	1453
Stage 1	-	-	-	-	1453	-
Stage 2	-	-	-	-	1430	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	403	-	~ 18	160
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	221	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	403	-	~ 5	160
Mov Cap-2 Maneuver	-	-	-	-	~ 5	-
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	~ 57	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	$ 16513.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	7	-	-	403	-
HCM Lane V/C Ratio	35.404	-	-	0.229	-
HCM Control Delay (s)	$ 16513.2	-	-	16.6	0
HCM Lane LOS	F	-	-	C	A
HCM 95th %tile Q(veh)	32.9	-	-	0.9	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1185	303	85	1146	157	71
Future Volume (veh/h)	1185	303	85	1146	157	71
Number	4	14	3	8	5	12
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	1716	1750	1863	1716	1750
Adj Flow Rate, veh/h	1288	329	92	1246	171	77
Adj No. of Lanes	1	1	0	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1327	1039	0	1327	230	104
Arrive On Green	0.71	0.71	0.00	0.71	0.21	0.21
Sat Flow, veh/h	1863	1458	0	1863	1082	487
Grp Volume(v), veh/h	1288	329	0	1246	249	0
Grp Sat Flow(s),veh/h/ln	1863	1458	0	1863	1576	0
Q Serve(g_s), s	77.3	10.1	0.0	69.7	17.7	0.0
Cycle Q Clear(g_c), s	77.3	10.1	0.0	69.7	17.7	0.0
Prop In Lane		1.00	0.00		0.69	0.31
Lane Grp Cap(c), veh/h	1327	1039	0	1327	335	0
V/C Ratio(X)	0.97	0.32	0.00	0.94	0.74	0.00
Avail Cap(c_a), veh/h	1327	1039	0	1428	335	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	0.00	0.39	1.00	0.00
Uniform Delay (d), s/veh	16.1	6.4	0.0	15.0	44.2	0.0
Incr Delay (d2), s/veh	15.7	0.1	0.0	5.4	13.9	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	44.8	4.1	0.0	37.3	9.0	0.0
LnGrp Delay(d),s/veh	31.8	6.5	0.0	20.4	58.1	0.0
LnGrp LOS	C	A		C	E	
Approach Vol, veh/h	1617			1246	249	
Approach Delay, s/veh	26.6			20.4	58.1	
Approach LOS	C			C	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		30.0	0.0	90.0				90.0
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		19.0	4.0	83.5				92.0
Max Q Clear Time (g_c+I1), s		19.7	0.0	79.3				71.7
Green Ext Time (p_c), s		0.0	0.0	3.9				13.8

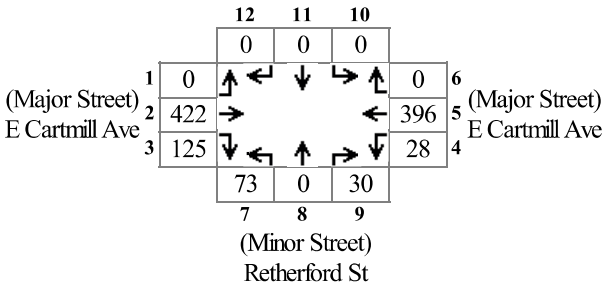
Intersection Summary	
HCM 2010 Ctrl Delay	26.7
HCM 2010 LOS	C

Notes

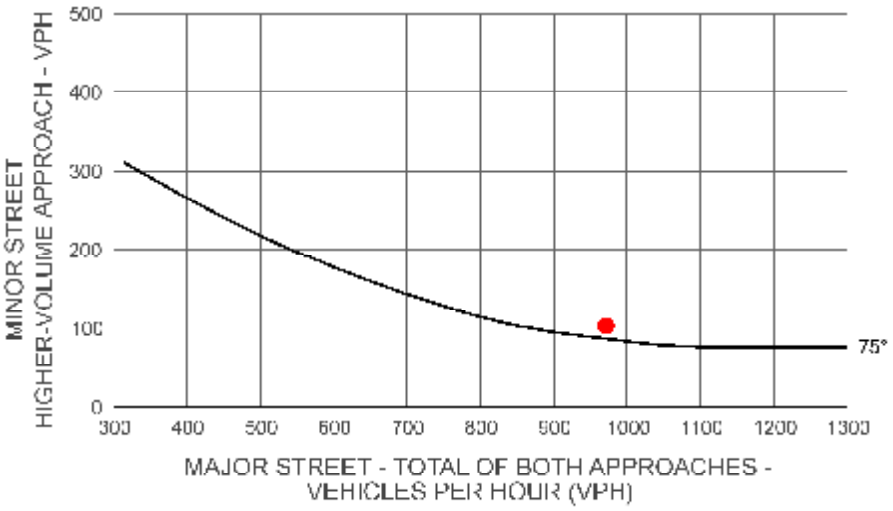
User approved volume balancing among the lanes for turning movement.

Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Existing
Intersection #: 9

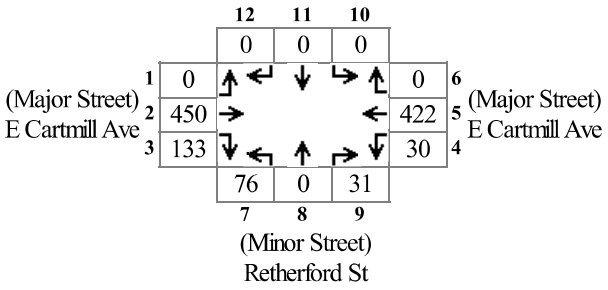


Major Total: 971
Minor High Volume: 103

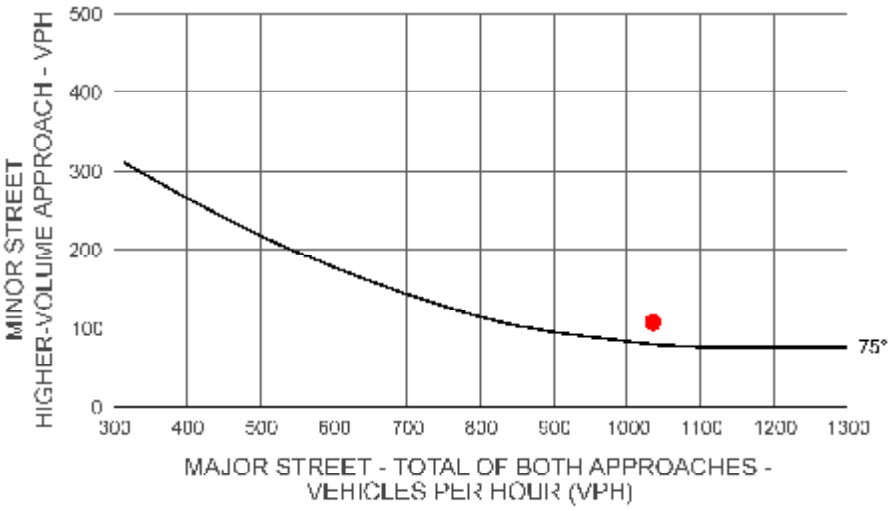


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future
Intersection #: 9

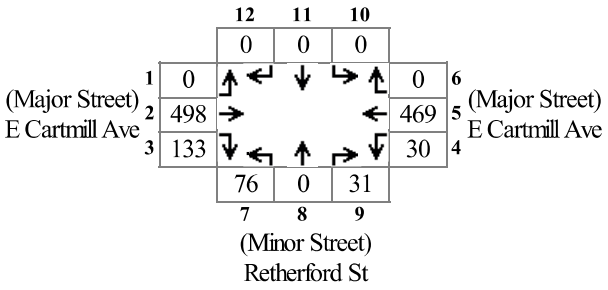


Major Total: 1035
Minor High Volume: 107

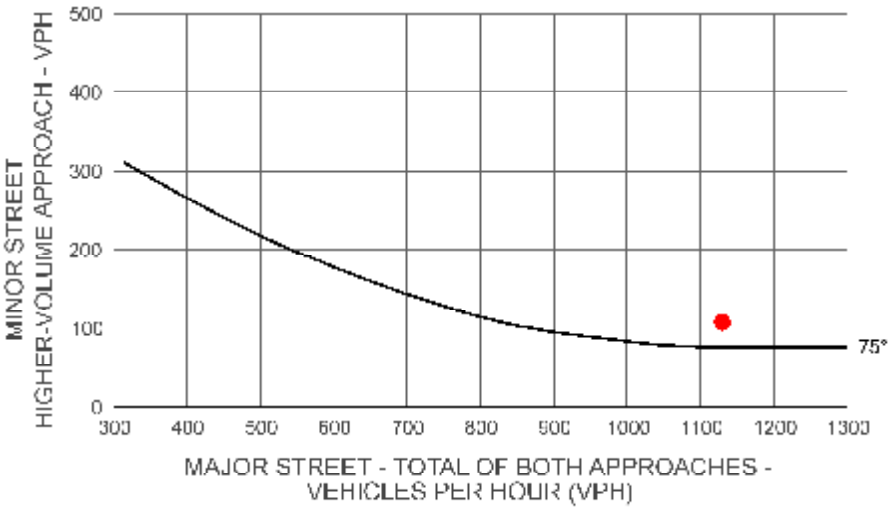


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project
Intersection #: 9

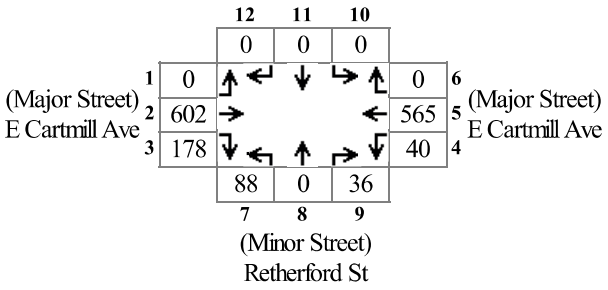


Major Total: 1130
Minor High Volume: 107

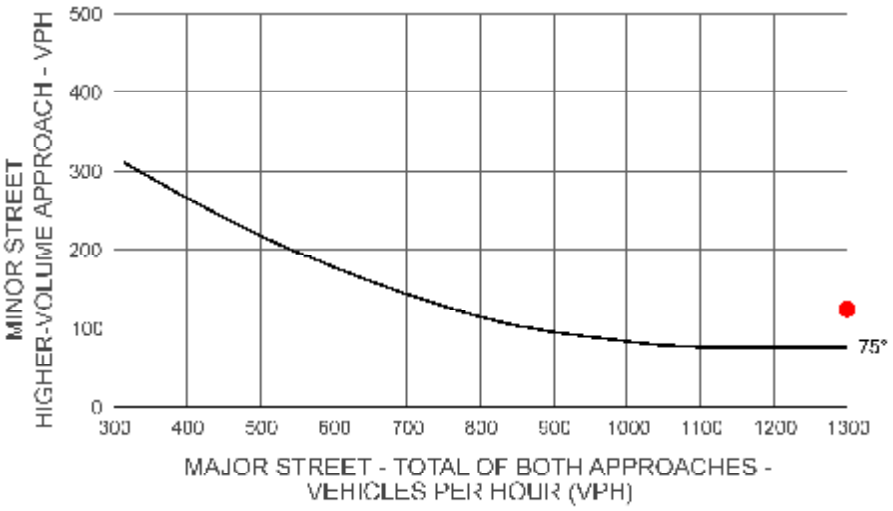


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future
Intersection #: 9

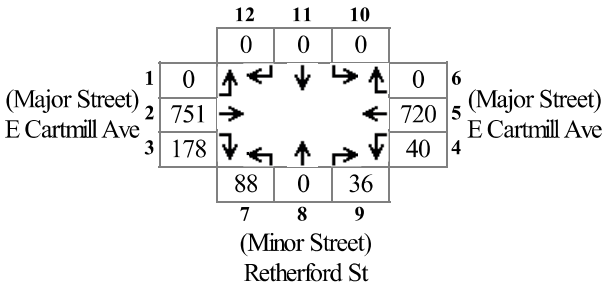


Major Total: 1385
Minor High Volume: 124

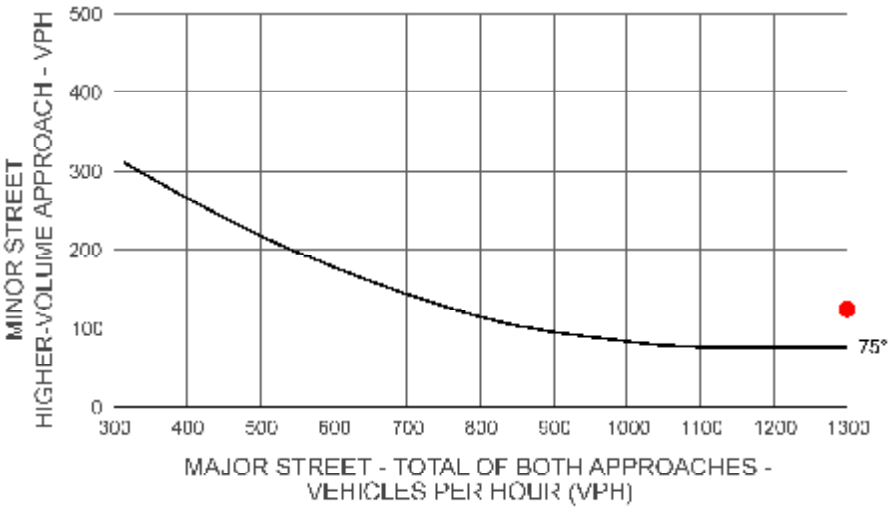


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project
Intersection #: 9

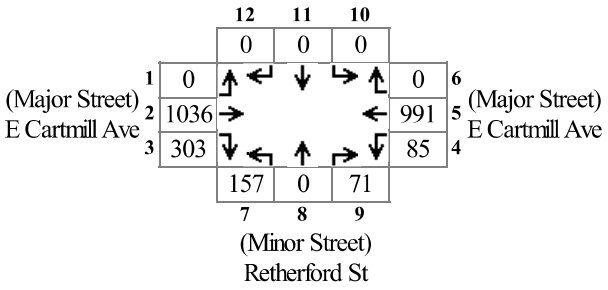


Major Total: 1689
Minor High Volume: 124

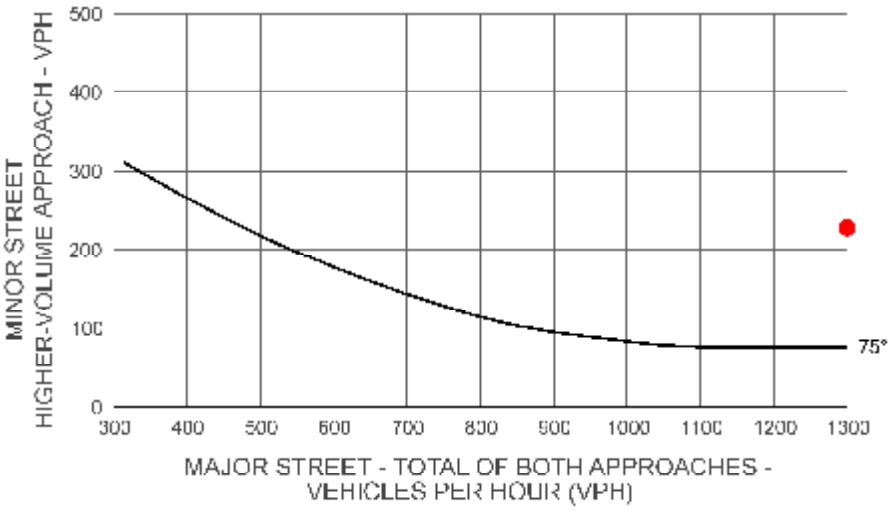


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future
Intersection #: 9

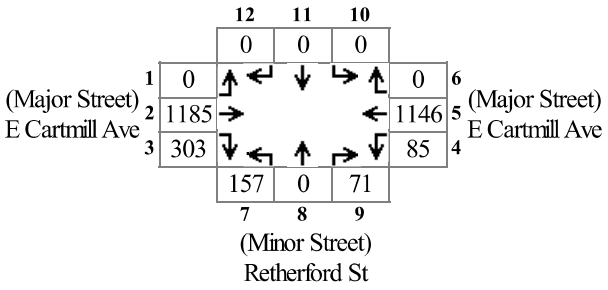


Major Total: 2415
Minor High Volume: 228

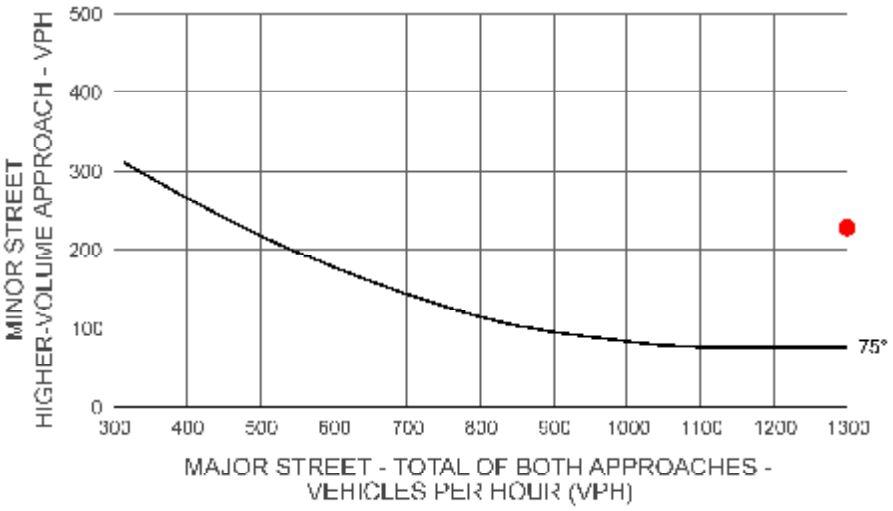


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project
Intersection #: 9



Major Total: 2719
Minor High Volume: 228



Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	402	73	2	444	21	1
Future Vol, veh/h	402	73	2	444	21	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	437	79	2	483	23	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	516	0	964	477
Stage 1	-	-	-	-	477	-
Stage 2	-	-	-	-	487	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1050	-	283	588
Stage 1	-	-	-	-	624	-
Stage 2	-	-	-	-	618	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1050	-	282	588
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	624	-
Stage 2	-	-	-	-	616	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	289	-	-	1050	-
HCM Lane V/C Ratio	0.083	-	-	0.002	-
HCM Control Delay (s)	18.6	-	-	8.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	429	78	2	474	22	1
Future Vol, veh/h	429	78	2	474	22	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	466	85	2	515	24	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	551	0	1029	509
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	520	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1019	-	259	564
Stage 1	-	-	-	-	604	-
Stage 2	-	-	-	-	597	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1019	-	258	564
Mov Cap-2 Maneuver	-	-	-	-	258	-
Stage 1	-	-	-	-	604	-
Stage 2	-	-	-	-	595	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	264	-	-	1019	-
HCM Lane V/C Ratio	0.095	-	-	0.002	-
HCM Control Delay (s)	20.1	-	-	8.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	439	78	2	491	22	1
Future Vol, veh/h	439	78	2	491	22	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	477	85	2	534	24	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	562	0	1058	520
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	538	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1009	-	249	556
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	585	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1009	-	248	556
Mov Cap-2 Maneuver	-	-	-	-	248	-
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	583	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	254	-	-	1009	-
HCM Lane V/C Ratio	0.098	-	-	0.002	-
HCM Control Delay (s)	20.7	-	-	8.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	573	104	3	633	25	1
Future Vol, veh/h	573	104	3	633	25	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	623	113	3	688	27	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	736	0	1374	679
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	695	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	870	-	160	452
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	495	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	870	-	159	452
Mov Cap-2 Maneuver	-	-	-	-	159	-
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	492	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	31.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	163	-	-	870	-
HCM Lane V/C Ratio	0.173	-	-	0.004	-
HCM Control Delay (s)	31.7	-	-	9.2	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	613	104	3	676	25	1
Future Vol, veh/h	613	104	3	676	25	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	666	113	3	735	27	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	779	0	1464	723
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	741	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	838	-	141	426
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	471	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	838	-	140	426
Mov Cap-2 Maneuver	-	-	-	-	140	-
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	468	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	36
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	144	-	-	838	-
HCM Lane V/C Ratio	0.196	-	-	0.004	-
HCM Control Delay (s)	36	-	-	9.3	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Intersection	
Int Delay, s/veh	20.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	924	180	23	1011	64	19
Future Vol, veh/h	924	180	23	1011	64	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1004	196	25	1099	70	21

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1200	0	2251	1102
Stage 1	-	-	-	-	1102	-
Stage 2	-	-	-	-	1149	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	582	-	~ 46	257
Stage 1	-	-	-	-	318	-
Stage 2	-	-	-	-	302	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	582	-	~ 41	257
Mov Cap-2 Maneuver	-	-	-	-	~ 41	-
Stage 1	-	-	-	-	318	-
Stage 2	-	-	-	-	269	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	$ 542.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	51	-	-	582	-
HCM Lane V/C Ratio	1.769	-	-	0.043	-
HCM Control Delay (s)	$ 542.1	-	-	11.5	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	8.8	-	-	0.1	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	24.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	964	180	23	1054	64	19
Future Vol, veh/h	964	180	23	1054	64	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1048	196	25	1146	70	21

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1243	0	2342	1146
Stage 1	-	-	-	-	1146	-
Stage 2	-	-	-	-	1196	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	560	-	~ 40	243
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	287	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	560	-	~ 35	243
Mov Cap-2 Maneuver	-	-	-	-	~ 35	-
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	252	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	$ 685.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	44	-	-	560	-
HCM Lane V/C Ratio	2.05	-	-	0.045	-
HCM Control Delay (s)	$ 685.6	-	-	11.7	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	9.4	-	-	0.1	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	964	180	23	1054	64	19
Future Volume (veh/h)	964	180	23	1054	64	19
Number	4	14	3	8	5	12
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	1716	1750	1863	1716	1750
Adj Flow Rate, veh/h	1048	196	25	1146	70	21
Adj No. of Lanes	1	1	0	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1255	983	0	1255	304	91
Arrive On Green	0.67	0.67	0.00	0.67	0.25	0.25
Sat Flow, veh/h	1863	1458	0	1863	1211	363
Grp Volume(v), veh/h	1048	196	0	1146	92	0
Grp Sat Flow(s),veh/h/ln	1863	1458	0	1863	1591	0
Q Serve(g_s), s	50.3	6.1	0.0	62.6	5.5	0.0
Cycle Q Clear(g_c), s	50.3	6.1	0.0	62.6	5.5	0.0
Prop In Lane		1.00	0.00		0.76	0.23
Lane Grp Cap(c), veh/h	1255	983	0	1255	399	0
V/C Ratio(X)	0.83	0.20	0.00	0.91	0.23	0.00
Avail Cap(c_a), veh/h	1312	1027	0	1444	399	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.00	0.52	1.00	0.00
Uniform Delay (d), s/veh	14.6	7.4	0.0	16.6	35.7	0.0
Incr Delay (d2), s/veh	4.3	0.1	0.0	4.7	1.3	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	27.1	2.5	0.0	33.5	2.6	0.0
LnGrp Delay(d),s/veh	18.9	7.5	0.0	21.3	37.1	0.0
LnGrp LOS	B	A		C	D	
Approach Vol, veh/h	1244			1146	92	
Approach Delay, s/veh	17.1			21.3	37.1	
Approach LOS	B			C	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		34.6	0.0	85.4				85.4
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		18.0	4.0	84.5				93.0
Max Q Clear Time (g_c+I1), s		7.5	0.0	52.3				64.6
Green Ext Time (p_c), s		0.2	0.0	17.5				16.3

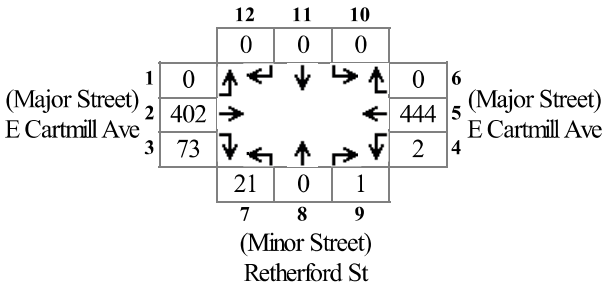
Intersection Summary	
HCM 2010 Ctrl Delay	19.8
HCM 2010 LOS	B

Notes

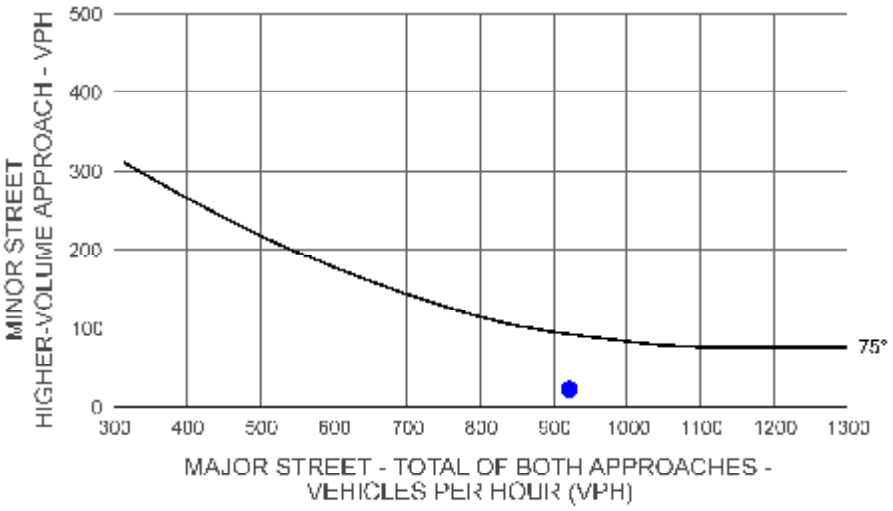
User approved volume balancing among the lanes for turning movement.

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 9

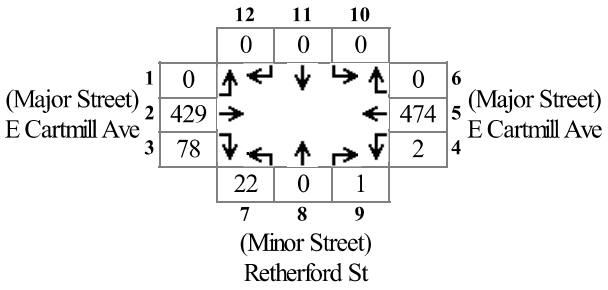


Major Total: 921
Minor High Volume: 22

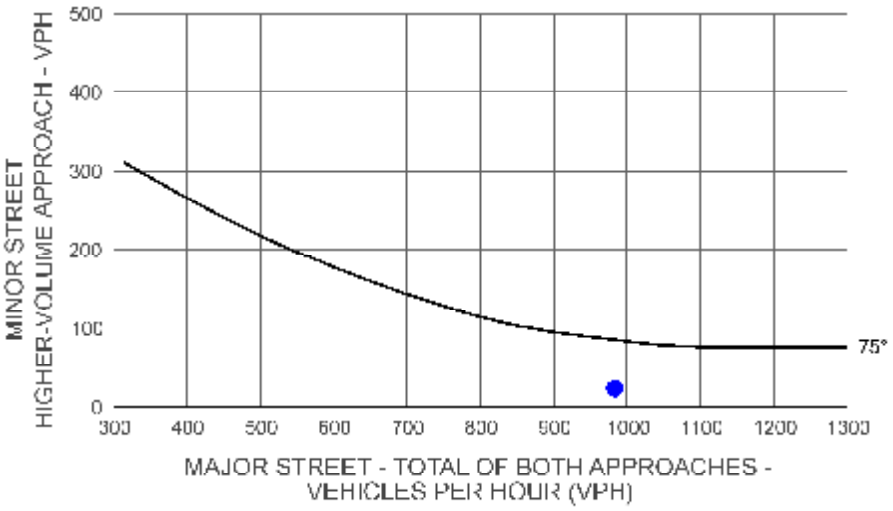


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 9

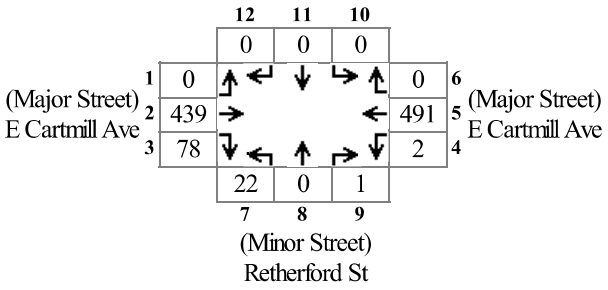


Major Total: 983
Minor High Volume: 23

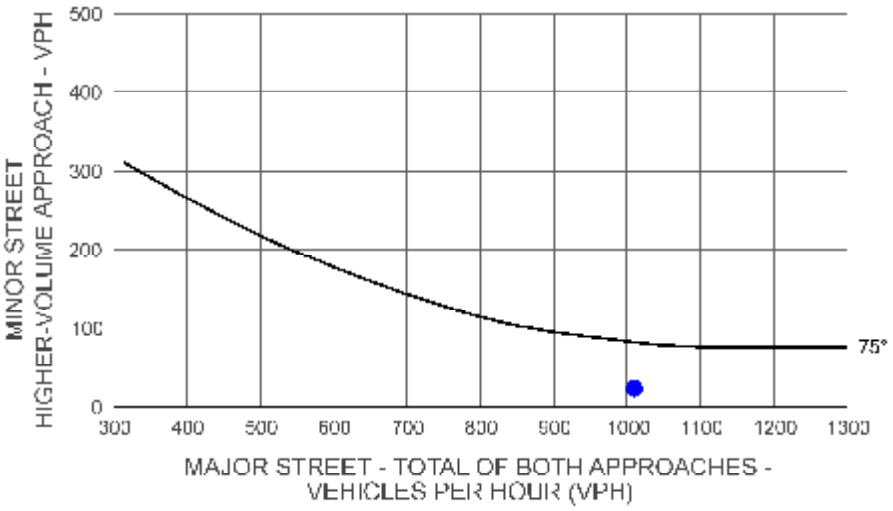


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 9

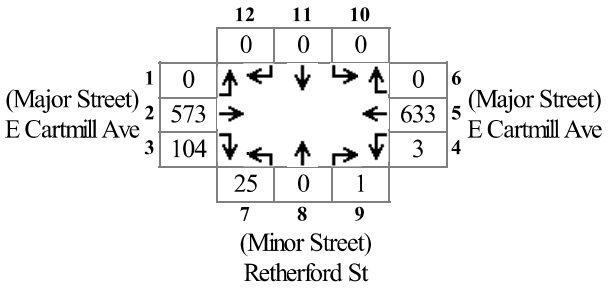


Major Total: 1010
Minor High Volume: 23

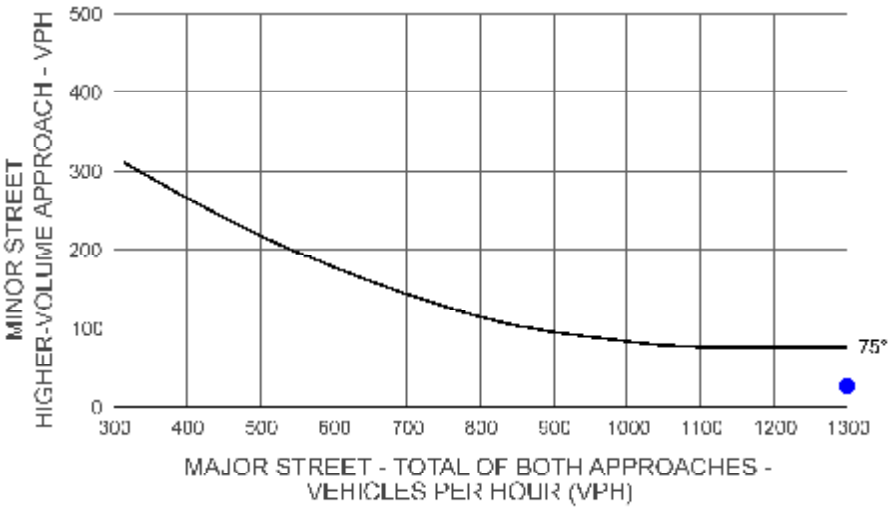


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 9

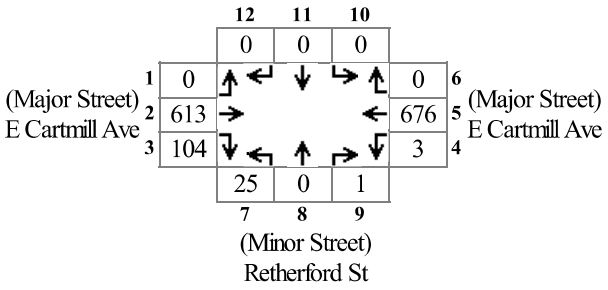


Major Total: 1313
Minor High Volume: 26

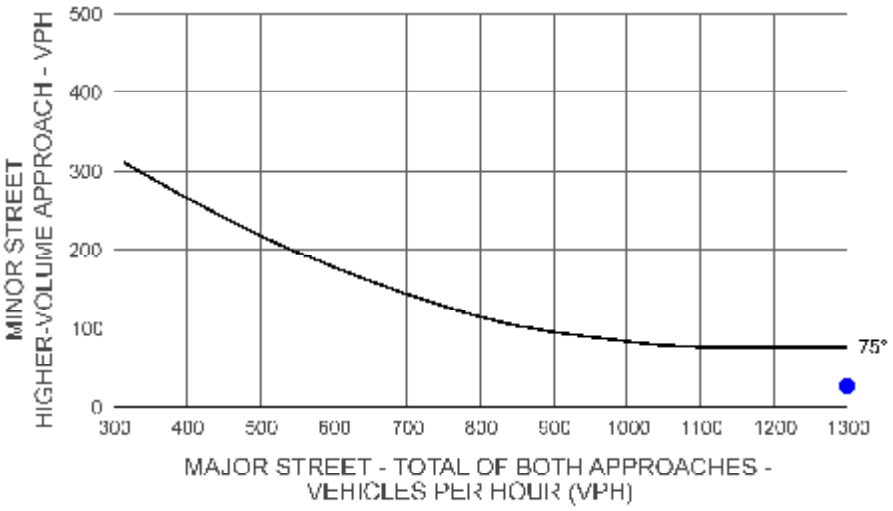


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 9

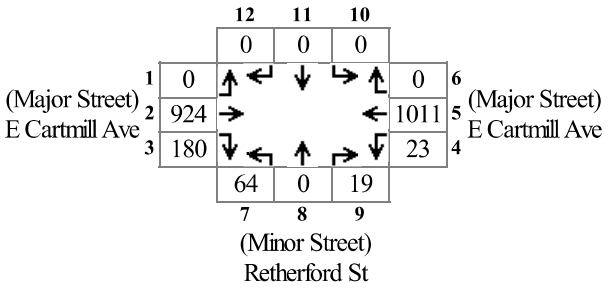


Major Total: 1396
Minor High Volume: 26

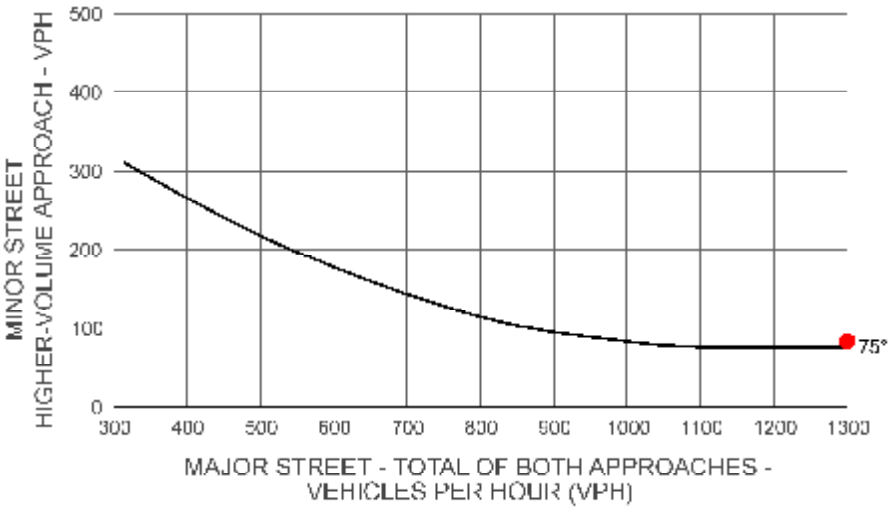


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future
Intersection #: 9

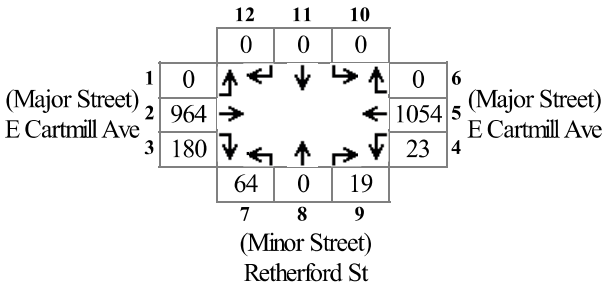


Major Total: 2138
Minor High Volume: 83

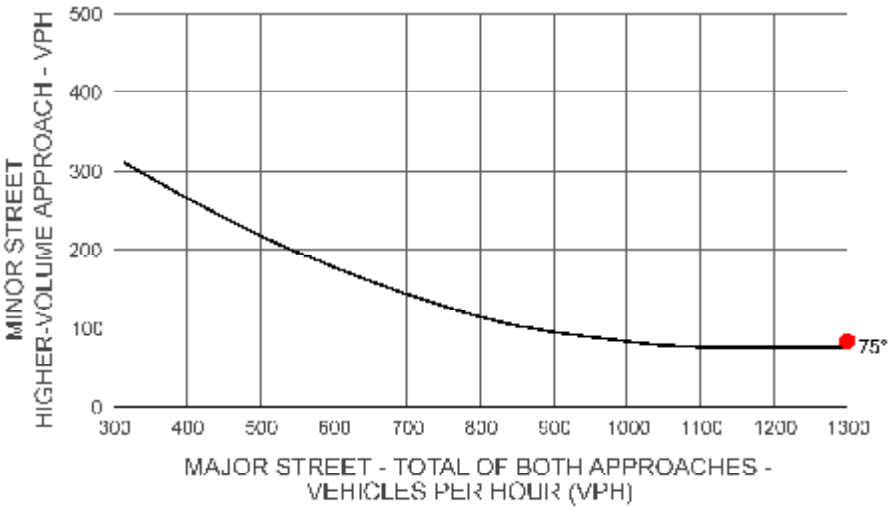


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future+Project
Intersection #: 9



Major Total: 2221
Minor High Volume: 83



Intersection 10
N Hillman St & E Cartmill Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	221	67	41	173	32	74	351	39	53	309	171
Future Volume (veh/h)	157	221	67	41	173	32	74	351	39	53	309	171
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	171	240	73	45	188	35	80	382	42	58	336	186
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	504	145	190	772	138	116	645	266	88	584	241
Arrive On Green	0.63	0.63	0.61	0.63	0.63	0.61	0.07	0.18	0.18	0.05	0.17	0.17
Sat Flow, veh/h	499	800	231	227	1225	218	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	484	0	0	268	0	0	80	382	42	58	336	186
Grp Sat Flow(s),veh/h/ln	1529	0	0	1670	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	8.4	0.0	0.0	0.0	0.0	0.0	4.3	8.9	2.2	3.1	7.9	11.0
Cycle Q Clear(g_c), s	14.2	0.0	0.0	5.8	0.0	0.0	4.3	8.9	2.2	3.1	7.9	11.0
Prop In Lane	0.35		0.15	0.17		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1018	0	0	1100	0	0	116	645	266	88	584	241
V/C Ratio(X)	0.48	0.00	0.00	0.24	0.00	0.00	0.69	0.59	0.16	0.66	0.57	0.77
Avail Cap(c_a), veh/h	1018	0	0	1100	0	0	182	692	285	153	629	259
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.98	0.00	0.00	0.46	0.46	0.46	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.7	0.0	0.0	7.3	0.0	0.0	40.8	33.7	31.0	41.8	34.7	36.0
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.5	0.0	0.0	3.4	0.6	0.1	8.1	1.1	12.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	0.0	0.0	3.0	0.0	0.0	2.0	4.4	0.9	1.6	3.9	5.3
LnGrp Delay(d),s/veh	10.2	0.0	0.0	7.8	0.0	0.0	44.2	34.3	31.1	49.9	35.8	48.5
LnGrp LOS	B			A			D	C	C	D	D	D
Approach Vol, veh/h		484			268			504			580	
Approach Delay, s/veh		10.2			7.8			35.6			41.3	
Approach LOS		B			A			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	8.8	20.4		60.7	10.4	18.9		60.7
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	7.5	16.7		50.0	9.1	15.1		50.0
Max Q Clear Time (g_c+I1), s	5.1	10.9		16.2	6.3	13.0		7.8
Green Ext Time (p_c), s	0.0	2.2		3.3	0.0	1.0		3.4

Intersection Summary	
HCM 2010 Ctrl Delay	26.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	236	71	47	197	36	75	356	40	55	318	176
Future Volume (veh/h)	167	236	71	47	197	36	75	356	40	55	318	176
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	182	257	77	51	214	39	82	387	43	60	346	191
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	364	501	142	188	768	134	118	649	267	91	589	243
Arrive On Green	0.63	0.63	0.61	0.63	0.63	0.61	0.07	0.18	0.18	0.06	0.17	0.17
Sat Flow, veh/h	494	798	227	225	1224	213	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	516	0	0	304	0	0	82	387	43	60	346	191
Grp Sat Flow(s),veh/h/ln	1519	0	0	1662	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	8.9	0.0	0.0	0.0	0.0	0.0	4.4	9.0	2.2	3.2	8.1	11.3
Cycle Q Clear(g_c), s	15.7	0.0	0.0	6.8	0.0	0.0	4.4	9.0	2.2	3.2	8.1	11.3
Prop In Lane	0.35		0.15	0.17		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1008	0	0	1090	0	0	118	649	267	91	589	243
V/C Ratio(X)	0.51	0.00	0.00	0.28	0.00	0.00	0.69	0.60	0.16	0.66	0.59	0.79
Avail Cap(c_a), veh/h	1008	0	0	1090	0	0	182	649	267	174	629	259
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.98	0.00	0.00	0.39	0.39	0.39	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.0	0.0	0.0	7.6	0.0	0.0	40.8	33.7	30.9	41.7	34.7	36.0
Incr Delay (d2), s/veh	1.9	0.0	0.0	0.6	0.0	0.0	2.9	0.6	0.1	8.0	1.3	14.0
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	7.4	0.0	0.0	3.6	0.0	0.0	2.1	4.5	0.9	1.7	4.1	5.5
LnGrp Delay(d),s/veh	10.9	0.0	0.0	8.2	0.0	0.0	43.6	34.3	31.0	49.6	35.9	50.0
LnGrp LOS	B			A			D	C	C	D	D	D
Approach Vol, veh/h		516			304			512			597	
Approach Delay, s/veh		10.9			8.2			35.5			41.8	
Approach LOS		B			A			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	9.0	20.5		60.5	10.5	19.0		60.5
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	8.7	15.5		50.0	9.1	15.1		50.0
Max Q Clear Time (g_c+I1), s	5.2	11.0		17.7	6.4	13.3		8.8
Green Ext Time (p_c), s	0.0	1.9		3.7	0.0	0.8		3.8

Intersection Summary	
HCM 2010 Ctrl Delay	26.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	255	92	47	218	36	93	356	40	55	318	184
Future Volume (veh/h)	175	255	92	47	218	36	93	356	40	55	318	184
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	190	277	100	51	237	39	101	387	43	60	346	200
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	342	476	164	171	770	121	141	704	290	91	595	245
Arrive On Green	0.61	0.61	0.59	0.61	0.61	0.59	0.09	0.20	0.20	0.06	0.17	0.17
Sat Flow, veh/h	471	777	267	203	1257	198	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	567	0	0	327	0	0	101	387	43	60	346	200
Grp Sat Flow(s),veh/h/ln	1515	0	0	1658	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	11.7	0.0	0.0	0.0	0.0	0.0	5.4	8.9	2.2	3.2	8.1	11.9
Cycle Q Clear(g_c), s	19.4	0.0	0.0	7.7	0.0	0.0	5.4	8.9	2.2	3.2	8.1	11.9
Prop In Lane	0.34		0.18	0.16		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	981	0	0	1061	0	0	141	704	290	91	595	245
V/C Ratio(X)	0.58	0.00	0.00	0.31	0.00	0.00	0.72	0.55	0.15	0.66	0.58	0.82
Avail Cap(c_a), veh/h	981	0	0	1061	0	0	182	704	290	167	629	259
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.97	0.00	0.00	0.45	0.45	0.45	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.4	0.0	0.0	8.3	0.0	0.0	40.0	32.4	29.7	41.7	34.5	36.1
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.7	0.0	0.0	4.3	0.4	0.1	8.0	1.2	17.2
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	9.1	0.0	0.0	4.0	0.0	0.0	2.6	4.3	0.9	1.7	4.0	6.0
LnGrp Delay(d),s/veh	12.8	0.0	0.0	9.0	0.0	0.0	44.3	32.8	29.9	49.6	35.7	53.3
LnGrp LOS	B			A			D	C	C	D	D	D
Approach Vol, veh/h		567			327			531			606	
Approach Delay, s/veh		12.8			9.0			34.8			42.9	
Approach LOS		B			A			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	9.0	21.9		59.1	11.8	19.1		59.1
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	8.3	15.9		50.0	9.1	15.1		50.0
Max Q Clear Time (g_c+I1), s	5.2	10.9		21.4	7.4	13.9		9.7
Green Ext Time (p_c), s	0.0	1.1		4.2	0.1	0.3		4.3

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	315	96	84	355	66	80	377	42	62	360	199
Future Volume (veh/h)	224	315	96	84	355	66	80	377	42	62	360	199
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	243	342	104	91	386	72	87	410	46	67	391	216
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	342	440	132	181	754	136	119	552	227	95	501	207
Arrive On Green	0.23	0.23	0.22	0.69	0.69	0.67	0.07	0.16	0.16	0.06	0.14	0.14
Sat Flow, veh/h	440	642	192	214	1099	198	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	689	0	0	549	0	0	87	410	46	67	391	216
Grp Sat Flow(s),veh/h/ln	1274	0	0	1511	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	43.4	0.0	0.0	0.0	0.0	0.0	6.3	13.3	3.3	4.8	12.8	17.0
Cycle Q Clear(g_c), s	62.5	0.0	0.0	19.2	0.0	0.0	6.3	13.3	3.3	4.8	12.8	17.0
Prop In Lane	0.35		0.15	0.17		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	914	0	0	1071	0	0	119	552	227	95	501	207
V/C Ratio(X)	0.75	0.00	0.00	0.51	0.00	0.00	0.73	0.74	0.20	0.70	0.78	1.05
Avail Cap(c_a), veh/h	914	0	0	1071	0	0	123	552	227	110	501	207
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.61	0.00	0.00	0.45	0.45	0.45	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.3	0.0	0.0	8.7	0.0	0.0	54.5	48.4	44.1	55.5	49.7	51.5
Incr Delay (d2), s/veh	5.7	0.0	0.0	1.1	0.0	0.0	9.5	2.5	0.2	15.4	7.7	75.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.2	0.0	0.0	8.9	0.0	0.0	3.1	6.7	1.3	2.6	6.8	11.1
LnGrp Delay(d),s/veh	46.0	0.0	0.0	9.8	0.0	0.0	64.0	50.8	44.3	70.9	57.4	126.6
LnGrp LOS	D			A			E	D	D	E	E	F
Approach Vol, veh/h		689			549			543			674	
Approach Delay, s/veh		46.0			9.8			52.4			80.9	
Approach LOS		D			A			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	11.0	22.7		86.3	12.7	21.0		86.3
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	7.2	17.0		80.0	8.1	16.1		80.0
Max Q Clear Time (g_c+I1), s	6.8	15.3		64.5	8.3	19.0		21.2
Green Ext Time (p_c), s	0.0	0.9		5.7	0.0	0.0		7.6

Intersection Summary	
HCM 2010 Ctrl Delay	48.9
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	248	379	157	84	421	66	141	377	42	62	360	227
Future Volume (veh/h)	248	379	157	84	421	66	141	377	42	62	360	227
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	270	412	171	91	458	72	153	410	46	67	391	247
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	395	163	154	760	115	150	590	243	95	472	194
Arrive On Green	1.00	1.00	1.00	0.68	0.68	0.66	0.09	0.17	0.17	0.06	0.13	0.13
Sat Flow, veh/h	377	586	241	178	1126	171	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	853	0	0	621	0	0	153	410	46	67	391	247
Grp Sat Flow(s),veh/h/ln	1205	0	0	1474	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	56.4	0.0	0.0	0.0	0.0	0.0	11.0	13.1	3.3	4.8	12.9	16.0
Cycle Q Clear(g_c), s	81.0	0.0	0.0	24.6	0.0	0.0	11.0	13.1	3.3	4.8	12.9	16.0
Prop In Lane	0.32		0.20	0.15		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	853	0	0	1029	0	0	150	590	243	95	472	194
V/C Ratio(X)	1.00	0.00	0.00	0.60	0.00	0.00	1.02	0.70	0.19	0.70	0.83	1.27
Avail Cap(c_a), veh/h	853	0	0	1029	0	0	150	590	243	109	472	194
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.43	0.00	0.00	0.14	0.14	0.14	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.0	0.0	0.0	10.0	0.0	0.0	54.5	47.1	43.0	55.5	50.7	52.0
Incr Delay (d2), s/veh	30.9	0.0	0.0	1.1	0.0	0.0	32.7	0.5	0.1	15.8	11.7	155.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	34.3	0.0	0.0	11.0	0.0	0.0	6.3	6.5	1.3	2.6	7.1	14.8
LnGrp Delay(d),s/veh	35.9	0.0	0.0	11.1	0.0	0.0	87.5	47.6	43.1	71.3	62.4	207.6
LnGrp LOS	F			B			F	D	D	E	E	F
Approach Vol, veh/h		853			621			609			705	
Approach Delay, s/veh		35.9			11.1			57.3			114.1	
Approach LOS		D			B			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	11.0	24.0		85.0	15.0	20.0		85.0
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	7.1	18.1		79.0	10.1	15.1		79.0
Max Q Clear Time (g_c+I1), s	6.8	15.1		83.0	13.0	18.0		26.6
Green Ext Time (p_c), s	0.0	1.5		0.0	0.0	0.0		10.8

Intersection Summary		
HCM 2010 Ctrl Delay	54.8	
HCM 2010 LOS	D	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	330	593	186	293	833	234	134	427	180	198	441	271
Future Volume (veh/h)	330	593	186	293	833	234	134	427	180	198	441	271
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	359	645	202	318	905	254	146	464	196	215	479	295
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	219	323	101	216	511	143	150	472	194	150	472	194
Arrive On Green	1.00	1.00	1.00	0.68	0.68	0.66	0.09	0.13	0.13	0.09	0.13	0.13
Sat Flow, veh/h	267	479	150	266	757	212	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	1206	0	0	1477	0	0	146	464	196	215	479	295
Grp Sat Flow(s),veh/h/ln	896	0	0	1235	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	10.7	15.7	16.0	11.0	16.0	16.0
Cycle Q Clear(g_c), s	81.0	0.0	0.0	81.0	0.0	0.0	10.7	15.7	16.0	11.0	16.0	16.0
Prop In Lane	0.30		0.17	0.22		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	644	0	0	870	0	0	150	472	194	150	472	194
V/C Ratio(X)	1.87	0.00	0.00	1.70	0.00	0.00	0.97	0.98	1.01	1.44	1.02	1.52
Avail Cap(c_a), veh/h	644	0	0	870	0	0	150	472	194	150	472	194
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.09	0.00	0.00	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	2.4	0.0	0.0	21.4	0.0	0.0	54.4	51.9	52.0	54.5	52.0	52.0
Incr Delay (d2), s/veh	399.0	0.0	0.0	314.1	0.0	0.0	16.4	9.0	21.3	229.7	45.3	257.3
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	88.3	0.0	0.0	104.7	0.0	0.0	5.5	8.3	7.6	14.5	10.8	20.3
LnGrp Delay(d),s/veh	401.4	0.0	0.0	335.4	0.0	0.0	70.8	60.8	73.4	284.2	97.3	309.3
LnGrp LOS	F			F			E	E	F	F	F	F
Approach Vol, veh/h		1206			1477			806			989	
Approach Delay, s/veh		401.4			335.4			65.7			201.2	
Approach LOS		F			F			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	15.0	20.0		85.0	15.0	20.0		85.0
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	10.1	15.1		79.0	10.1	15.1		79.0
Max Q Clear Time (g_c+I1), s	13.0	18.0		83.0	12.7	18.0		83.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	275.0
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	354	657	247	293	899	234	195	427	180	198	441	299
Future Volume (veh/h)	354	657	247	293	899	234	195	427	180	198	441	299
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	385	714	268	318	977	254	212	464	196	215	479	325
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	315	118	206	521	135	150	472	194	150	472	194
Arrive On Green	1.00	1.00	1.00	0.68	0.68	0.66	0.09	0.13	0.13	0.09	0.13	0.13
Sat Flow, veh/h	252	467	175	251	771	201	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	1367	0	0	1549	0	0	212	464	196	215	479	325
Grp Sat Flow(s),veh/h/ln	894	0	0	1223	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	11.0	15.7	16.0	11.0	16.0	16.0
Cycle Q Clear(g_c), s	81.0	0.0	0.0	81.0	0.0	0.0	11.0	15.7	16.0	11.0	16.0	16.0
Prop In Lane	0.28		0.20	0.21		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	642	0	0	862	0	0	150	472	194	150	472	194
V/C Ratio(X)	2.13	0.00	0.00	1.80	0.00	0.00	1.42	0.98	1.01	1.44	1.02	1.67
Avail Cap(c_a), veh/h	642	0	0	862	0	0	150	472	194	150	472	194
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.09	0.00	0.00	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	2.4	0.0	0.0	21.4	0.0	0.0	54.5	51.9	52.0	54.5	52.0	52.0
Incr Delay (d2), s/veh	513.1	0.0	0.0	359.4	0.0	0.0	190.5	9.0	21.3	229.7	45.3	323.7
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	108.4	0.0	0.0	114.5	0.0	0.0	12.9	8.3	7.6	14.5	10.8	23.9
LnGrp Delay(d),s/veh	515.5	0.0	0.0	380.8	0.0	0.0	245.0	60.8	73.4	284.2	97.3	375.7
LnGrp LOS	F			F			F	E	F	F	F	F
Approach Vol, veh/h		1367			1549			872			1019	
Approach Delay, s/veh		515.5			380.8			108.4			225.5	
Approach LOS		F			F			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	15.0	20.0		85.0	15.0	20.0		85.0
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	10.1	15.1		79.0	10.1	15.1		79.0
Max Q Clear Time (g_c+I1), s	13.0	18.0		83.0	13.0	18.0		83.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	336.8
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	354	657	247	293	899	234	195	427	180	198	441	299
Future Volume (veh/h)	354	657	247	293	899	234	195	427	180	198	441	299
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	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	385	714	268	318	977	254	212	464	196	215	479	325
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	404	1001	377	467	1194	461	228	575	636	249	620	599
Arrive On Green	0.25	0.28	0.26	0.29	0.34	0.32	0.14	0.16	0.16	0.15	0.18	0.18
Sat Flow, veh/h	1634	3539	1444	1634	3539	1458	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	385	714	268	318	977	254	212	464	196	215	479	325
Grp Sat Flow(s),veh/h/ln	1634	1770	1444	1634	1770	1458	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	21.6	16.9	11.6	16.1	23.5	9.4	11.9	11.8	0.0	11.9	12.0	15.7
Cycle Q Clear(g_c), s	21.6	16.9	11.6	16.1	23.5	9.4	11.9	11.8	0.0	11.9	12.0	15.7
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	404	1001	377	467	1194	461	228	575	636	249	620	599
V/C Ratio(X)	0.95	0.71	0.71	0.68	0.82	0.55	0.93	0.81	0.31	0.86	0.77	0.54
Avail Cap(c_a), veh/h	404	1001	377	467	1194	461	228	609	650	249	620	599
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)	0.31	0.31	0.31	0.68	0.68	0.68	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.5	30.0	17.1	29.5	28.2	13.0	39.5	37.5	17.1	38.5	36.6	20.8
Incr Delay (d2), s/veh	15.1	1.4	3.5	2.7	4.4	3.2	6.7	0.7	0.0	25.2	6.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	8.4	5.0	7.6	12.1	4.2	5.8	5.8	3.2	7.1	6.4	6.5
LnGrp Delay(d),s/veh	49.5	31.3	20.6	32.2	32.6	16.2	46.3	38.3	17.1	63.7	42.6	21.8
LnGrp LOS	D	C	C	C	C	B	D	D	B	E	D	C
Approach Vol, veh/h		1367			1549			872			1019	
Approach Delay, s/veh		34.4			29.8			35.5			40.4	
Approach LOS		C			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	18.2	19.1	30.7	30.3	17.0	20.3	25.5	35.5
Change Period (Y+Rc), s	4.9	4.9	6.0	* 6	4.9	4.9	4.5	6.0
Max Green Setting (Gmax), s	12.4	15.1	20.9	* 24	12.1	15.4	21.0	24.2
Max Q Clear Time (g_c+I1), s	13.9	13.8	18.1	18.9	13.9	17.7	23.6	25.5
Green Ext Time (p_c), s	0.0	0.5	1.5	2.2	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	34.4
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												
Traffic Volume (veh/h)	163	192	44	27	206	44	49	359	29	46	272	174
Future Volume (veh/h)	163	192	44	27	206	44	49	359	29	46	272	174
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	177	209	48	29	224	48	53	390	32	50	296	189
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	423	486	106	118	876	181	81	617	254	77	609	251
Arrive On Green	0.65	0.65	0.63	0.65	0.65	0.63	0.05	0.17	0.17	0.05	0.17	0.17
Sat Flow, veh/h	566	745	163	117	1343	277	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	434	0	0	301	0	0	53	390	32	50	296	189
Grp Sat Flow(s),veh/h/ln	1474	0	0	1736	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	5.2	0.0	0.0	0.0	0.0	0.0	3.0	9.7	1.8	2.9	7.2	11.7
Cycle Q Clear(g_c), s	11.8	0.0	0.0	6.6	0.0	0.0	3.0	9.7	1.8	2.9	7.2	11.7
Prop In Lane	0.41		0.11	0.10		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1015	0	0	1174	0	0	81	617	254	77	609	251
V/C Ratio(X)	0.43	0.00	0.00	0.26	0.00	0.00	0.66	0.63	0.13	0.65	0.49	0.75
Avail Cap(c_a), veh/h	1015	0	0	1174	0	0	138	671	276	155	708	292
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.98	0.00	0.00	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.7	0.0	0.0	7.0	0.0	0.0	44.4	36.4	33.1	44.5	35.5	37.4
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.5	0.0	0.0	8.1	1.6	0.2	8.9	0.6	9.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	0.0	3.5	0.0	0.0	1.6	4.9	0.7	1.5	3.5	5.4
LnGrp Delay(d),s/veh	9.0	0.0	0.0	7.5	0.0	0.0	52.4	38.0	33.3	53.3	36.1	46.5
LnGrp LOS	A			A			D	D	C	D	D	D
Approach Vol, veh/h		434			301			475			535	
Approach Delay, s/veh		9.0			7.5			39.3			41.4	
Approach LOS		A			A			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	8.5	20.6		66.0	8.7	20.3		66.0
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	8.1	17.1		54.0	7.1	18.1		54.0
Max Q Clear Time (g_c+I1), s	4.9	11.7		13.8	5.0	13.7		8.6
Green Ext Time (p_c), s	0.0	2.0		3.3	0.0	1.7		3.3

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	174	205	47	31	235	50	50	364	29	47	280	179
Future Volume (veh/h)	174	205	47	31	235	50	50	364	29	47	280	179
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	189	223	51	34	255	54	54	396	32	51	304	195
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	413	473	103	120	867	176	86	620	256	79	604	249
Arrive On Green	0.21	0.21	0.20	0.64	0.64	0.62	0.05	0.18	0.18	0.05	0.17	0.17
Sat Flow, veh/h	554	735	160	119	1348	274	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	463	0	0	343	0	0	54	396	32	51	304	195
Grp Sat Flow(s),veh/h/ln	1449	0	0	1741	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	16.7	0.0	0.0	0.0	0.0	0.0	2.9	9.4	1.7	2.8	7.0	11.5
Cycle Q Clear(g_c), s	24.2	0.0	0.0	7.6	0.0	0.0	2.9	9.4	1.7	2.8	7.0	11.5
Prop In Lane	0.41		0.11	0.10		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	988	0	0	1164	0	0	86	620	256	79	604	249
V/C Ratio(X)	0.47	0.00	0.00	0.29	0.00	0.00	0.63	0.64	0.13	0.65	0.50	0.78
Avail Cap(c_a), veh/h	988	0	0	1164	0	0	127	708	292	145	747	308
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.97	0.00	0.00	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	0.0	0.0	7.1	0.0	0.0	41.8	34.5	31.3	42.1	33.9	35.7
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.6	0.0	0.0	6.7	1.5	0.2	8.6	0.6	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	0.0	0.0	3.9	0.0	0.0	1.5	4.7	0.7	1.4	3.5	5.4
LnGrp Delay(d),s/veh	23.3	0.0	0.0	7.8	0.0	0.0	48.5	35.9	31.5	50.6	34.5	45.8
LnGrp LOS	C			A			D	D	C	D	C	D
Approach Vol, veh/h		463			343			482			550	
Approach Delay, s/veh		23.3			7.8			37.0			40.0	
Approach LOS		C			A			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	8.3	19.8		61.9	8.7	19.4		61.9
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	7.1	17.1		50.0	6.1	18.1		50.0
Max Q Clear Time (g_c+I1), s	4.8	11.4		26.2	4.9	13.5		9.6
Green Ext Time (p_c), s	0.0	1.1		3.5	0.3	0.9		3.7

Intersection Summary		
HCM 2010 Ctrl Delay		29.0
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	208	52	31	243	50	57	364	29	47	280	182
Future Volume (veh/h)	176	208	52	31	243	50	57	364	29	47	280	182
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	191	226	57	34	264	54	62	396	32	51	304	198
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	402	462	110	116	863	169	104	645	266	79	590	243
Arrive On Green	0.64	0.64	0.61	0.64	0.64	0.61	0.06	0.18	0.18	0.05	0.17	0.17
Sat Flow, veh/h	544	726	174	114	1356	266	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	474	0	0	352	0	0	62	396	32	51	304	198
Grp Sat Flow(s),veh/h/ln	1443	0	0	1736	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	6.3	0.0	0.0	0.0	0.0	0.0	3.3	9.3	1.7	2.8	7.0	11.8
Cycle Q Clear(g_c), s	14.3	0.0	0.0	7.9	0.0	0.0	3.3	9.3	1.7	2.8	7.0	11.8
Prop In Lane	0.40		0.12	0.10		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	975	0	0	1148	0	0	104	645	266	79	590	243
V/C Ratio(X)	0.49	0.00	0.00	0.31	0.00	0.00	0.60	0.61	0.12	0.65	0.51	0.81
Avail Cap(c_a), veh/h	975	0	0	1148	0	0	182	731	301	134	629	259
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.96	0.00	0.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.4	0.0	0.0	7.5	0.0	0.0	41.0	33.9	30.8	42.1	34.2	36.1
Incr Delay (d2), s/veh	1.7	0.0	0.0	0.7	0.0	0.0	5.0	1.1	0.2	8.6	0.7	17.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.0	0.0	4.2	0.0	0.0	1.6	4.6	0.7	1.4	3.5	5.9
LnGrp Delay(d),s/veh	10.1	0.0	0.0	8.1	0.0	0.0	46.0	35.0	31.0	50.7	34.9	53.1
LnGrp LOS	B			A			D	D	C	D	C	D
Approach Vol, veh/h		474			352			490			553	
Approach Delay, s/veh		10.1			8.1			36.2			42.9	
Approach LOS		B			A			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	8.3	20.4		61.3	9.7	19.0		61.3
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	6.5	17.7		50.0	9.1	15.1		50.0
Max Q Clear Time (g_c+I1), s	4.8	11.3		16.3	5.3	13.8		9.9
Green Ext Time (p_c), s	0.0	1.2		3.8	0.8	0.3		3.8

Intersection Summary	
HCM 2010 Ctrl Delay	26.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	274	63	55	423	90	53	386	31	54	317	203
Future Volume (veh/h)	232	274	63	55	423	90	53	386	31	54	317	203
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	252	298	68	60	460	98	58	420	34	59	345	221
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	350	377	83	118	857	176	87	593	244	88	596	246
Arrive On Green	0.65	0.65	0.63	0.65	0.65	0.63	0.05	0.17	0.17	0.05	0.17	0.17
Sat Flow, veh/h	455	578	128	117	1315	270	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	618	0	0	618	0	0	58	420	34	59	345	221
Grp Sat Flow(s),veh/h/ln	1161	0	0	1702	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	23.4	0.0	0.0	0.0	0.0	0.0	3.3	10.6	1.9	3.4	8.5	14.1
Cycle Q Clear(g_c), s	40.6	0.0	0.0	17.3	0.0	0.0	3.3	10.6	1.9	3.4	8.5	14.1
Prop In Lane	0.41		0.11	0.10		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	810	0	0	1151	0	0	87	593	244	88	596	246
V/C Ratio(X)	0.76	0.00	0.00	0.54	0.00	0.00	0.67	0.71	0.14	0.67	0.58	0.90
Avail Cap(c_a), veh/h	810	0	0	1151	0	0	103	596	246	103	596	246
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.49	0.00	0.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.6	0.0	0.0	8.8	0.0	0.0	44.1	37.3	33.7	44.1	36.4	38.7
Incr Delay (d2), s/veh	6.7	0.0	0.0	0.9	0.0	0.0	11.0	3.5	0.2	12.4	1.4	32.3
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	13.9	0.0	0.0	8.7	0.0	0.0	1.8	5.5	0.8	1.8	4.3	7.9
LnGrp Delay(d),s/veh	20.4	0.0	0.0	9.7	0.0	0.0	55.2	40.9	33.9	56.5	37.8	71.0
LnGrp LOS	C			A			E	D	C	E	D	E
Approach Vol, veh/h		618			618			512			625	
Approach Delay, s/veh		20.4			9.7			42.0			51.3	
Approach LOS		C			A			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	9.1	19.9		65.9	9.1	20.0		65.9
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	5.1	15.1		59.0	5.1	15.1		59.0
Max Q Clear Time (g_c+I1), s	5.4	12.6		42.6	5.3	16.1		19.3
Green Ext Time (p_c), s	0.0	1.2		5.9	0.0	0.0		7.5

Intersection Summary		
HCM 2010 Ctrl Delay		30.4
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	238	291	79	55	442	90	70	386	31	54	317	211
Future Volume (veh/h)	238	291	79	55	442	90	70	386	31	54	317	211
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	259	316	86	60	480	98	76	420	34	59	345	229
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	334	366	97	114	858	169	86	598	247	88	604	249
Arrive On Green	0.65	0.65	0.63	0.65	0.65	0.63	0.05	0.17	0.17	0.05	0.17	0.17
Sat Flow, veh/h	433	563	149	112	1319	260	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	661	0	0	638	0	0	76	420	34	59	345	229
Grp Sat Flow(s),veh/h/ln	1145	0	0	1691	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	29.6	0.0	0.0	0.0	0.0	0.0	4.4	10.6	1.9	3.4	8.5	14.7
Cycle Q Clear(g_c), s	48.0	0.0	0.0	18.4	0.0	0.0	4.4	10.6	1.9	3.4	8.5	14.7
Prop In Lane	0.39		0.13	0.09		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	798	0	0	1141	0	0	86	598	247	88	604	249
V/C Ratio(X)	0.83	0.00	0.00	0.56	0.00	0.00	0.88	0.70	0.14	0.67	0.57	0.92
Avail Cap(c_a), veh/h	798	0	0	1141	0	0	86	598	247	89	604	249
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.48	0.00	0.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	9.1	0.0	0.0	44.7	37.2	33.6	44.1	36.2	38.8
Incr Delay (d2), s/veh	9.7	0.0	0.0	1.0	0.0	0.0	57.0	3.4	0.2	17.2	1.3	36.5
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	16.7	0.0	0.0	9.2	0.0	0.0	3.3	5.5	0.8	1.9	4.3	8.4
LnGrp Delay(d),s/veh	25.1	0.0	0.0	10.0	0.0	0.0	101.7	40.6	33.8	61.2	37.5	75.2
LnGrp LOS	C			B			F	D	C	E	D	E
Approach Vol, veh/h		661			638			530			633	
Approach Delay, s/veh		25.1			10.0			48.9			53.4	
Approach LOS		C			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	9.1	20.1		65.8	9.0	20.2		65.8
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	4.3	15.1		59.8	4.1	15.3		59.8
Max Q Clear Time (g_c+I1), s	5.4	12.6		50.0	6.4	16.7		20.4
Green Ext Time (p_c), s	0.0	1.2		4.7	0.0	0.0		8.2

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	334	479	123	192	911	244	88	428	120	144	382	261
Future Volume (veh/h)	334	479	123	192	911	244	88	428	120	144	382	261
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	363	521	134	209	990	265	96	465	130	157	415	284
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	190	215	55	176	702	187	109	472	194	123	501	207
Arrive On Green	1.00	1.00	1.00	0.69	0.69	0.68	0.07	0.13	0.13	0.08	0.14	0.14
Sat Flow, veh/h	216	311	80	205	1015	270	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	1018	0	0	1464	0	0	96	465	130	157	415	284
Grp Sat Flow(s),veh/h/ln	607	0	0	1491	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	7.0	15.7	10.2	9.0	13.7	17.0
Cycle Q Clear(g_c), s	83.0	0.0	0.0	83.0	0.0	0.0	7.0	15.7	10.2	9.0	13.7	17.0
Prop In Lane	0.36		0.13	0.14		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	460	0	0	1065	0	0	109	472	194	123	501	207
V/C Ratio(X)	2.21	0.00	0.00	1.37	0.00	0.00	0.88	0.99	0.67	1.28	0.83	1.37
Avail Cap(c_a), veh/h	460	0	0	1065	0	0	109	472	194	123	501	207
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.09	0.00	0.00	0.89	0.89	0.89	1.00	1.00	1.00
Uniform Delay (d), s/veh	3.7	0.0	0.0	19.8	0.0	0.0	55.5	51.9	49.5	55.5	50.1	51.5
Incr Delay (d2), s/veh	552.0	0.0	0.0	169.0	0.0	0.0	47.1	35.2	7.6	174.9	11.0	196.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	83.7	0.0	0.0	85.2	0.0	0.0	4.6	10.0	4.5	10.0	7.5	18.1
LnGrp Delay(d),s/veh	555.6	0.0	0.0	188.8	0.0	0.0	102.6	87.0	57.1	230.4	61.1	247.6
LnGrp LOS	F			F			F	F	E	F	E	F
Approach Vol, veh/h		1018			1464			691			856	
Approach Delay, s/veh		555.6			188.8			83.6			154.0	
Approach LOS		F			F			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	13.0	20.0		87.0	12.0	21.0		87.0
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	8.1	15.1		81.0	7.1	16.1		81.0
Max Q Clear Time (g_c+I1), s	11.0	17.7		85.0	9.0	19.0		85.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	256.0
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	496	139	192	930	244	105	428	120	144	382	269
Future Volume (veh/h)	340	496	139	192	930	244	105	428	120	144	382	269
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	1750	1863	1750	1750	1863	1750	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	370	539	151	209	1011	265	114	465	130	157	415	292
Adj No. of Lanes	0	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	210	59	172	682	177	109	539	222	109	539	222
Arrive On Green	1.00	1.00	1.00	0.67	0.67	0.65	0.07	0.15	0.15	0.07	0.15	0.15
Sat Flow, veh/h	217	316	88	200	1023	266	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	1060	0	0	1485	0	0	114	465	130	157	415	292
Grp Sat Flow(s),veh/h/ln	621	0	0	1488	0	0	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	7.0	13.5	8.7	7.0	11.8	16.0
Cycle Q Clear(g_c), s	70.0	0.0	0.0	70.0	0.0	0.0	7.0	13.5	8.7	7.0	11.8	16.0
Prop In Lane	0.35		0.14	0.14		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	460	0	0	1031	0	0	109	539	222	109	539	222
V/C Ratio(X)	2.30	0.00	0.00	1.44	0.00	0.00	1.05	0.86	0.58	1.44	0.77	1.31
Avail Cap(c_a), veh/h	460	0	0	1031	0	0	109	539	222	109	539	222
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.09	0.00	0.00	0.88	0.88	0.88	1.00	1.00	1.00
Uniform Delay (d), s/veh	3.5	0.0	0.0	18.7	0.0	0.0	49.0	43.4	41.4	49.0	42.7	44.5
Incr Delay (d2), s/veh	593.7	0.0	0.0	198.5	0.0	0.0	94.0	12.1	3.5	242.7	6.7	169.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	87.4	0.0	0.0	86.7	0.0	0.0	6.0	7.5	3.7	10.5	6.3	16.9
LnGrp Delay(d),s/veh	597.2	0.0	0.0	217.3	0.0	0.0	143.7	55.5	44.9	291.7	49.4	214.0
LnGrp LOS	F			F			F	E	D	F	D	F
Approach Vol, veh/h		1060			1485			709			864	
Approach Delay, s/veh		597.2			217.3			67.7			149.1	
Approach LOS		F			F			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	11.0	20.0		74.0	11.0	20.0		74.0
Change Period (Y+Rc), s	4.9	4.9		6.0	4.9	4.9		6.0
Max Green Setting (Gmax), s	6.1	15.1		68.0	6.1	15.1		68.0
Max Q Clear Time (g_c+I1), s	9.0	15.5		72.0	9.0	18.0		72.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	275.0
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	496	139	192	930	244	105	428	120	144	382	269
Future Volume (veh/h)	340	496	139	192	930	244	105	428	120	144	382	269
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	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	370	539	151	209	1011	265	114	465	130	157	415	292
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	413	1439	558	274	1138	438	186	574	464	176	552	579
Arrive On Green	0.25	0.41	0.39	0.17	0.32	0.30	0.11	0.16	0.16	0.11	0.16	0.16
Sat Flow, veh/h	1634	3539	1449	1634	3539	1458	1634	3539	1458	1634	3539	1458
Grp Volume(v), veh/h	370	539	151	209	1011	265	114	465	130	157	415	292
Grp Sat Flow(s),veh/h/ln	1634	1770	1449	1634	1770	1458	1634	1770	1458	1634	1770	1458
Q Serve(g_s), s	20.3	9.9	4.3	11.4	25.2	10.0	6.2	11.8	4.0	8.8	10.4	8.3
Cycle Q Clear(g_c), s	20.3	9.9	4.3	11.4	25.2	10.0	6.2	11.8	4.0	8.8	10.4	8.3
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	413	1439	558	274	1138	438	186	574	464	176	552	579
V/C Ratio(X)	0.90	0.37	0.27	0.76	0.89	0.61	0.61	0.81	0.28	0.89	0.75	0.50
Avail Cap(c_a), veh/h	413	1439	558	364	1138	438	186	609	478	176	647	618
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)	0.61	0.61	0.61	0.74	0.74	0.74	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	19.3	8.0	36.9	30.0	13.4	39.3	37.6	10.9	41.0	37.5	8.6
Incr Delay (d2), s/veh	14.7	0.5	0.7	5.0	8.0	4.5	0.5	0.8	0.0	39.3	4.2	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	10.8	4.9	1.8	5.5	13.5	4.5	2.8	5.8	1.6	5.9	5.4	3.4
LnGrp Delay(d),s/veh	48.3	19.8	8.8	41.9	37.9	17.9	39.8	38.3	10.9	80.3	41.7	9.3
LnGrp LOS	D	B	A	D	D	B	D	D	B	F	D	A
Approach Vol, veh/h		1060			1485			709			864	
Approach Delay, s/veh		28.2			34.9			33.5			37.7	
Approach LOS		C			C			C			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	19.1	18.1	41.8	14.6	18.5	26.0	33.9
Change Period (Y+Rc), s	4.9	4.9	4.5	6.0	4.9	4.9	4.5	6.0
Max Green Setting (Gmax), s	9.1	15.1	18.7	29.8	8.1	16.1	21.5	27.0
Max Q Clear Time (g_c+I1), s	10.8	13.8	13.4	11.9	8.2	12.4	22.3	27.2
Green Ext Time (p_c), s	0.0	0.4	0.3	8.8	0.0	1.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	33.5
HCM 2010 LOS	C

Intersection 11
North Mooney Boulevard & E Cartmill Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	213	42	23	165	17	31	303	24	35	267	38
Future Volume (veh/h)	58	213	42	23	165	17	31	303	24	35	267	38
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		0.98	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	63	232	46	25	179	18	34	329	26	38	290	41
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	857	170	65	900	91	73	607	48	78	579	81
Arrive On Green	0.07	0.57	0.55	0.04	0.54	0.52	0.04	0.18	0.16	0.05	0.19	0.17
Sat Flow, veh/h	1634	1506	299	1634	1663	167	1634	3314	260	1634	3102	433
Grp Volume(v), veh/h	63	0	278	25	0	197	34	175	180	38	164	167
Grp Sat Flow(s),veh/h/ln	1634	0	1805	1634	0	1830	1634	1770	1804	1634	1770	1766
Q Serve(g_s), s	3.7	0.0	7.9	1.5	0.0	5.6	2.0	8.9	9.1	2.3	8.3	8.5
Cycle Q Clear(g_c), s	3.7	0.0	7.9	1.5	0.0	5.6	2.0	8.9	9.1	2.3	8.3	8.5
Prop In Lane	1.00		0.17	1.00		0.09	1.00		0.14	1.00		0.25
Lane Grp Cap(c), veh/h	110	0	1027	65	0	991	73	324	331	78	330	329
V/C Ratio(X)	0.57	0.00	0.27	0.38	0.00	0.20	0.47	0.54	0.55	0.49	0.50	0.51
Avail Cap(c_a), veh/h	147	0	1027	98	0	991	98	662	675	98	662	660
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)	0.87	0.00	0.87	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	0.0	11.1	46.8	0.0	11.8	46.6	37.0	37.2	46.4	36.5	36.8
Incr Delay (d2), s/veh	4.0	0.0	0.6	3.6	0.0	0.5	4.6	1.4	1.4	4.6	1.2	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	1.8	0.0	4.0	0.7	0.0	2.9	1.0	4.5	4.6	1.1	4.2	4.3
LnGrp Delay(d),s/veh	49.2	0.0	11.6	50.4	0.0	12.3	51.2	38.4	38.6	51.0	37.6	38.0
LnGrp LOS	D		B	D		B	D	D	D	D	D	D
Approach Vol, veh/h		341			222			389			369	
Approach Delay, s/veh		18.6			16.6			39.6			39.2	
Approach LOS		B			B			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	22.3	8.0	60.9	8.5	22.6	10.8	58.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	4.0	32.6	4.0	35.4	7.0	29.6
Max Q Clear Time (g_c+I1), s	4.3	11.1	3.5	9.9	4.0	10.5	5.7	7.6
Green Ext Time (p_c), s	0.0	2.4	0.0	1.7	0.0	2.4	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	30.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	243	48	28	200	21	33	327	26	37	282	40
Future Volume (veh/h)	66	243	48	28	200	21	33	327	26	37	282	40
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		0.98	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	72	264	52	30	217	23	36	355	28	40	307	43
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	447	840	165	70	539	57	76	633	50	81	603	83
Arrive On Green	0.27	0.56	0.54	0.04	0.33	0.31	0.05	0.19	0.17	0.05	0.19	0.17
Sat Flow, veh/h	1634	1508	297	1634	1653	175	1634	3314	260	1634	3106	430
Grp Volume(v), veh/h	72	0	316	30	0	240	36	189	194	40	173	177
Grp Sat Flow(s),veh/h/ln	1634	0	1805	1634	0	1828	1634	1770	1805	1634	1770	1767
Q Serve(g_s), s	3.3	0.0	9.5	1.8	0.0	10.2	2.1	9.6	9.8	2.4	8.7	9.0
Cycle Q Clear(g_c), s	3.3	0.0	9.5	1.8	0.0	10.2	2.1	9.6	9.8	2.4	8.7	9.0
Prop In Lane	1.00		0.16	1.00		0.10	1.00		0.14	1.00		0.24
Lane Grp Cap(c), veh/h	447	0	1005	70	0	596	76	338	344	81	343	343
V/C Ratio(X)	0.16	0.00	0.31	0.43	0.00	0.40	0.48	0.56	0.56	0.50	0.50	0.52
Avail Cap(c_a), veh/h	447	0	1005	98	0	596	98	662	675	98	662	661
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)	0.83	0.00	0.83	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.6	0.0	12.0	46.7	0.0	26.2	46.5	36.6	36.8	46.3	36.0	36.3
Incr Delay (d2), s/veh	0.1	0.0	0.7	4.2	0.0	2.0	4.6	1.4	1.5	4.6	1.1	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	1.5	0.0	4.9	0.9	0.0	5.5	1.1	4.8	5.0	1.2	4.4	4.5
LnGrp Delay(d),s/veh	27.7	0.0	12.7	50.8	0.0	28.2	51.1	38.1	38.3	50.9	37.1	37.5
LnGrp LOS	C		B	D		C	D	D	D	D	D	D
Approach Vol, veh/h		388			270			419			390	
Approach Delay, s/veh		15.5			30.8			39.3			38.7	
Approach LOS		B			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	8.9	23.1	8.3	59.7	8.6	23.4	31.4	36.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	4.0	32.6	4.0	35.4	6.0	30.6
Max Q Clear Time (g_c+I1), s	4.4	11.8	3.8	11.5	4.1	11.0	5.3	12.2
Green Ext Time (p_c), s	0.0	2.5	0.0	1.3	0.0	2.5	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	31.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	248	55	28	205	21	40	327	26	37	282	49
Future Volume (veh/h)	73	248	55	28	205	21	40	327	26	37	282	49
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		0.98	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	79	270	60	30	223	23	43	355	28	40	307	53
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	447	819	182	70	540	56	85	634	50	81	568	97
Arrive On Green	0.27	0.56	0.54	0.04	0.33	0.31	0.05	0.19	0.17	0.05	0.19	0.17
Sat Flow, veh/h	1634	1472	327	1634	1658	171	1634	3314	260	1634	3006	512
Grp Volume(v), veh/h	79	0	330	30	0	246	43	189	194	40	179	181
Grp Sat Flow(s),veh/h/ln	1634	0	1799	1634	0	1829	1634	1770	1805	1634	1770	1748
Q Serve(g_s), s	3.7	0.0	10.0	1.8	0.0	10.5	2.6	9.6	9.8	2.4	9.1	9.4
Cycle Q Clear(g_c), s	3.7	0.0	10.0	1.8	0.0	10.5	2.6	9.6	9.8	2.4	9.1	9.4
Prop In Lane	1.00		0.18	1.00		0.09	1.00		0.14	1.00		0.29
Lane Grp Cap(c), veh/h	447	0	1001	70	0	596	85	338	345	81	334	330
V/C Ratio(X)	0.18	0.00	0.33	0.43	0.00	0.41	0.51	0.56	0.56	0.50	0.54	0.55
Avail Cap(c_a), veh/h	447	0	1001	98	0	596	98	662	675	98	662	654
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)	0.78	0.00	0.78	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	0.0	12.1	46.7	0.0	26.3	46.2	36.6	36.8	46.3	36.6	37.0
Incr Delay (d2), s/veh	0.1	0.0	0.7	4.2	0.0	2.1	4.6	1.4	1.4	4.6	1.3	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	1.7	0.0	5.2	0.9	0.0	5.6	1.3	4.8	5.0	1.2	4.6	4.7
LnGrp Delay(d),s/veh	27.9	0.0	12.8	50.8	0.0	28.4	50.8	38.0	38.2	50.9	37.9	38.4
LnGrp LOS	C		B	D		C	D	D	D	D	D	D
Approach Vol, veh/h		409			276			426			400	
Approach Delay, s/veh		15.7			30.9			39.4			39.4	
Approach LOS		B			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	8.9	23.1	8.3	59.7	9.2	22.9	31.3	36.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	4.0	32.6	4.0	35.4	6.0	30.6
Max Q Clear Time (g_c+I1), s	4.4	11.8	3.8	12.0	4.6	11.4	5.7	12.5
Green Ext Time (p_c), s	0.0	2.6	0.0	1.4	0.0	2.6	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	31.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	437	86	66	475	49	47	459	36	47	361	51
Future Volume (veh/h)	119	437	86	66	475	49	47	459	36	47	361	51
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		0.98	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	129	475	93	72	516	53	51	499	39	51	392	55
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	146	743	146	97	768	79	95	768	60	95	719	100
Arrive On Green	0.09	0.49	0.47	0.06	0.46	0.44	0.06	0.23	0.21	0.06	0.23	0.21
Sat Flow, veh/h	1634	1509	296	1634	1659	170	1634	3317	258	1634	3106	432
Grp Volume(v), veh/h	129	0	568	72	0	569	51	265	273	51	222	225
Grp Sat Flow(s),veh/h/ln	1634	0	1805	1634	0	1829	1634	1770	1806	1634	1770	1768
Q Serve(g_s), s	7.9	0.0	23.6	4.4	0.0	24.5	3.1	13.7	13.8	3.1	11.1	11.4
Cycle Q Clear(g_c), s	7.9	0.0	23.6	4.4	0.0	24.5	3.1	13.7	13.8	3.1	11.1	11.4
Prop In Lane	1.00		0.16	1.00		0.09	1.00		0.14	1.00		0.24
Lane Grp Cap(c), veh/h	146	0	889	97	0	847	95	410	418	95	410	410
V/C Ratio(X)	0.89	0.00	0.64	0.74	0.00	0.67	0.54	0.65	0.65	0.54	0.54	0.55
Avail Cap(c_a), veh/h	146	0	889	97	0	847	97	655	669	97	655	655
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)	0.52	0.00	0.52	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.5	0.0	19.1	46.7	0.0	21.2	46.3	35.1	35.2	46.3	34.1	34.4
Incr Delay (d2), s/veh	27.0	0.0	1.9	25.9	0.0	4.2	5.5	1.7	1.7	5.5	1.1	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	4.6	0.0	12.2	2.7	0.0	13.3	1.5	6.9	7.1	1.5	5.6	5.6
LnGrp Delay(d),s/veh	72.5	0.0	21.0	72.7	0.0	25.5	51.8	36.8	37.0	51.8	35.2	35.5
LnGrp LOS	E		C	E		C	D	D	D	D	D	D
Approach Vol, veh/h		697			641			589			498	
Approach Delay, s/veh		30.5			30.8			38.2			37.1	
Approach LOS		C			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	9.9	27.4	10.0	53.7	9.9	27.4	13.0	50.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	4.0	33.6	4.0	35.4	7.0	30.6
Max Q Clear Time (g_c+I1), s	5.1	15.8	6.4	25.6	5.1	13.4	9.9	26.5
Green Ext Time (p_c), s	0.0	3.4	0.0	3.1	0.0	3.5	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	33.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	143	454	109	66	492	49	69	459	36	47	361	78
Future Volume (veh/h)	143	454	109	66	492	49	69	459	36	47	361	78
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		0.98	1.00		0.98	1.00		0.97	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	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	155	493	118	72	535	53	75	499	39	51	392	85
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	162	712	170	97	753	75	97	772	60	95	666	143
Arrive On Green	0.10	0.49	0.47	0.06	0.45	0.43	0.06	0.23	0.21	0.06	0.23	0.21
Sat Flow, veh/h	1634	1448	347	1634	1665	165	1634	3317	258	1634	2880	617
Grp Volume(v), veh/h	155	0	611	72	0	588	75	265	273	51	239	238
Grp Sat Flow(s),veh/h/ln	1634	0	1795	1634	0	1830	1634	1770	1806	1634	1770	1727
Q Serve(g_s), s	9.5	0.0	26.6	4.4	0.0	26.2	4.6	13.7	13.8	3.1	12.1	12.5
Cycle Q Clear(g_c), s	9.5	0.0	26.6	4.4	0.0	26.2	4.6	13.7	13.8	3.1	12.1	12.5
Prop In Lane	1.00		0.19	1.00		0.09	1.00		0.14	1.00		0.36
Lane Grp Cap(c), veh/h	162	0	882	97	0	827	97	412	420	95	409	400
V/C Ratio(X)	0.96	0.00	0.69	0.74	0.00	0.71	0.77	0.64	0.65	0.54	0.58	0.60
Avail Cap(c_a), veh/h	162	0	882	97	0	827	97	655	669	97	655	640
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)	0.09	0.00	0.09	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.3	0.0	20.0	46.7	0.0	22.4	46.8	35.0	35.2	46.3	34.5	34.9
Incr Delay (d2), s/veh	12.8	0.0	0.4	25.9	0.0	5.1	31.1	1.7	1.7	5.5	1.3	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	4.9	0.0	13.2	2.7	0.0	14.4	2.9	6.8	7.1	1.5	6.1	6.1
LnGrp Delay(d),s/veh	58.0	0.0	20.4	72.7	0.0	27.6	77.9	36.7	36.8	51.8	35.8	36.4
LnGrp LOS	E		C	E		C	E	D	D	D	D	D
Approach Vol, veh/h		766			660			613			528	
Approach Delay, s/veh		28.0			32.5			41.8			37.6	
Approach LOS		C			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	9.9	27.5	10.0	53.6	10.0	27.4	14.0	49.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	4.0	33.6	4.0	35.4	8.0	29.6
Max Q Clear Time (g_c+I1), s	5.1	15.8	6.4	28.6	6.6	14.5	11.5	28.2
Green Ext Time (p_c), s	0.0	3.6	0.0	2.4	0.0	3.6	0.0	0.8

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												
Traffic Volume (veh/h)	345	926	252	173	1323	174	151	733	53	102	531	173
Future Volume (veh/h)	345	926	252	173	1323	174	151	733	53	102	531	173
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		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	375	1007	274	188	1438	189	164	797	58	111	577	188
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	670	182	95	665	87	104	940	68	82	697	227
Arrive On Green	0.12	0.48	0.46	0.06	0.41	0.40	0.06	0.28	0.26	0.05	0.27	0.25
Sat Flow, veh/h	1634	1405	382	1634	1610	212	1634	3337	243	1634	2604	846
Grp Volume(v), veh/h	375	0	1281	188	0	1627	164	423	432	111	392	373
Grp Sat Flow(s),veh/h/ln	1634	0	1788	1634	0	1821	1634	1770	1810	1634	1770	1680
Q Serve(g_s), s	14.6	0.0	57.2	7.0	0.0	49.6	7.7	27.0	27.1	6.0	25.0	25.2
Cycle Q Clear(g_c), s	14.6	0.0	57.2	7.0	0.0	49.6	7.7	27.0	27.1	6.0	25.0	25.2
Prop In Lane	1.00		0.21	1.00		0.12	1.00		0.13	1.00		0.50
Lane Grp Cap(c), veh/h	199	0	852	95	0	753	104	498	510	82	474	450
V/C Ratio(X)	1.89	0.00	1.50	1.97	0.00	2.16	1.57	0.85	0.85	1.36	0.83	0.83
Avail Cap(c_a), veh/h	199	0	852	95	0	753	104	566	579	82	552	524
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)	0.09	0.00	0.09	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.7	0.0	31.6	56.5	0.0	35.3	56.2	40.7	40.8	57.0	41.3	41.9
Incr Delay (d2), s/veh	400.0	0.0	226.9	473.0	0.0	527.1	299.1	10.5	10.3	222.0	8.8	9.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	28.7	0.0	81.9	15.7	0.0	135.1	12.1	14.7	15.0	7.7	13.3	12.8
LnGrp Delay(d),s/veh	452.7	0.0	258.5	529.5	0.0	562.4	355.3	51.2	51.1	279.0	50.2	51.4
LnGrp LOS	F		F	F		F	F	D	D	F	D	D
Approach Vol, veh/h		1656			1815			1019			876	
Approach Delay, s/veh		302.5			559.0			100.1			79.7	
Approach LOS		F			F			F			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	10.0	37.8	11.0	61.2	11.7	36.1	18.6	53.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	36.4	5.0	50.6	5.0	35.4	8.0	47.6
Max Q Clear Time (g_c+I1), s	8.0	29.1	9.0	59.2	9.7	27.2	16.6	51.6
Green Ext Time (p_c), s	0.0	2.1	0.0	0.0	0.0	2.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	314.4
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	369	943	275	173	1340	174	173	733	53	102	531	200
Future Volume (veh/h)	369	943	275	173	1340	174	173	733	53	102	531	200
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		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	401	1025	299	188	1457	189	188	797	58	111	577	217
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	656	191	95	712	92	95	940	68	85	687	258
Arrive On Green	0.09	0.47	0.46	0.06	0.44	0.42	0.06	0.28	0.26	0.05	0.28	0.26
Sat Flow, veh/h	1634	1381	403	1634	1613	209	1634	3337	243	1634	2495	936
Grp Volume(v), veh/h	401	0	1324	188	0	1646	188	423	432	111	409	385
Grp Sat Flow(s),veh/h/ln	1634	0	1784	1634	0	1822	1634	1770	1810	1634	1770	1661
Q Serve(g_s), s	11.0	0.0	57.0	7.0	0.0	53.0	7.0	27.0	27.1	6.2	26.1	26.3
Cycle Q Clear(g_c), s	11.0	0.0	57.0	7.0	0.0	53.0	7.0	27.0	27.1	6.2	26.1	26.3
Prop In Lane	1.00		0.23	1.00		0.11	1.00		0.13	1.00		0.56
Lane Grp Cap(c), veh/h	150	0	847	95	0	804	95	498	510	85	487	457
V/C Ratio(X)	2.68	0.00	1.56	1.97	0.00	2.05	1.97	0.85	0.85	1.30	0.84	0.84
Avail Cap(c_a), veh/h	150	0	847	95	0	804	95	566	579	85	552	518
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)	0.09	0.00	0.09	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	0.0	31.7	56.5	0.0	33.6	56.5	40.7	40.8	56.9	41.0	41.6
Incr Delay (d2), s/veh	756.5	0.0	254.2	473.0	0.0	475.6	473.0	10.5	10.3	199.4	10.1	10.9
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	36.4	0.0	87.8	15.7	0.0	132.8	15.7	14.7	15.0	7.5	14.1	13.5
LnGrp Delay(d),s/veh	811.0	0.0	285.9	529.5	0.0	509.2	529.5	51.2	51.1	256.3	51.0	52.5
LnGrp LOS	F		F	F		F	F	D	D	F	D	D
Approach Vol, veh/h		1725			1834			1043			905	
Approach Delay, s/veh		408.0			511.3			137.4			76.8	
Approach LOS		F			F			F			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	10.2	37.8	11.0	61.0	11.0	37.0	15.0	57.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	36.4	5.0	50.6	5.0	35.4	9.0	46.6
Max Q Clear Time (g_c+I1), s	8.2	29.1	9.0	59.0	9.0	28.3	13.0	55.0
Green Ext Time (p_c), s	0.0	2.1	0.0	0.0	0.0	1.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	336.7
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	369	943	275	173	1340	174	173	733	53	102	531	200
Future Volume (veh/h)	369	943	275	173	1340	174	173	733	53	102	531	200
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		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	401	1025	299	188	1457	189	188	797	58	111	577	217
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	491	2130	571	196	1657	437	354	1035	389	196	859	317
Arrive On Green	0.15	0.42	0.40	0.06	0.33	0.31	0.11	0.29	0.27	0.06	0.24	0.22
Sat Flow, veh/h	3170	5085	1434	3170	5085	1432	3170	3539	1431	3170	3539	1428
Grp Volume(v), veh/h	401	1025	299	188	1457	189	188	797	58	111	577	217
Grp Sat Flow(s),veh/h/ln	1585	1695	1434	1585	1695	1432	1585	1770	1431	1585	1770	1428
Q Serve(g_s), s	11.9	14.2	9.9	5.7	26.3	7.8	5.4	19.9	3.0	3.3	14.3	13.5
Cycle Q Clear(g_c), s	11.9	14.2	9.9	5.7	26.3	7.8	5.4	19.9	3.0	3.3	14.3	13.5
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	491	2130	571	196	1657	437	354	1035	389	196	859	317
V/C Ratio(X)	0.82	0.48	0.52	0.96	0.88	0.43	0.53	0.77	0.15	0.57	0.67	0.68
Avail Cap(c_a), veh/h	491	2130	571	196	1657	437	354	1365	522	196	1365	521
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)	0.68	0.68	0.68	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.7	20.5	9.2	45.4	30.9	15.7	40.7	31.3	26.8	44.2	33.2	34.6
Incr Delay (d2), s/veh	7.3	0.5	2.3	52.3	7.0	3.1	1.5	2.0	0.2	3.8	0.9	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	6.7	4.2	3.9	13.4	3.4	2.5	10.0	1.2	1.6	7.1	5.6
LnGrp Delay(d),s/veh	47.0	21.1	11.5	97.7	37.9	18.8	42.2	33.3	27.0	48.0	34.2	37.2
LnGrp LOS	D	C	B	F	D	B	D	C	C	D	C	D
Approach Vol, veh/h		1725			1834			1043			905	
Approach Delay, s/veh		25.4			42.1			34.6			36.6	
Approach LOS		C			D			C			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	10.0	32.4	10.0	44.6	14.8	27.5	19.0	35.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	4.0	29.6	4.0	35.4	4.0	29.6
Max Q Clear Time (g_c+I1), s	5.3	21.9	7.7	16.2	7.4	16.3	13.9	28.3
Green Ext Time (p_c), s	0.0	3.2	0.0	6.7	0.0	3.2	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	34.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	126	37	19	164	31	33	245	27	35	276	81
Future Volume (veh/h)	97	126	37	19	164	31	33	245	27	35	276	81
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		0.98	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	105	137	40	21	178	34	36	266	29	38	300	88
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	462	775	226	62	479	91	76	621	67	78	524	150
Arrive On Green	0.28	0.56	0.54	0.04	0.32	0.30	0.05	0.19	0.17	0.05	0.19	0.17
Sat Flow, veh/h	1634	1381	403	1634	1516	290	1634	3209	346	1634	2689	771
Grp Volume(v), veh/h	105	0	177	21	0	212	36	145	150	38	195	193
Grp Sat Flow(s),veh/h/ln	1634	0	1784	1634	0	1805	1634	1770	1785	1634	1770	1691
Q Serve(g_s), s	4.9	0.0	4.9	1.3	0.0	9.1	2.1	7.2	7.4	2.3	10.0	10.4
Cycle Q Clear(g_c), s	4.9	0.0	4.9	1.3	0.0	9.1	2.1	7.2	7.4	2.3	10.0	10.4
Prop In Lane	1.00		0.23	1.00		0.16	1.00		0.19	1.00		0.46
Lane Grp Cap(c), veh/h	462	0	1001	62	0	570	76	342	345	78	345	330
V/C Ratio(X)	0.23	0.00	0.18	0.34	0.00	0.37	0.48	0.42	0.43	0.49	0.57	0.59
Avail Cap(c_a), veh/h	462	0	1001	98	0	570	98	662	668	98	662	632
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)	0.89	0.00	0.89	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	0.0	10.8	46.9	0.0	26.6	46.5	35.4	35.7	46.4	36.4	37.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	3.2	0.0	1.9	4.6	0.8	0.9	4.6	1.5	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	2.5	0.6	0.0	4.8	1.1	3.6	3.8	1.1	5.0	5.0
LnGrp Delay(d),s/veh	27.7	0.0	11.2	50.1	0.0	28.5	51.1	36.3	36.5	51.0	37.9	38.7
LnGrp LOS	C		B	D		C	D	D	D	D	D	D
Approach Vol, veh/h		282			233			331			426	
Approach Delay, s/veh		17.3			30.4			38.0			39.4	
Approach LOS		B			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	8.8	23.3	7.8	60.1	8.6	23.5	32.3	35.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	4.0	32.6	4.0	35.4	7.0	29.6
Max Q Clear Time (g_c+I1), s	4.3	9.4	3.3	6.9	4.1	12.4	6.9	11.1
Green Ext Time (p_c), s	0.0	2.4	0.0	1.0	0.0	2.4	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	32.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	144	42	23	199	38	36	264	29	37	292	86
Future Volume (veh/h)	111	144	42	23	199	38	36	264	29	37	292	86
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		0.98	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	121	157	46	25	216	41	39	287	32	40	317	93
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	448	759	222	65	480	91	79	642	71	81	541	156
Arrive On Green	0.27	0.55	0.53	0.04	0.32	0.30	0.05	0.20	0.18	0.05	0.20	0.18
Sat Flow, veh/h	1634	1380	404	1634	1517	288	1634	3201	353	1634	2688	773
Grp Volume(v), veh/h	121	0	203	25	0	257	39	157	162	40	206	204
Grp Sat Flow(s),veh/h/ln	1634	0	1784	1634	0	1806	1634	1770	1784	1634	1770	1691
Q Serve(g_s), s	5.8	0.0	5.8	1.5	0.0	11.4	2.3	7.8	8.0	2.4	10.5	11.0
Cycle Q Clear(g_c), s	5.8	0.0	5.8	1.5	0.0	11.4	2.3	7.8	8.0	2.4	10.5	11.0
Prop In Lane	1.00		0.23	1.00		0.16	1.00		0.20	1.00		0.46
Lane Grp Cap(c), veh/h	448	0	981	65	0	571	79	355	358	81	356	341
V/C Ratio(X)	0.27	0.00	0.21	0.38	0.00	0.45	0.49	0.44	0.45	0.50	0.58	0.60
Avail Cap(c_a), veh/h	448	0	981	98	0	571	98	662	667	98	662	632
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)	0.85	0.00	0.85	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.5	0.0	11.6	46.8	0.0	27.4	46.4	35.1	35.3	46.3	36.1	36.7
Incr Delay (d2), s/veh	0.3	0.0	0.4	3.6	0.0	2.6	4.6	0.9	0.9	4.6	1.5	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	3.0	0.7	0.0	6.1	1.2	3.9	4.0	1.2	5.3	5.3
LnGrp Delay(d),s/veh	28.7	0.0	12.0	50.4	0.0	30.0	51.0	35.9	36.2	50.9	37.6	38.4
LnGrp LOS	C		B	D		C	D	D	D	D	D	D
Approach Vol, veh/h		324			282			358			450	
Approach Delay, s/veh		18.2			31.8			37.7			39.1	
Approach LOS		B			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	8.9	24.1	8.0	59.0	8.9	24.1	31.4	35.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	4.0	32.6	4.0	35.4	7.0	29.6
Max Q Clear Time (g_c+I1), s	4.4	10.0	3.5	7.8	4.3	13.0	7.8	13.4
Green Ext Time (p_c), s	0.0	2.6	0.0	1.1	0.0	2.5	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	32.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	145	43	23	201	38	39	264	29	37	292	89
Future Volume (veh/h)	112	145	43	23	201	38	39	264	29	37	292	89
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		0.98	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	122	158	47	25	218	41	42	287	32	40	317	97
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	442	751	223	65	480	90	83	654	72	81	539	161
Arrive On Green	0.27	0.55	0.53	0.04	0.32	0.30	0.05	0.20	0.18	0.05	0.20	0.18
Sat Flow, veh/h	1634	1374	409	1634	1520	286	1634	3201	353	1634	2659	797
Grp Volume(v), veh/h	122	0	205	25	0	259	42	157	162	40	209	205
Grp Sat Flow(s),veh/h/ln	1634	0	1783	1634	0	1806	1634	1770	1784	1634	1770	1686
Q Serve(g_s), s	5.9	0.0	5.9	1.5	0.0	11.5	2.5	7.8	8.0	2.4	10.7	11.1
Cycle Q Clear(g_c), s	5.9	0.0	5.9	1.5	0.0	11.5	2.5	7.8	8.0	2.4	10.7	11.1
Prop In Lane	1.00		0.23	1.00		0.16	1.00		0.20	1.00		0.47
Lane Grp Cap(c), veh/h	442	0	974	65	0	571	83	361	364	81	359	342
V/C Ratio(X)	0.28	0.00	0.21	0.38	0.00	0.45	0.50	0.44	0.44	0.50	0.58	0.60
Avail Cap(c_a), veh/h	442	0	974	98	0	571	98	662	667	98	662	630
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)	0.84	0.00	0.84	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.8	0.0	11.8	46.8	0.0	27.4	46.2	34.8	35.0	46.3	36.0	36.6
Incr Delay (d2), s/veh	0.3	0.0	0.4	3.6	0.0	2.6	4.6	0.8	0.8	4.6	1.5	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	3.0	0.7	0.0	6.1	1.2	3.9	4.0	1.2	5.4	5.3
LnGrp Delay(d),s/veh	29.1	0.0	12.2	50.4	0.0	30.0	50.9	35.6	35.8	50.9	37.5	38.3
LnGrp LOS	C		B	D		C	D	D	D	D	D	D
Approach Vol, veh/h		327			284			361			454	
Approach Delay, s/veh		18.5			31.8			37.5			39.1	
Approach LOS		B			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	8.9	24.4	8.0	58.6	9.1	24.3	31.0	35.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	4.0	32.6	4.0	35.4	7.0	29.6
Max Q Clear Time (g_c+I1), s	4.4	10.0	3.5	7.9	4.5	13.1	7.9	13.5
Green Ext Time (p_c), s	0.0	2.6	0.0	1.1	0.0	2.6	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	32.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	199	259	76	55	472	89	50	371	41	47	373	110
Future Volume (veh/h)	199	259	76	55	472	89	50	371	41	47	373	110
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		0.98	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	216	282	83	60	513	97	54	403	45	51	405	120
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	227	735	216	103	694	131	85	680	75	85	569	166
Arrive On Green	0.14	0.53	0.52	0.06	0.46	0.44	0.05	0.21	0.20	0.05	0.21	0.20
Sat Flow, veh/h	1634	1378	406	1634	1519	287	1634	3199	355	1634	2677	783
Grp Volume(v), veh/h	216	0	365	60	0	610	54	222	226	51	266	259
Grp Sat Flow(s),veh/h/ln	1634	0	1784	1634	0	1806	1634	1770	1784	1634	1770	1690
Q Serve(g_s), s	15.1	0.0	13.9	4.1	0.0	31.9	3.7	13.0	13.2	3.5	16.0	16.4
Cycle Q Clear(g_c), s	15.1	0.0	13.9	4.1	0.0	31.9	3.7	13.0	13.2	3.5	16.0	16.4
Prop In Lane	1.00		0.23	1.00		0.16	1.00		0.20	1.00		0.46
Lane Grp Cap(c), veh/h	227	0	951	103	0	825	85	376	380	85	376	359
V/C Ratio(X)	0.95	0.00	0.38	0.58	0.00	0.74	0.63	0.59	0.60	0.60	0.71	0.72
Avail Cap(c_a), veh/h	227	0	951	142	0	825	85	576	580	85	576	550
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)	0.50	0.00	0.50	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.1	0.0	15.9	52.4	0.0	25.8	53.4	40.7	41.0	53.3	41.9	42.5
Incr Delay (d2), s/veh	29.9	0.0	0.6	5.2	0.0	5.9	14.3	1.5	1.5	11.0	2.4	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	7.0	2.0	0.0	17.1	2.0	6.5	6.6	1.8	8.1	7.9
LnGrp Delay(d),s/veh	79.0	0.0	16.5	57.6	0.0	31.6	67.7	42.2	42.5	64.3	44.4	45.3
LnGrp LOS	E		B	E		C	E	D	D	E	D	D
Approach Vol, veh/h		581			670			502			576	
Approach Delay, s/veh		39.8			34.0			45.1			46.6	
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	10.0	28.5	11.2	65.3	10.0	28.5	20.0	56.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	8.0	43.6	4.0	35.4	14.0	37.6
Max Q Clear Time (g_c+I1), s	5.5	15.2	6.1	15.9	5.7	18.4	17.1	33.9
Green Ext Time (p_c), s	0.0	1.7	0.0	4.2	0.0	1.7	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	40.9
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	264	82	55	477	89	56	371	41	47	373	118
Future Volume (veh/h)	205	264	82	55	477	89	56	371	41	47	373	118
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		0.98	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	223	287	89	60	518	97	61	403	45	51	405	128
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	237	714	221	102	674	126	84	716	79	84	589	184
Arrive On Green	0.15	0.53	0.51	0.06	0.44	0.43	0.05	0.22	0.21	0.05	0.22	0.21
Sat Flow, veh/h	1634	1359	421	1634	1522	285	1634	3200	355	1634	2632	821
Grp Volume(v), veh/h	223	0	376	60	0	615	61	222	226	51	271	262
Grp Sat Flow(s),veh/h/ln	1634	0	1780	1634	0	1807	1634	1770	1785	1634	1770	1683
Q Serve(g_s), s	15.8	0.0	15.0	4.2	0.0	33.7	4.3	13.0	13.2	3.6	16.4	16.8
Cycle Q Clear(g_c), s	15.8	0.0	15.0	4.2	0.0	33.7	4.3	13.0	13.2	3.6	16.4	16.8
Prop In Lane	1.00		0.24	1.00		0.16	1.00		0.20	1.00		0.49
Lane Grp Cap(c), veh/h	237	0	936	102	0	800	84	396	400	84	396	377
V/C Ratio(X)	0.94	0.00	0.40	0.59	0.00	0.77	0.73	0.56	0.57	0.61	0.68	0.70
Avail Cap(c_a), veh/h	237	0	936	140	0	800	84	567	572	84	567	539
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)	0.36	0.00	0.36	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	0.0	16.9	53.4	0.0	27.7	54.7	40.3	40.5	54.4	41.6	42.2
Incr Delay (d2), s/veh	21.6	0.0	0.5	5.3	0.0	7.0	27.0	1.2	1.3	12.1	2.1	2.3
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	8.5	0.0	7.5	2.0	0.0	18.3	2.6	6.5	6.6	1.9	8.3	8.1
LnGrp Delay(d),s/veh	71.1	0.0	17.3	58.6	0.0	34.7	81.7	41.5	41.8	66.4	43.7	44.5
LnGrp LOS	E		B	E		C	F	D	D	E	D	D
Approach Vol, veh/h		599			675			509			584	
Approach Delay, s/veh		37.3			36.8			46.5			46.1	
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	10.0	30.2	11.3	65.5	10.0	30.2	21.0	55.8
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.5	8.0	45.5	4.0	35.5	15.0	38.5
Max Q Clear Time (g_c+I1), s	5.6	15.2	6.2	17.0	6.3	18.8	17.8	35.7
Green Ext Time (p_c), s	0.0	3.5	0.0	4.3	0.0	3.4	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	41.3
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	458	554	202	143	1285	262	125	582	60	88	527	212
Future Volume (veh/h)	458	554	202	143	1285	262	125	582	60	88	527	212
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		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	498	602	220	155	1397	285	136	633	65	96	573	230
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	219	579	212	151	606	124	82	796	82	132	678	272
Arrive On Green	0.13	0.45	0.43	0.09	0.41	0.39	0.05	0.25	0.23	0.08	0.28	0.26
Sat Flow, veh/h	1634	1296	474	1634	1497	305	1634	3229	331	1634	2443	978
Grp Volume(v), veh/h	498	0	822	155	0	1682	136	346	352	96	415	388
Grp Sat Flow(s),veh/h/ln	1634	0	1770	1634	0	1803	1634	1770	1791	1634	1770	1652
Q Serve(g_s), s	16.1	0.0	53.6	11.1	0.0	48.6	6.0	22.0	22.1	6.9	26.5	26.7
Cycle Q Clear(g_c), s	16.1	0.0	53.6	11.1	0.0	48.6	6.0	22.0	22.1	6.9	26.5	26.7
Prop In Lane	1.00		0.27	1.00		0.17	1.00		0.18	1.00		0.59
Lane Grp Cap(c), veh/h	219	0	791	151	0	730	82	436	442	132	491	459
V/C Ratio(X)	2.27	0.00	1.04	1.03	0.00	2.30	1.66	0.79	0.80	0.73	0.84	0.85
Avail Cap(c_a), veh/h	219	0	791	151	0	730	82	552	558	132	552	515
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)	0.09	0.00	0.09	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	0.0	33.5	54.5	0.0	35.9	57.0	42.3	42.6	53.8	40.9	41.5
Incr Delay (d2), s/veh	574.1	0.0	22.2	80.4	0.0	591.1	346.7	6.2	6.3	17.9	10.5	11.5
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	42.2	0.0	31.0	8.4	0.0	144.0	10.6	11.5	11.7	3.8	14.3	13.7
LnGrp Delay(d),s/veh	626.1	0.0	55.7	135.1	0.0	626.9	403.7	48.6	48.8	71.7	51.4	53.0
LnGrp LOS	F		F	F		F	F	D	D	E	D	D
Approach Vol, veh/h		1320			1837			834			899	
Approach Delay, s/veh		270.9			585.4			106.6			54.3	
Approach LOS		F			F			F			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	13.7	33.6	15.1	57.6	10.0	37.3	20.1	52.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	5.0	51.6	4.0	35.4	10.0	46.6
Max Q Clear Time (g_c+I1), s	8.9	24.1	13.1	55.6	8.0	28.7	18.1	50.6
Green Ext Time (p_c), s	0.0	2.0	0.0	0.0	0.0	1.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	321.2
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	464	559	208	143	1290	262	131	582	60	88	527	220
Future Volume (veh/h)	464	559	208	143	1290	262	131	582	60	88	527	220
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		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	504	608	226	155	1402	285	142	633	65	96	573	239
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	215	576	214	147	607	123	82	796	82	136	676	281
Arrive On Green	0.13	0.45	0.43	0.09	0.41	0.39	0.05	0.25	0.23	0.08	0.28	0.26
Sat Flow, veh/h	1634	1289	479	1634	1498	305	1634	3229	331	1634	2412	1004
Grp Volume(v), veh/h	504	0	834	155	0	1687	142	346	352	96	420	392
Grp Sat Flow(s),veh/h/ln	1634	0	1769	1634	0	1803	1634	1770	1791	1634	1770	1646
Q Serve(g_s), s	15.8	0.0	53.6	10.8	0.0	48.6	6.0	22.0	22.1	6.9	26.9	27.1
Cycle Q Clear(g_c), s	15.8	0.0	53.6	10.8	0.0	48.6	6.0	22.0	22.1	6.9	26.9	27.1
Prop In Lane	1.00		0.27	1.00		0.17	1.00		0.18	1.00		0.61
Lane Grp Cap(c), veh/h	215	0	790	147	0	730	82	436	442	136	496	461
V/C Ratio(X)	2.34	0.00	1.06	1.05	0.00	2.31	1.74	0.79	0.80	0.70	0.85	0.85
Avail Cap(c_a), veh/h	215	0	790	147	0	730	82	552	558	136	552	513
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)	0.09	0.00	0.09	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	0.0	33.5	54.6	0.0	35.9	57.0	42.3	42.6	53.5	40.8	41.4
Incr Delay (d2), s/veh	605.8	0.0	28.5	89.5	0.0	594.0	377.8	6.2	6.3	15.1	10.9	11.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	43.3	0.0	32.4	8.5	0.0	144.6	11.3	11.5	11.7	3.7	14.6	13.9
LnGrp Delay(d),s/veh	657.9	0.0	61.9	144.1	0.0	629.9	434.8	48.6	48.8	68.7	51.7	53.3
LnGrp LOS	F		F	F		F	F	D	D	E	D	D
Approach Vol, veh/h		1338			1842			840			908	
Approach Delay, s/veh		286.4			589.0			114.0			54.2	
Approach LOS		F			F			F			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	33.6	14.8	57.6	10.0	37.6	19.8	52.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	5.0	51.6	4.0	35.4	10.0	46.6
Max Q Clear Time (g_c+I1), s	8.9	24.1	12.8	55.6	8.0	29.1	17.8	50.6
Green Ext Time (p_c), s	0.0	2.0	0.0	0.0	0.0	1.8	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	327.3
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	464	559	208	143	1290	262	131	582	60	88	527	220
Future Volume (veh/h)	464	559	208	143	1290	262	131	582	60	88	527	220
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		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	504	608	226	155	1402	285	142	633	65	96	573	239
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	620	2336	629	196	1657	437	204	892	331	196	883	327
Arrive On Green	0.20	0.46	0.44	0.06	0.33	0.31	0.06	0.25	0.23	0.06	0.25	0.23
Sat Flow, veh/h	3170	5085	1434	3170	5085	1432	3170	3539	1429	3170	3539	1429
Grp Volume(v), veh/h	504	608	226	155	1402	285	142	633	65	96	573	239
Grp Sat Flow(s),veh/h/ln	1585	1695	1434	1585	1695	1432	1585	1770	1429	1585	1770	1429
Q Serve(g_s), s	14.8	7.1	7.1	4.7	24.9	16.8	4.3	15.8	2.8	2.8	14.1	15.0
Cycle Q Clear(g_c), s	14.8	7.1	7.1	4.7	24.9	16.8	4.3	15.8	2.8	2.8	14.1	15.0
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	620	2336	629	196	1657	437	204	892	331	196	883	327
V/C Ratio(X)	0.81	0.26	0.36	0.79	0.85	0.65	0.70	0.71	0.20	0.49	0.65	0.73
Avail Cap(c_a), veh/h	620	2336	629	196	1657	437	204	1365	521	196	1365	521
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)	0.88	0.88	0.88	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.3	16.1	8.9	44.9	30.4	29.2	44.5	33.0	18.5	44.0	32.6	34.6
Incr Delay (d2), s/veh	7.3	0.2	1.4	19.3	5.5	7.4	10.0	1.1	0.3	1.9	0.8	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	3.4	3.0	2.6	12.4	7.5	2.2	7.9	1.1	1.3	6.9	6.2
LnGrp Delay(d),s/veh	44.6	16.3	10.3	64.2	36.0	36.6	54.5	34.1	18.8	45.9	33.4	37.8
LnGrp LOS	D	B	B	E	D	D	D	C	B	D	C	D
Approach Vol, veh/h		1338			1842			840			908	
Approach Delay, s/veh		26.0			38.5			36.4			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	10.0	28.4	10.0	48.6	10.2	28.2	23.0	35.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.4	4.0	29.6	4.0	35.4	4.0	29.6
Max Q Clear Time (g_c+I1), s	4.8	17.8	6.7	9.1	6.3	17.0	16.8	26.9
Green Ext Time (p_c), s	0.0	2.7	0.0	6.1	0.0	3.3	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	34.2
HCM 2010 LOS	C

Intersection 12
J St & Prosperity Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	326	71	26	425	25	84	248	58	33	182	152
Future Volume (veh/h)	92	326	71	26	425	25	84	248	58	33	182	152
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	100	354	77	28	462	27	91	270	63	36	198	165
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	260	800	174	135	1189	68	165	593	136	180	407	320
Arrive On Green	0.38	0.38	0.34	0.38	0.38	0.34	0.10	0.21	0.17	0.11	0.22	0.18
Sat Flow, veh/h	355	2130	464	90	3165	181	1634	2848	652	1634	1874	1473
Grp Volume(v), veh/h	265	0	266	270	0	247	91	166	167	36	186	177
Grp Sat Flow(s),veh/h/ln	1345	0	1603	1777	0	1659	1634	1770	1730	1634	1770	1577
Q Serve(g_s), s	1.6	0.0	4.9	0.0	0.0	4.3	2.1	3.2	3.4	0.8	3.6	4.0
Cycle Q Clear(g_c), s	5.9	0.0	4.9	4.2	0.0	4.3	2.1	3.2	3.4	0.8	3.6	4.0
Prop In Lane	0.38		0.29	0.10		0.11	1.00		0.38	1.00		0.93
Lane Grp Cap(c), veh/h	632	0	602	769	0	623	165	368	360	180	385	343
V/C Ratio(X)	0.42	0.00	0.44	0.35	0.00	0.40	0.55	0.45	0.46	0.20	0.48	0.52
Avail Cap(c_a), veh/h	1455	0	1595	1818	0	1651	667	1309	1280	417	1038	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.1	0.0	9.3	8.9	0.0	9.0	16.8	13.6	13.8	15.9	13.4	14.1
Incr Delay (d2), s/veh	0.4	0.0	0.5	0.3	0.0	0.4	2.9	0.9	0.9	0.5	0.9	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	2.3	0.0	2.2	2.2	0.0	2.0	1.1	1.7	1.7	0.4	1.9	1.8
LnGrp Delay(d),s/veh	9.6	0.0	9.8	9.2	0.0	9.4	19.6	14.4	14.8	16.4	14.4	15.3
LnGrp LOS	A		A	A		A	B	B	B	B	B	B
Approach Vol, veh/h		531			517			424			399	
Approach Delay, s/veh		9.7			9.3			15.7			15.0	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.3	12.2		18.7	8.0	12.5		18.7
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	8.7	27.7		37.7	14.7	21.7		37.7
Max Q Clear Time (g_c+I1), s	2.8	5.4		7.9	4.1	6.0		6.3
Green Ext Time (p_c), s	0.8	1.1		4.8	0.2	1.3		4.8

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	334	73	26	433	25	87	257	60	35	191	160
Future Volume (veh/h)	94	334	73	26	433	25	87	257	60	35	191	160
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	102	363	79	28	471	27	95	279	65	38	208	174
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	802	176	131	1205	68	169	593	136	189	412	326
Arrive On Green	0.38	0.38	0.35	0.38	0.38	0.35	0.10	0.21	0.18	0.12	0.22	0.19
Sat Flow, veh/h	353	2111	462	88	3171	178	1634	2848	651	1634	1868	1478
Grp Volume(v), veh/h	270	0	274	275	0	251	95	171	173	38	196	186
Grp Sat Flow(s),veh/h/ln	1323	0	1604	1777	0	1660	1634	1770	1730	1634	1770	1577
Q Serve(g_s), s	1.9	0.0	5.2	0.0	0.0	4.5	2.2	3.4	3.6	0.9	3.9	4.3
Cycle Q Clear(g_c), s	6.4	0.0	5.2	4.3	0.0	4.5	2.2	3.4	3.6	0.9	3.9	4.3
Prop In Lane	0.38		0.29	0.10		0.11	1.00		0.38	1.00		0.94
Lane Grp Cap(c), veh/h	625	0	609	773	0	631	169	369	360	189	390	348
V/C Ratio(X)	0.43	0.00	0.45	0.36	0.00	0.40	0.56	0.46	0.48	0.20	0.50	0.53
Avail Cap(c_a), veh/h	1395	0	1544	1760	0	1598	645	1267	1238	403	1004	895
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.4	0.0	9.6	9.1	0.0	9.2	17.3	14.1	14.3	16.2	13.8	14.5
Incr Delay (d2), s/veh	0.5	0.0	0.5	0.3	0.0	0.4	2.9	0.9	1.0	0.5	1.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	2.4	2.3	0.0	2.1	1.1	1.8	1.8	0.4	2.0	2.0
LnGrp Delay(d),s/veh	9.9	0.0	10.1	9.4	0.0	9.6	20.2	15.0	15.3	16.7	14.9	15.8
LnGrp LOS	A		B	A		A	C	B	B	B	B	B
Approach Vol, veh/h		544			526			439			420	
Approach Delay, s/veh		10.0			9.5			16.2			15.4	
Approach LOS		A			A			B			B	

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	12.4		19.4	8.2	12.9		19.4
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	8.7	27.7		37.7	14.7	21.7		37.7
Max Q Clear Time (g_c+I1), s	2.9	5.6		8.4	4.2	6.3		6.5
Green Ext Time (p_c), s	0.8	1.1		4.9	0.2	1.3		4.9

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												
Traffic Volume (veh/h)	98	334	73	26	433	31	87	264	60	41	197	165
Future Volume (veh/h)	98	334	73	26	433	31	87	264	60	41	197	165
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	107	363	79	28	471	34	95	287	65	45	214	179
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	262	795	176	128	1211	86	167	595	132	192	415	330
Arrive On Green	0.39	0.39	0.36	0.39	0.39	0.36	0.10	0.21	0.18	0.12	0.22	0.19
Sat Flow, veh/h	367	2052	454	86	3124	221	1634	2865	637	1634	1866	1480
Grp Volume(v), veh/h	269	0	280	279	0	254	95	175	177	45	202	191
Grp Sat Flow(s),veh/h/ln	1266	0	1606	1779	0	1652	1634	1770	1733	1634	1770	1576
Q Serve(g_s), s	2.5	0.0	5.4	0.0	0.0	4.7	2.3	3.6	3.8	1.0	4.2	4.6
Cycle Q Clear(g_c), s	7.2	0.0	5.4	4.5	0.0	4.7	2.3	3.6	3.8	1.0	4.2	4.6
Prop In Lane	0.40		0.28	0.10		0.13	1.00		0.37	1.00		0.94
Lane Grp Cap(c), veh/h	611	0	622	784	0	640	167	368	360	192	394	351
V/C Ratio(X)	0.44	0.00	0.45	0.36	0.00	0.40	0.57	0.48	0.49	0.23	0.51	0.54
Avail Cap(c_a), veh/h	1289	0	1461	1670	0	1502	587	1271	1244	391	1059	943
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.7	0.0	9.6	9.2	0.0	9.3	17.9	14.5	14.8	16.7	14.3	14.9
Incr Delay (d2), s/veh	0.5	0.0	0.5	0.3	0.0	0.4	3.0	1.0	1.0	0.6	1.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	2.4	2.3	0.0	2.2	1.2	1.9	1.9	0.5	2.1	2.1
LnGrp Delay(d),s/veh	10.2	0.0	10.1	9.5	0.0	9.7	20.9	15.5	15.9	17.4	15.3	16.2
LnGrp LOS	B		B	A		A	C	B	B	B	B	B
Approach Vol, veh/h		549			533			447			438	
Approach Delay, s/veh		10.2			9.6			16.8			15.9	
Approach LOS		B			A			B			B	

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	12.7		20.2	8.3	13.3		20.2
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	8.7	28.7		36.7	13.7	23.7		36.7
Max Q Clear Time (g_c+I1), s	3.0	5.8		9.2	4.3	6.6		6.7
Green Ext Time (p_c), s	0.8	1.2		4.9	0.1	1.4		5.0

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												
Traffic Volume (veh/h)	105	371	81	29	468	28	103	304	71	44	241	201
Future Volume (veh/h)	105	371	81	29	468	28	103	304	71	44	241	201
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	114	403	88	32	509	30	112	330	77	48	262	218
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	662	158	81	1103	65	162	1290	297	82	751	601
Arrive On Green	0.36	0.36	0.35	0.36	0.36	0.35	0.10	0.45	0.44	0.05	0.40	0.39
Sat Flow, veh/h	335	1821	434	101	3033	179	1634	2849	655	1634	1858	1488
Grp Volume(v), veh/h	279	0	326	293	0	278	112	203	204	48	249	231
Grp Sat Flow(s),veh/h/ln	980	0	1609	1653	0	1660	1634	1770	1734	1634	1770	1577
Q Serve(g_s), s	14.1	0.0	14.6	0.4	0.0	11.5	6.0	6.4	6.6	2.6	8.8	9.4
Cycle Q Clear(g_c), s	25.6	0.0	14.6	15.0	0.0	11.5	6.0	6.4	6.6	2.6	8.8	9.4
Prop In Lane	0.41		0.27	0.11		0.11	1.00		0.38	1.00		0.94
Lane Grp Cap(c), veh/h	413	0	585	645	0	604	162	801	785	82	715	637
V/C Ratio(X)	0.67	0.00	0.56	0.45	0.00	0.46	0.69	0.25	0.26	0.59	0.35	0.36
Avail Cap(c_a), veh/h	501	0	697	762	0	719	290	801	785	163	715	637
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Uniform Delay (d), s/veh	28.0	0.0	23.0	21.6	0.0	21.9	39.2	15.2	15.4	41.8	18.6	19.2
Incr Delay (d2), s/veh	2.7	0.0	0.8	0.5	0.0	0.5	5.2	0.8	0.8	6.1	1.3	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	6.6	5.6	0.0	5.3	2.9	3.3	3.3	1.3	4.5	4.3
LnGrp Delay(d),s/veh	30.7	0.0	23.8	22.2	0.0	22.5	44.4	16.0	16.2	47.9	19.9	20.7
LnGrp LOS	C		C	C		C	D	B	B	D	B	C
Approach Vol, veh/h		605			571			519			528	
Approach Delay, s/veh		27.0			22.3			22.2			22.8	
Approach LOS		C			C			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	8.5	44.8		36.7	12.9	40.4		36.7
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	7.7	28.7		37.7	14.7	21.7		37.7
Max Q Clear Time (g_c+I1), s	4.6	8.6		27.6	8.0	11.4		17.0
Green Ext Time (p_c), s	0.0	3.2		3.8	0.1	2.6		5.2

Intersection Summary	
HCM 2010 Ctrl Delay	23.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	371	81	29	468	47	103	325	71	62	261	216
Future Volume (veh/h)	119	371	81	29	468	47	103	325	71	62	261	216
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	129	403	88	32	509	51	112	353	77	67	284	235
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	198	666	159	82	1118	112	162	1211	261	107	717	574
Arrive On Green	0.38	0.38	0.37	0.38	0.38	0.37	0.10	0.42	0.40	0.07	0.39	0.37
Sat Flow, veh/h	364	1743	415	99	2927	292	1634	2888	622	1634	1858	1488
Grp Volume(v), veh/h	278	0	342	306	0	286	112	215	215	67	270	249
Grp Sat Flow(s),veh/h/ln	910	0	1613	1681	0	1637	1634	1770	1741	1634	1770	1577
Q Serve(g_s), s	15.8	0.0	15.0	0.3	0.0	11.8	6.0	7.2	7.4	3.6	10.0	10.5
Cycle Q Clear(g_c), s	27.6	0.0	15.0	15.3	0.0	11.8	6.0	7.2	7.4	3.6	10.0	10.5
Prop In Lane	0.46		0.26	0.10		0.18	1.00		0.36	1.00		0.94
Lane Grp Cap(c), veh/h	406	0	616	686	0	625	162	742	730	107	683	608
V/C Ratio(X)	0.69	0.00	0.56	0.45	0.00	0.46	0.69	0.29	0.30	0.63	0.40	0.41
Avail Cap(c_a), veh/h	467	0	699	772	0	710	272	742	730	200	683	608
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.93	0.93	0.93
Uniform Delay (d), s/veh	28.0	0.0	22.0	20.6	0.0	20.9	39.2	17.3	17.5	41.0	20.0	20.7
Incr Delay (d2), s/veh	3.4	0.0	0.8	0.5	0.0	0.5	5.2	1.0	1.0	5.5	1.6	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	6.8	5.7	0.0	5.4	2.9	3.7	3.8	1.8	5.2	4.9
LnGrp Delay(d),s/veh	31.4	0.0	22.8	21.1	0.0	21.4	44.5	18.2	18.5	46.5	21.6	22.5
LnGrp LOS	C		C	C		C	D	B	B	D	C	C
Approach Vol, veh/h		620			592			542			586	
Approach Delay, s/veh		26.6			21.2			23.8			24.9	
Approach LOS		C			C			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	9.9	41.7		38.4	12.9	38.7		38.4
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	9.7	26.7		37.7	13.7	22.7		37.7
Max Q Clear Time (g_c+I1), s	5.6	9.4		29.6	8.0	12.5		17.3
Green Ext Time (p_c), s	0.0	3.3		3.5	0.1	2.7		5.4

Intersection Summary	
HCM 2010 Ctrl Delay	24.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	417	91	31	511	45	124	381	85	77	330	264
Future Volume (veh/h)	121	417	91	31	511	45	124	381	85	77	330	264
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	132	453	99	34	555	49	135	414	92	84	359	287
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	708	171	78	1174	106	183	1138	251	125	675	531
Arrive On Green	0.41	0.41	0.39	0.41	0.41	0.39	0.11	0.40	0.38	0.08	0.36	0.35
Sat Flow, veh/h	343	1738	419	94	2882	259	1634	2875	633	1634	1875	1474
Grp Volume(v), veh/h	303	0	381	327	0	311	135	253	253	84	339	307
Grp Sat Flow(s),veh/h/ln	888	0	1613	1592	0	1644	1634	1770	1738	1634	1770	1579
Q Serve(g_s), s	20.3	0.0	18.4	0.9	0.0	13.8	8.0	10.1	10.3	5.0	15.1	15.6
Cycle Q Clear(g_c), s	34.2	0.0	18.4	19.2	0.0	13.8	8.0	10.1	10.3	5.0	15.1	15.6
Prop In Lane	0.44		0.26	0.10		0.16	1.00		0.36	1.00		0.93
Lane Grp Cap(c), veh/h	413	0	657	688	0	670	183	701	688	125	638	569
V/C Ratio(X)	0.73	0.00	0.58	0.48	0.00	0.46	0.74	0.36	0.37	0.67	0.53	0.54
Avail Cap(c_a), veh/h	452	0	710	742	0	723	278	701	688	183	638	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.86	0.86	0.86
Uniform Delay (d), s/veh	31.0	0.0	23.1	21.4	0.0	21.7	43.0	21.3	21.5	44.9	25.3	25.9
Incr Delay (d2), s/veh	5.5	0.0	1.0	0.5	0.0	0.5	5.6	1.4	1.5	5.2	2.7	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	0.0	8.4	6.6	0.0	6.3	3.9	5.2	5.2	2.4	7.8	7.3
LnGrp Delay(d),s/veh	36.6	0.0	24.2	21.9	0.0	22.2	48.6	22.7	23.0	50.2	28.0	29.1
LnGrp LOS	D		C	C		C	D	C	C	D	C	C
Approach Vol, veh/h		684			638			641			730	
Approach Delay, s/veh		29.7			22.1			28.3			31.0	
Approach LOS		C			C			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	11.7	43.6		44.7	15.2	40.0		44.7
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	9.9	31.5		42.7	15.7	25.7		42.7
Max Q Clear Time (g_c+I1), s	7.0	12.3		36.2	10.0	17.6		21.2
Green Ext Time (p_c), s	0.0	4.3		3.3	0.2	3.0		6.2

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												
Traffic Volume (veh/h)	135	417	91	31	511	64	124	402	85	95	350	279
Future Volume (veh/h)	135	417	91	31	511	64	124	402	85	95	350	279
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	147	453	99	34	555	70	135	437	92	103	380	303
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	712	171	79	1187	152	350	1058	221	148	450	354
Arrive On Green	0.43	0.43	0.41	0.43	0.43	0.41	0.21	0.36	0.35	0.09	0.24	0.23
Sat Flow, veh/h	369	1673	402	93	2790	357	1634	2906	607	1634	1873	1474
Grp Volume(v), veh/h	301	0	398	341	0	318	135	265	264	103	359	324
Grp Sat Flow(s),veh/h/ln	827	0	1616	1615	0	1625	1634	1770	1743	1634	1770	1578
Q Serve(g_s), s	22.3	0.0	18.8	0.8	0.0	14.0	7.1	11.2	11.4	6.1	19.3	19.7
Cycle Q Clear(g_c), s	36.3	0.0	18.8	19.7	0.0	14.0	7.1	11.2	11.4	6.1	19.3	19.7
Prop In Lane	0.49		0.25	0.10		0.22	1.00		0.35	1.00		0.93
Lane Grp Cap(c), veh/h	406	0	688	727	0	691	350	644	635	148	425	379
V/C Ratio(X)	0.74	0.00	0.58	0.47	0.00	0.46	0.39	0.41	0.42	0.70	0.84	0.86
Avail Cap(c_a), veh/h	433	0	727	767	0	731	350	644	635	219	471	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.83	0.83	0.83
Uniform Delay (d), s/veh	31.0	0.0	22.0	20.3	0.0	20.6	33.7	23.8	24.0	44.2	36.2	36.9
Incr Delay (d2), s/veh	6.3	0.0	1.0	0.5	0.0	0.5	0.7	1.9	2.0	4.9	15.6	18.3
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	8.5	0.0	8.6	6.7	0.0	6.4	3.3	5.8	5.8	3.0	11.3	10.5
LnGrp Delay(d),s/veh	37.3	0.0	23.1	20.7	0.0	21.1	34.4	25.7	26.0	49.1	51.8	55.2
LnGrp LOS	D		C	C		C	C	C	C	D	D	E
Approach Vol, veh/h		699			659			664			786	
Approach Delay, s/veh		29.2			20.9			27.6			52.8	
Approach LOS		C			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	13.0	40.4		46.6	25.4	28.0		46.6
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	12.1	28.3		43.7	15.1	25.3		43.7
Max Q Clear Time (g_c+I1), s	8.1	13.4		38.3	9.1	21.7		21.7
Green Ext Time (p_c), s	0.1	2.1		2.9	1.4	1.0		6.5

Intersection Summary		
HCM 2010 Ctrl Delay	33.5	
HCM 2010 LOS	C	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	389	102	32	283	20	80	201	35	4	251	165
Future Volume (veh/h)	167	389	102	32	283	20	80	201	35	4	251	165
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	182	423	111	35	308	22	87	218	38	4	273	179
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	631	180	107	963	74	132	1391	238	31	826	524
Arrive On Green	0.39	0.39	0.37	0.39	0.39	0.37	0.08	0.46	0.45	0.02	0.40	0.38
Sat Flow, veh/h	564	1633	466	152	2492	192	1634	3015	516	1634	2069	1311
Grp Volume(v), veh/h	334	0	382	175	0	190	87	126	130	4	232	220
Grp Sat Flow(s),veh/h/ln	1060	0	1603	1179	0	1657	1634	1770	1762	1634	1770	1611
Q Serve(g_s), s	20.6	0.0	17.3	1.2	0.0	7.2	4.7	3.7	3.9	0.2	8.2	8.7
Cycle Q Clear(g_c), s	27.8	0.0	17.3	18.6	0.0	7.2	4.7	3.7	3.9	0.2	8.2	8.7
Prop In Lane	0.54		0.29	0.20		0.12	1.00		0.29	1.00		0.81
Lane Grp Cap(c), veh/h	471	0	620	504	0	641	132	817	813	31	707	643
V/C Ratio(X)	0.71	0.00	0.62	0.35	0.00	0.30	0.66	0.15	0.16	0.13	0.33	0.34
Avail Cap(c_a), veh/h	576	0	748	625	0	773	236	817	813	109	707	643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97
Uniform Delay (d), s/veh	28.3	0.0	22.4	19.3	0.0	19.2	40.2	14.1	14.2	43.4	18.7	19.2
Incr Delay (d2), s/veh	3.1	0.0	1.1	0.4	0.0	0.3	5.5	0.4	0.4	1.9	1.2	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	8.0	0.0	7.8	3.0	0.0	3.3	2.3	1.9	2.0	0.1	4.2	4.1
LnGrp Delay(d),s/veh	31.4	0.0	23.5	19.7	0.0	19.4	45.7	14.5	14.6	45.3	19.9	20.6
LnGrp LOS	C		C	B		B	D	B	B	D	B	C
Approach Vol, veh/h		716			365			343			456	
Approach Delay, s/veh		27.2			19.6			22.4			20.5	
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	5.7	45.5		38.8	11.3	39.9		38.8
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	4.7	28.7		40.7	11.7	21.7		40.7
Max Q Clear Time (g_c+I1), s	2.2	5.9		29.8	6.7	10.7		20.6
Green Ext Time (p_c), s	0.0	2.5		3.7	0.1	2.0		4.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	398	104	33	288	20	83	209	36	4	264	174
Future Volume (veh/h)	171	398	104	33	288	20	83	209	36	4	264	174
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	186	433	113	36	313	22	90	227	39	4	287	189
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	642	182	108	973	74	136	1374	232	31	805	514
Arrive On Green	0.39	0.39	0.38	0.39	0.39	0.38	0.08	0.45	0.44	0.02	0.39	0.38
Sat Flow, veh/h	564	1631	463	153	2474	188	1634	3022	511	1634	2062	1317
Grp Volume(v), veh/h	341	0	391	177	0	194	90	131	135	4	245	231
Grp Sat Flow(s),veh/h/ln	1055	0	1604	1157	0	1658	1634	1770	1763	1634	1770	1610
Q Serve(g_s), s	21.2	0.0	17.7	1.3	0.0	7.3	4.8	3.9	4.1	0.2	8.8	9.3
Cycle Q Clear(g_c), s	28.4	0.0	17.7	19.0	0.0	7.3	4.8	3.9	4.1	0.2	8.8	9.3
Prop In Lane	0.55		0.29	0.20		0.11	1.00		0.29	1.00		0.82
Lane Grp Cap(c), veh/h	477	0	631	503	0	652	136	804	801	31	691	628
V/C Ratio(X)	0.71	0.00	0.62	0.35	0.00	0.30	0.66	0.16	0.17	0.13	0.35	0.37
Avail Cap(c_a), veh/h	572	0	748	614	0	774	236	804	801	98	691	628
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97
Uniform Delay (d), s/veh	28.1	0.0	22.1	18.9	0.0	18.8	40.0	14.5	14.6	43.4	19.4	19.9
Incr Delay (d2), s/veh	3.4	0.0	1.2	0.4	0.0	0.3	5.5	0.4	0.5	1.8	1.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	7.9	3.0	0.0	3.3	2.4	2.0	2.1	0.1	4.6	4.4
LnGrp Delay(d),s/veh	31.5	0.0	23.2	19.3	0.0	19.1	45.5	14.9	15.1	45.3	20.8	21.5
LnGrp LOS	C		C	B		B	D	B	B	D	C	C
Approach Vol, veh/h		732			371			356			480	
Approach Delay, s/veh		27.1			19.2			22.7			21.4	
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	5.7	44.9		39.4	11.5	39.1		39.4
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	4.1	29.3		40.7	11.7	21.7		40.7
Max Q Clear Time (g_c+I1), s	2.2	6.1		30.4	6.8	11.3		21.0
Green Ext Time (p_c), s	0.0	2.7		3.7	0.1	2.1		4.8

Intersection Summary	
HCM 2010 Ctrl Delay	23.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	398	104	33	288	23	83	211	36	5	265	175
Future Volume (veh/h)	172	398	104	33	288	23	83	211	36	5	265	175
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	187	433	113	36	313	25	90	229	39	5	288	190
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	642	182	108	969	84	136	1368	229	32	801	513
Arrive On Green	0.39	0.39	0.38	0.39	0.39	0.38	0.08	0.45	0.44	0.02	0.39	0.37
Sat Flow, veh/h	565	1626	462	152	2454	212	1634	3026	507	1634	2061	1318
Grp Volume(v), veh/h	340	0	393	179	0	195	90	132	136	5	246	232
Grp Sat Flow(s),veh/h/ln	1049	0	1604	1164	0	1653	1634	1770	1763	1634	1770	1609
Q Serve(g_s), s	21.3	0.0	17.7	1.3	0.0	7.3	4.8	4.0	4.1	0.3	8.9	9.4
Cycle Q Clear(g_c), s	28.6	0.0	17.7	19.0	0.0	7.3	4.8	4.0	4.1	0.3	8.9	9.4
Prop In Lane	0.55		0.29	0.20		0.13	1.00		0.29	1.00		0.82
Lane Grp Cap(c), veh/h	476	0	633	508	0	653	136	800	797	32	688	626
V/C Ratio(X)	0.71	0.00	0.62	0.35	0.00	0.30	0.66	0.17	0.17	0.16	0.36	0.37
Avail Cap(c_a), veh/h	569	0	749	616	0	772	236	800	797	98	688	626
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96
Uniform Delay (d), s/veh	28.1	0.0	22.0	18.8	0.0	18.7	40.0	14.6	14.8	43.4	19.5	20.1
Incr Delay (d2), s/veh	3.4	0.0	1.2	0.4	0.0	0.3	5.5	0.4	0.5	2.1	1.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	8.0	3.0	0.0	3.4	2.4	2.0	2.1	0.1	4.6	4.5
LnGrp Delay(d),s/veh	31.5	0.0	23.2	19.3	0.0	19.0	45.5	15.0	15.2	45.5	20.9	21.7
LnGrp LOS	C		C	B		B	D	B	B	D	C	C
Approach Vol, veh/h		733			374			358			483	
Approach Delay, s/veh		27.0			19.1			22.8			21.5	
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	5.8	44.7		39.5	11.5	39.0		39.5
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	4.1	29.3		40.7	11.7	21.7		40.7
Max Q Clear Time (g_c+I1), s	2.3	6.1		30.6	6.8	11.4		21.0
Green Ext Time (p_c), s	0.0	2.7		3.7	0.1	2.1		4.9

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	443	116	35	312	22	98	246	43	5	332	218
Future Volume (veh/h)	190	443	116	35	312	22	98	246	43	5	332	218
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	207	482	126	38	339	24	107	267	47	5	361	237
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	680	194	109	1027	80	155	1273	221	32	714	460
Arrive On Green	0.42	0.42	0.41	0.42	0.42	0.41	0.10	0.42	0.41	0.02	0.35	0.33
Sat Flow, veh/h	565	1606	458	143	2423	188	1634	3008	522	1634	2053	1324
Grp Volume(v), veh/h	373	0	442	190	0	211	107	155	159	5	310	288
Grp Sat Flow(s),veh/h/ln	1023	0	1605	1096	0	1658	1634	1770	1760	1634	1770	1608
Q Serve(g_s), s	24.5	0.0	19.8	1.8	0.0	7.6	5.7	5.0	5.2	0.3	12.5	12.9
Cycle Q Clear(g_c), s	32.1	0.0	19.8	21.5	0.0	7.6	5.7	5.0	5.2	0.3	12.5	12.9
Prop In Lane	0.55		0.29	0.20		0.11	1.00		0.30	1.00		0.82
Lane Grp Cap(c), veh/h	496	0	680	513	0	703	155	749	745	32	615	559
V/C Ratio(X)	0.75	0.00	0.65	0.37	0.00	0.30	0.69	0.21	0.21	0.16	0.50	0.51
Avail Cap(c_a), veh/h	536	0	731	559	0	755	240	749	745	98	615	559
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92
Uniform Delay (d), s/veh	27.6	0.0	20.8	17.5	0.0	17.2	39.4	16.4	16.6	43.4	23.2	23.8
Incr Delay (d2), s/veh	5.5	0.0	1.8	0.4	0.0	0.2	5.3	0.6	0.7	2.0	2.7	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	0.0	9.1	3.1	0.0	3.5	2.8	2.5	2.7	0.1	6.6	6.2
LnGrp Delay(d),s/veh	33.1	0.0	22.6	18.0	0.0	17.4	44.8	17.0	17.2	45.4	25.9	26.9
LnGrp LOS	C		C	B		B	D	B	B	D	C	C
Approach Vol, veh/h		815			401			421			603	
Approach Delay, s/veh		27.4			17.7			24.2			26.5	
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	5.8	42.1		42.1	12.6	35.3		42.1
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	4.1	30.3		39.7	11.9	22.5		39.7
Max Q Clear Time (g_c+I1), s	2.3	7.2		34.1	7.7	14.9		23.5
Green Ext Time (p_c), s	0.0	3.4		2.7	0.1	2.2		5.1

Intersection Summary	
HCM 2010 Ctrl Delay	24.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	194	443	116	35	312	27	98	252	43	10	337	222
Future Volume (veh/h)	194	443	116	35	312	27	98	252	43	10	337	222
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	211	482	126	38	339	29	107	274	47	11	366	241
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	307	681	194	108	1023	96	155	1250	211	41	705	456
Arrive On Green	0.43	0.43	0.41	0.43	0.43	0.41	0.10	0.41	0.40	0.03	0.34	0.33
Sat Flow, veh/h	570	1592	454	142	2391	224	1634	3021	511	1634	2050	1327
Grp Volume(v), veh/h	373	0	446	193	0	213	107	159	162	11	315	292
Grp Sat Flow(s),veh/h/ln	1010	0	1606	1106	0	1651	1634	1770	1762	1634	1770	1607
Q Serve(g_s), s	24.8	0.0	19.9	1.8	0.0	7.7	5.7	5.2	5.4	0.6	12.8	13.2
Cycle Q Clear(g_c), s	32.5	0.0	19.9	21.6	0.0	7.7	5.7	5.2	5.4	0.6	12.8	13.2
Prop In Lane	0.57		0.28	0.20		0.14	1.00		0.29	1.00		0.83
Lane Grp Cap(c), veh/h	495	0	687	521	0	706	155	732	729	41	608	553
V/C Ratio(X)	0.75	0.00	0.65	0.37	0.00	0.30	0.69	0.22	0.22	0.27	0.52	0.53
Avail Cap(c_a), veh/h	533	0	735	565	0	756	240	732	729	98	608	553
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92
Uniform Delay (d), s/veh	27.6	0.0	20.6	17.3	0.0	17.0	39.4	17.0	17.2	43.1	23.6	24.2
Incr Delay (d2), s/veh	5.6	0.0	1.8	0.4	0.0	0.2	5.3	0.7	0.7	3.1	2.9	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	9.4	0.0	9.2	3.1	0.0	3.6	2.8	2.7	2.8	0.3	6.7	6.4
LnGrp Delay(d),s/veh	33.2	0.0	22.4	17.8	0.0	17.2	44.8	17.7	17.9	46.2	26.5	27.4
LnGrp LOS	C		C	B		B	D	B	B	D	C	C
Approach Vol, veh/h		819			406			428			618	
Approach Delay, s/veh		27.3			17.5			24.5			27.3	
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	6.3	41.2		42.5	12.6	34.9		42.5
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	4.1	30.1		39.9	11.9	22.3		39.9
Max Q Clear Time (g_c+I1), s	2.6	7.4		34.5	7.7	15.2		23.6
Green Ext Time (p_c), s	0.0	3.5		2.7	0.1	2.2		5.2

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	498	130	38	340	34	118	306	52	21	443	284
Future Volume (veh/h)	216	498	130	38	340	34	118	306	52	21	443	284
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	235	541	141	41	370	37	128	333	57	23	482	309
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	699	199	101	1005	114	243	1173	199	55	564	360
Arrive On Green	0.44	0.44	0.43	0.44	0.44	0.43	0.15	0.39	0.37	0.03	0.27	0.26
Sat Flow, veh/h	551	1572	448	120	2262	256	1634	3021	511	1634	2062	1316
Grp Volume(v), veh/h	411	0	506	210	0	238	128	194	196	23	413	378
Grp Sat Flow(s),veh/h/ln	964	0	1607	993	0	1645	1634	1770	1762	1634	1770	1609
Q Serve(g_s), s	29.6	0.0	23.1	2.5	0.0	8.5	6.5	6.8	6.9	1.2	19.9	20.1
Cycle Q Clear(g_c), s	38.1	0.0	23.1	25.6	0.0	8.5	6.5	6.8	6.9	1.2	19.9	20.1
Prop In Lane	0.57		0.28	0.20		0.16	1.00		0.29	1.00		0.82
Lane Grp Cap(c), veh/h	491	0	714	489	0	731	243	687	684	55	484	440
V/C Ratio(X)	0.84	0.00	0.71	0.43	0.00	0.33	0.53	0.28	0.29	0.42	0.85	0.86
Avail Cap(c_a), veh/h	491	0	714	489	0	731	243	687	684	107	531	483
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80
Uniform Delay (d), s/veh	28.6	0.0	20.4	17.1	0.0	16.3	35.4	18.9	19.1	42.6	31.0	31.6
Incr Delay (d2), s/veh	12.0	0.0	3.2	0.6	0.0	0.3	2.1	1.0	1.1	3.9	14.3	15.9
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	11.6	0.0	10.8	3.3	0.0	3.9	3.1	3.5	3.5	0.6	11.7	10.9
LnGrp Delay(d),s/veh	40.6	0.0	23.7	17.7	0.0	16.6	37.5	19.9	20.1	46.6	45.3	47.5
LnGrp LOS	D		C	B		B	D	B	C	D	D	D
Approach Vol, veh/h		917			448			518			814	
Approach Delay, s/veh		31.3			17.1			24.3			46.4	
Approach LOS		C			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	7.0	39.0		44.0	17.4	28.6		44.0
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	4.6	30.8		38.7	9.7	25.7		38.7
Max Q Clear Time (g_c+I1), s	3.2	8.9		40.1	8.5	22.1		27.6
Green Ext Time (p_c), s	0.0	1.7		0.0	0.3	1.2		4.9

Intersection Summary	
HCM 2010 Ctrl Delay	32.1
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	498	130	38	340	39	118	312	52	26	448	288
Future Volume (veh/h)	220	498	130	38	340	39	118	312	52	26	448	288
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		0.98	1.00		0.98	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	1750	1863	1750	1750	1863	1750	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	239	541	141	41	370	42	128	339	57	28	487	313
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	333	737	208	112	1075	136	184	1068	178	62	573	367
Arrive On Green	0.47	0.47	0.45	0.47	0.47	0.45	0.11	0.35	0.34	0.04	0.28	0.26
Sat Flow, veh/h	569	1573	444	131	2295	289	1634	3029	504	1634	2059	1319
Grp Volume(v), veh/h	411	0	510	215	0	238	128	196	200	28	418	382
Grp Sat Flow(s),veh/h/ln	978	0	1608	1076	0	1638	1634	1770	1763	1634	1770	1608
Q Serve(g_s), s	27.2	0.0	21.1	2.2	0.0	7.7	6.4	6.9	7.1	1.4	19.0	19.2
Cycle Q Clear(g_c), s	34.9	0.0	21.1	23.3	0.0	7.7	6.4	6.9	7.1	1.4	19.0	19.2
Prop In Lane	0.58		0.28	0.19		0.18	1.00		0.29	1.00		0.82
Lane Grp Cap(c), veh/h	525	0	754	555	0	768	184	624	622	62	492	447
V/C Ratio(X)	0.78	0.00	0.68	0.39	0.00	0.31	0.70	0.31	0.32	0.45	0.85	0.85
Avail Cap(c_a), veh/h	540	0	773	573	0	788	211	639	637	119	540	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	0.0	17.8	14.7	0.0	14.2	36.4	20.1	20.3	40.1	29.1	29.7
Incr Delay (d2), s/veh	7.2	0.0	2.3	0.4	0.0	0.2	8.1	0.3	0.3	5.0	11.5	12.8
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	10.1	0.0	9.9	3.1	0.0	3.5	3.3	3.4	3.5	0.7	10.9	10.1
LnGrp Delay(d),s/veh	32.1	0.0	20.1	15.2	0.0	14.4	44.5	20.4	20.6	45.2	40.6	42.5
LnGrp LOS	C		C	B		B	D	C	C	D	D	D
Approach Vol, veh/h		921			453			524			828	
Approach Delay, s/veh		25.5			14.8			26.4			41.6	
Approach LOS		C			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	7.2	34.1		44.0	13.6	27.7		44.0
Change Period (Y+Rc), s	5.3	5.3		5.3	5.3	5.3		5.3
Max Green Setting (Gmax), s	4.9	29.5		39.7	9.7	24.7		39.7
Max Q Clear Time (g_c+I1), s	3.4	9.1		36.9	8.4	21.2		25.3
Green Ext Time (p_c), s	0.0	1.7		1.7	0.3	1.2		5.7

Intersection Summary	
HCM 2010 Ctrl Delay	28.8
HCM 2010 LOS	C

Intersection 13
N Hillman St & E Prosperity Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	464	555	117	99	548	141	201	288	108	212	99	359
Future Volume (veh/h)	464	555	117	99	548	141	201	288	108	212	99	359
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	504	603	127	108	596	153	218	313	117	230	108	390
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	853	1460	307	140	1629	459	97	479	175	270	402	542
Arrive On Green	0.27	0.50	0.50	0.09	0.32	0.32	0.06	0.19	0.18	0.09	0.22	0.22
Sat Flow, veh/h	3170	2897	609	1634	5085	1432	1634	2523	922	3170	1863	2513
Grp Volume(v), veh/h	504	368	362	108	596	153	218	217	213	230	108	390
Grp Sat Flow(s),veh/h/ln	1585	1770	1736	1634	1695	1432	1634	1770	1675	1585	1863	1257
Q Serve(g_s), s	16.3	15.4	15.5	7.6	10.6	7.3	7.0	13.4	13.9	8.4	5.7	17.0
Cycle Q Clear(g_c), s	16.3	15.4	15.5	7.6	10.6	7.3	7.0	13.4	13.9	8.4	5.7	17.0
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	853	892	875	140	1629	459	97	336	318	270	402	542
V/C Ratio(X)	0.59	0.41	0.41	0.77	0.37	0.33	2.25	0.65	0.67	0.85	0.27	0.72
Avail Cap(c_a), veh/h	853	892	875	220	1879	529	97	688	652	270	693	935
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	0.77	0.77	0.77
Uniform Delay (d), s/veh	37.5	18.3	18.4	52.8	30.9	17.6	55.5	44.1	44.6	53.2	38.5	43.0
Incr Delay (d2), s/veh	1.1	1.4	1.4	8.7	0.1	0.4	593.7	2.1	2.4	17.9	0.3	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	7.3	7.8	7.7	3.8	5.0	2.9	19.1	6.7	6.7	4.4	3.0	6.0
LnGrp Delay(d),s/veh	38.6	19.7	19.9	61.6	31.0	18.1	649.2	46.2	47.0	71.2	38.8	44.4
LnGrp LOS	D	B	B	E	C	B	F	D	D	E	D	D
Approach Vol, veh/h		1234			857			648			728	
Approach Delay, s/veh		27.5			32.6			249.3			52.0	
Approach LOS		C			C			F			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	26.4	14.1	63.5	11.0	29.5	35.8	41.8
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	4.1	45.0	15.3	34.6	6.1	43.0	6.9	43.0
Max Q Clear Time (g_c+I1), s	10.4	15.9	9.6	17.5	9.0	19.0	18.3	12.6
Green Ext Time (p_c), s	0.0	1.7	0.1	6.5	0.0	2.4	0.0	7.8

Intersection Summary	
HCM 2010 Ctrl Delay	75.3
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	469	561	118	104	575	148	202	289	109	215	100	364
Future Volume (veh/h)	469	561	118	104	575	148	202	289	109	215	100	364
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	510	610	128	113	625	161	220	314	118	234	109	396
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	725	1447	303	144	1823	514	97	480	176	275	406	547
Arrive On Green	0.23	0.50	0.49	0.09	0.36	0.36	0.06	0.19	0.18	0.09	0.22	0.22
Sat Flow, veh/h	3170	2899	607	1634	5085	1433	1634	2518	926	3170	1863	2513
Grp Volume(v), veh/h	510	372	366	113	625	161	220	219	213	234	109	396
Grp Sat Flow(s),veh/h/ln	1585	1770	1736	1634	1695	1433	1634	1770	1674	1585	1863	1257
Q Serve(g_s), s	17.4	15.7	15.8	8.0	10.6	7.1	7.0	13.5	14.0	8.6	5.7	17.3
Cycle Q Clear(g_c), s	17.4	15.7	15.8	8.0	10.6	7.1	7.0	13.5	14.0	8.6	5.7	17.3
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	725	883	867	144	1823	514	97	337	319	275	406	547
V/C Ratio(X)	0.70	0.42	0.42	0.79	0.34	0.31	2.27	0.65	0.67	0.85	0.27	0.72
Avail Cap(c_a), veh/h	725	883	867	169	1901	536	97	688	651	275	693	935
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	0.76	0.76	0.76
Uniform Delay (d), s/veh	41.8	18.7	18.8	52.7	27.7	15.1	55.5	44.1	44.6	53.1	38.3	42.8
Incr Delay (d2), s/veh	3.1	1.5	1.5	18.5	0.1	0.3	602.8	2.1	2.4	17.4	0.3	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	8.0	8.0	7.9	4.3	5.0	2.8	19.4	6.8	6.7	4.4	3.0	6.1
LnGrp Delay(d),s/veh	44.9	20.2	20.3	71.2	27.8	15.5	658.3	46.2	47.0	70.6	38.6	44.3
LnGrp LOS	D	C	C	E	C	B	F	D	D	E	D	D
Approach Vol, veh/h		1248			899			652			739	
Approach Delay, s/veh		30.3			31.0			253.0			51.8	
Approach LOS		C			C			F			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	26.5	14.4	62.9	11.0	29.7	31.0	46.3
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	4.1	45.0	11.6	38.3	6.1	43.0	6.4	43.5
Max Q Clear Time (g_c+I1), s	10.6	16.0	10.0	17.8	9.0	19.3	19.4	12.6
Green Ext Time (p_c), s	0.0	1.7	0.0	7.2	0.0	2.4	0.0	8.1

Intersection Summary	
HCM 2010 Ctrl Delay	76.0
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	470	561	118	104	575	151	202	293	109	220	104	366
Future Volume (veh/h)	470	561	118	104	575	151	202	293	109	220	104	366
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	511	610	128	113	625	164	220	318	118	239	113	398
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	728	1458	305	144	1837	518	95	481	175	271	405	547
Arrive On Green	0.23	0.50	0.50	0.09	0.36	0.36	0.06	0.19	0.18	0.09	0.22	0.22
Sat Flow, veh/h	3170	2899	607	1634	5085	1433	1634	2528	918	3170	1863	2513
Grp Volume(v), veh/h	511	372	366	113	625	164	220	221	215	239	113	398
Grp Sat Flow(s),veh/h/ln	1585	1770	1736	1634	1695	1433	1634	1770	1676	1585	1863	1257
Q Serve(g_s), s	17.8	15.9	16.0	8.1	10.7	7.4	7.0	13.8	14.4	8.9	6.1	17.7
Cycle Q Clear(g_c), s	17.8	15.9	16.0	8.1	10.7	7.4	7.0	13.8	14.4	8.9	6.1	17.7
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	728	890	873	144	1837	518	95	337	319	271	405	547
V/C Ratio(X)	0.70	0.42	0.42	0.79	0.34	0.32	2.31	0.65	0.68	0.88	0.28	0.73
Avail Cap(c_a), veh/h	728	890	873	167	1911	539	95	662	627	271	681	919
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	0.76	0.76	0.76
Uniform Delay (d), s/veh	42.5	18.8	18.9	53.6	27.9	15.4	56.5	44.9	45.4	54.3	39.1	43.6
Incr Delay (d2), s/veh	3.0	1.4	1.5	19.0	0.1	0.3	620.3	2.2	2.5	21.8	0.3	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	8.1	8.1	8.0	4.4	5.1	3.0	19.6	6.9	6.9	4.7	3.1	6.2
LnGrp Delay(d),s/veh	45.5	20.2	20.3	72.6	28.0	15.7	676.8	47.1	47.9	76.1	39.4	45.1
LnGrp LOS	D	C	C	E	C	B	F	D	D	E	D	D
Approach Vol, veh/h		1249			902			656			750	
Approach Delay, s/veh		30.6			31.4			258.5			54.1	
Approach LOS		C			C			F			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	14.3	26.8	14.5	64.4	11.0	30.1	31.6	47.3
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	5.1	44.0	11.7	40.2	6.1	43.0	7.4	44.5
Max Q Clear Time (g_c+I1), s	10.9	16.4	10.1	18.0	9.0	19.7	19.8	12.7
Green Ext Time (p_c), s	0.0	1.7	0.0	7.4	0.0	2.5	0.0	8.2

Intersection Summary	
HCM 2010 Ctrl Delay	77.8
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	490	586	124	129	716	184	206	296	111	228	106	386
Future Volume (veh/h)	490	586	124	129	716	184	206	296	111	228	106	386
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	533	637	135	140	778	200	224	322	121	248	115	420
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	749	1383	292	172	1764	497	95	484	178	289	419	566
Arrive On Green	0.24	0.48	0.47	0.11	0.35	0.35	0.06	0.19	0.18	0.09	0.23	0.23
Sat Flow, veh/h	3170	2893	612	1634	5085	1433	1634	2518	926	3170	1863	2514
Grp Volume(v), veh/h	533	389	383	140	778	200	224	224	219	248	115	420
Grp Sat Flow(s),veh/h/ln	1585	1770	1735	1634	1695	1433	1634	1770	1674	1585	1863	1257
Q Serve(g_s), s	18.5	17.7	17.8	10.1	14.2	9.4	7.0	14.1	14.6	9.3	6.1	18.6
Cycle Q Clear(g_c), s	18.5	17.7	17.8	10.1	14.2	9.4	7.0	14.1	14.6	9.3	6.1	18.6
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	749	846	829	172	1764	497	95	340	322	289	419	566
V/C Ratio(X)	0.71	0.46	0.46	0.81	0.44	0.40	2.35	0.66	0.68	0.86	0.27	0.74
Avail Cap(c_a), veh/h	749	846	829	199	1848	521	95	662	627	289	681	920
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	0.50	0.50	0.50
Uniform Delay (d), s/veh	42.1	21.0	21.1	52.5	30.2	16.4	56.5	44.8	45.3	53.8	38.4	43.2
Incr Delay (d2), s/veh	3.2	1.8	1.8	19.9	0.2	0.5	638.8	2.2	2.5	12.2	0.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	9.1	8.9	5.5	6.7	3.8	20.1	7.1	7.0	4.6	3.2	6.6
LnGrp Delay(d),s/veh	45.2	22.8	22.9	72.4	30.4	16.9	695.3	47.0	47.8	66.0	38.6	44.2
LnGrp LOS	D	C	C	E	C	B	F	D	D	E	D	D
Approach Vol, veh/h		1305			1118			667			783	
Approach Delay, s/veh		32.0			33.3			265.0			50.3	
Approach LOS		C			C			F			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	27.1	16.6	61.4	11.0	31.0	32.4	45.6
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	5.1	44.0	14.0	37.9	6.1	43.0	8.9	43.0
Max Q Clear Time (g_c+I1), s	11.3	16.6	12.1	19.8	9.0	20.6	20.5	16.2
Green Ext Time (p_c), s	0.0	1.7	0.1	8.1	0.0	2.6	0.0	9.5

Intersection Summary	
HCM 2010 Ctrl Delay	76.2
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	494	586	124	129	716	217	206	310	111	261	120	390
Future Volume (veh/h)	494	586	124	129	716	217	206	310	111	261	120	390
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	537	637	135	140	778	236	224	337	121	284	130	424
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	695	1365	289	172	1820	513	97	502	177	287	425	573
Arrive On Green	0.22	0.47	0.47	0.11	0.36	0.36	0.06	0.20	0.19	0.09	0.23	0.23
Sat Flow, veh/h	3170	2893	612	1634	5085	1433	1634	2551	899	3170	1863	2514
Grp Volume(v), veh/h	537	389	383	140	778	236	224	232	226	284	130	424
Grp Sat Flow(s),veh/h/ln	1585	1770	1735	1634	1695	1433	1634	1770	1680	1585	1863	1257
Q Serve(g_s), s	18.8	17.6	17.7	9.9	13.7	11.0	7.0	14.3	14.8	10.6	6.8	18.5
Cycle Q Clear(g_c), s	18.8	17.6	17.7	9.9	13.7	11.0	7.0	14.3	14.8	10.6	6.8	18.5
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.53	1.00		1.00
Lane Grp Cap(c), veh/h	695	835	818	172	1820	513	97	348	331	287	425	573
V/C Ratio(X)	0.77	0.47	0.47	0.81	0.43	0.46	2.31	0.67	0.68	0.99	0.31	0.74
Avail Cap(c_a), veh/h	695	835	818	198	1901	536	97	658	625	287	693	935
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	0.43	0.43	0.43
Uniform Delay (d), s/veh	43.3	21.1	21.2	51.6	28.7	15.8	55.5	43.8	44.2	53.6	37.8	42.3
Incr Delay (d2), s/veh	5.4	1.9	1.9	19.8	0.2	0.6	621.0	2.2	2.5	32.3	0.2	0.8
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	8.7	9.0	8.9	5.4	6.4	4.4	19.9	7.2	7.1	5.9	3.5	6.5
LnGrp Delay(d),s/veh	48.7	23.0	23.1	71.5	28.9	16.5	676.5	46.0	46.7	85.9	38.0	43.1
LnGrp LOS	D	C	C	E	C	B	F	D	D	F	D	D
Approach Vol, veh/h		1309			1154			682			838	
Approach Delay, s/veh		33.6			31.5			253.3			56.8	
Approach LOS		C			C			F			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	14.7	27.2	16.4	59.7	11.0	30.9	29.9	46.2
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.1	43.0	13.7	36.2	6.1	43.0	6.4	43.5
Max Q Clear Time (g_c+I1), s	12.6	16.8	11.9	19.7	9.0	20.5	20.8	15.7
Green Ext Time (p_c), s	0.0	1.8	0.1	7.9	0.0	2.7	0.0	9.8

Intersection Summary	
HCM 2010 Ctrl Delay	75.5
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	511	552	116	165	913	267	211	347	114	274	157	461
Future Volume (veh/h)	511	552	116	165	913	267	211	347	114	274	157	461
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	555	600	126	179	992	290	229	377	124	298	171	501
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	620	1231	258	212	1824	514	95	539	175	337	474	640
Arrive On Green	0.20	0.42	0.42	0.13	0.36	0.36	0.06	0.21	0.20	0.11	0.25	0.25
Sat Flow, veh/h	3170	2898	607	1634	5085	1433	1634	2614	847	3170	1863	2517
Grp Volume(v), veh/h	555	366	360	179	992	290	229	253	248	298	171	501
Grp Sat Flow(s),veh/h/ln	1585	1770	1735	1634	1695	1433	1634	1770	1691	1585	1863	1258
Q Serve(g_s), s	20.5	18.0	18.1	12.9	18.7	14.0	7.0	15.9	16.4	11.1	9.0	22.2
Cycle Q Clear(g_c), s	20.5	18.0	18.1	12.9	18.7	14.0	7.0	15.9	16.4	11.1	9.0	22.2
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	620	751	737	212	1824	514	95	365	349	337	474	640
V/C Ratio(X)	0.90	0.49	0.49	0.85	0.54	0.56	2.40	0.69	0.71	0.88	0.36	0.78
Avail Cap(c_a), veh/h	620	751	737	240	1911	539	95	662	633	337	681	921
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	0.09	0.09	0.09
Uniform Delay (d), s/veh	47.1	25.0	25.2	51.1	30.7	15.8	56.5	44.1	44.5	52.9	36.7	41.7
Incr Delay (d2), s/veh	15.7	2.2	2.3	21.5	0.3	1.2	662.0	2.4	2.7	2.9	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	9.2	9.1	7.1	8.8	5.7	20.7	8.1	7.9	5.0	4.7	7.7
LnGrp Delay(d),s/veh	62.7	27.3	27.5	72.6	31.0	17.1	718.5	46.5	47.2	55.8	36.8	41.9
LnGrp LOS	E	C	C	E	C	B	F	D	D	E	D	D
Approach Vol, veh/h		1281			1461			730			970	
Approach Delay, s/veh		42.7			33.3			257.5			45.3	
Approach LOS		D			C			F			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	16.8	28.8	19.5	55.0	11.0	34.5	27.5	47.0
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	5.1	44.0	17.0	34.9	6.1	43.0	7.4	44.5
Max Q Clear Time (g_c+I1), s	13.1	18.4	14.9	20.1	9.0	24.2	22.5	20.7
Green Ext Time (p_c), s	0.0	1.9	0.1	8.4	0.0	3.1	0.0	10.9

Intersection Summary	
HCM 2010 Ctrl Delay	75.5
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	515	552	116	165	913	300	211	361	114	307	171	465
Future Volume (veh/h)	515	552	116	165	913	300	211	361	114	307	171	465
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	560	600	126	179	992	326	229	392	124	334	186	505
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	614	1226	257	212	1824	514	95	554	173	331	477	644
Arrive On Green	0.19	0.42	0.42	0.13	0.36	0.36	0.06	0.21	0.20	0.10	0.26	0.26
Sat Flow, veh/h	3170	2898	607	1634	5085	1433	1634	2641	824	3170	1863	2517
Grp Volume(v), veh/h	560	366	360	179	992	326	229	261	255	334	186	505
Grp Sat Flow(s),veh/h/ln	1585	1770	1735	1634	1695	1433	1634	1770	1696	1585	1863	1258
Q Serve(g_s), s	20.8	18.0	18.2	12.9	18.7	16.3	7.0	16.4	16.8	12.5	9.9	22.4
Cycle Q Clear(g_c), s	20.8	18.0	18.2	12.9	18.7	16.3	7.0	16.4	16.8	12.5	9.9	22.4
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.49	1.00		1.00
Lane Grp Cap(c), veh/h	614	749	734	212	1824	514	95	371	356	331	477	644
V/C Ratio(X)	0.91	0.49	0.49	0.85	0.54	0.63	2.40	0.70	0.72	1.01	0.39	0.78
Avail Cap(c_a), veh/h	614	749	734	240	1911	539	95	662	635	331	681	921
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	0.09	0.09	0.09
Uniform Delay (d), s/veh	47.4	25.2	25.3	51.1	30.7	16.5	56.5	43.9	44.3	53.7	36.9	41.6
Incr Delay (d2), s/veh	17.9	2.3	2.3	21.5	0.3	2.3	662.0	2.4	2.7	17.4	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	9.3	9.2	7.1	8.8	6.7	20.7	8.3	8.1	6.3	5.1	7.8
LnGrp Delay(d),s/veh	65.3	27.5	27.6	72.6	31.0	18.7	718.5	46.4	47.0	71.2	37.0	41.8
LnGrp LOS	E	C	C	E	C	B	F	D	D	F	D	D
Approach Vol, veh/h		1286			1497			745			1025	
Approach Delay, s/veh		44.0			33.3			253.2			50.5	
Approach LOS		D			C			F			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	16.5	29.2	19.5	54.8	11.0	34.7	27.3	47.0
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	5.1	44.0	17.0	34.9	6.1	43.0	7.4	44.5
Max Q Clear Time (g_c+I1), s	14.5	18.8	14.9	20.2	9.0	24.4	22.8	20.7
Green Ext Time (p_c), s	0.0	2.0	0.1	8.5	0.0	3.2	0.0	11.1

Intersection Summary	
HCM 2010 Ctrl Delay	76.2
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	349	370	103	65	448	91	182	244	82	83	62	272
Future Volume (veh/h)	349	370	103	65	448	91	182	244	82	83	62	272
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	379	402	112	71	487	99	198	265	89	90	67	296
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	792	1572	433	97	1961	553	109	472	154	158	306	412
Arrive On Green	0.25	0.58	0.57	0.06	0.39	0.39	0.07	0.18	0.17	0.05	0.16	0.16
Sat Flow, veh/h	3170	2726	750	1634	5085	1434	1634	2606	853	3170	1863	2506
Grp Volume(v), veh/h	379	259	255	71	487	99	198	178	176	90	67	296
Grp Sat Flow(s),veh/h/ln	1585	1770	1707	1634	1695	1434	1634	1770	1689	1585	1863	1253
Q Serve(g_s), s	12.2	8.7	9.0	5.1	7.8	4.3	8.0	11.0	11.5	3.3	3.7	8.1
Cycle Q Clear(g_c), s	12.2	8.7	9.0	5.1	7.8	4.3	8.0	11.0	11.5	3.3	3.7	8.1
Prop In Lane	1.00		0.44	1.00		1.00	1.00		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	792	1020	984	97	1961	553	109	320	306	158	306	412
V/C Ratio(X)	0.48	0.25	0.26	0.73	0.25	0.18	1.82	0.55	0.58	0.57	0.22	0.72
Avail Cap(c_a), veh/h	792	1020	984	153	1961	553	109	655	625	198	681	917
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	0.86	0.86	0.86
Uniform Delay (d), s/veh	38.3	12.6	12.7	55.5	25.0	15.3	56.0	44.7	45.1	55.7	43.5	17.3
Incr Delay (d2), s/veh	0.4	0.6	0.6	10.2	0.1	0.2	401.6	1.5	1.7	2.8	0.3	2.0
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	5.4	4.4	4.4	2.6	3.7	1.7	15.8	5.5	5.5	1.5	2.0	2.9
LnGrp Delay(d),s/veh	38.8	13.2	13.4	65.8	25.1	15.5	457.6	46.2	46.9	58.5	43.8	19.3
LnGrp LOS	D	B	B	E	C	B	F	D	D	E	D	B
Approach Vol, veh/h		893			657			552			453	
Approach Delay, s/veh		24.1			28.1			194.0			30.7	
Approach LOS		C			C			F			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	10.0	25.7	11.1	73.2	12.0	23.7	34.0	50.3
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.6	43.5	10.6	40.3	7.1	43.0	7.4	43.5
Max Q Clear Time (g_c+I1), s	5.3	13.5	7.1	11.0	10.0	10.1	14.2	9.8
Green Ext Time (p_c), s	0.0	3.2	0.0	4.1	0.0	3.3	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	63.0
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	352	374	104	68	470	96	183	245	82	84	63	276
Future Volume (veh/h)	352	374	104	68	470	96	183	245	82	84	63	276
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	383	407	113	74	511	104	199	266	89	91	68	300
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	782	1565	429	100	1974	557	109	473	154	160	308	414
Arrive On Green	0.25	0.57	0.57	0.06	0.39	0.39	0.07	0.18	0.17	0.05	0.17	0.17
Sat Flow, veh/h	3170	2728	749	1634	5085	1434	1634	2608	850	3170	1863	2506
Grp Volume(v), veh/h	383	262	258	74	511	104	199	178	177	91	68	300
Grp Sat Flow(s),veh/h/ln	1585	1770	1707	1634	1695	1434	1634	1770	1689	1585	1863	1253
Q Serve(g_s), s	12.4	8.9	9.1	5.3	8.2	4.6	8.0	11.0	11.5	3.4	3.8	8.3
Cycle Q Clear(g_c), s	12.4	8.9	9.1	5.3	8.2	4.6	8.0	11.0	11.5	3.4	3.8	8.3
Prop In Lane	1.00		0.44	1.00		1.00	1.00		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	782	1015	979	100	1974	557	109	321	307	160	308	414
V/C Ratio(X)	0.49	0.26	0.26	0.74	0.26	0.19	1.83	0.55	0.58	0.57	0.22	0.72
Avail Cap(c_a), veh/h	782	1015	979	155	1974	557	109	653	624	201	681	917
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	0.83	0.83	0.83
Uniform Delay (d), s/veh	38.7	12.8	12.9	55.4	25.0	15.2	56.0	44.7	45.1	55.7	43.4	17.5
Incr Delay (d2), s/veh	0.5	0.6	0.7	10.1	0.1	0.2	405.6	1.5	1.7	2.6	0.3	2.0
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	5.5	4.5	4.5	2.7	3.8	1.8	15.9	5.5	5.5	1.5	2.0	3.0
LnGrp Delay(d),s/veh	39.2	13.4	13.6	65.4	25.0	15.4	461.6	46.2	46.8	58.4	43.7	19.5
LnGrp LOS	D	B	B	E	C	B	F	D	D	E	D	B
Approach Vol, veh/h		903			689			554			459	
Approach Delay, s/veh		24.4			27.9			195.6			30.8	
Approach LOS		C			C			F			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	10.0	25.8	11.4	72.8	12.0	23.8	33.6	50.6
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.7	43.4	10.8	40.1	7.1	43.0	7.4	43.5
Max Q Clear Time (g_c+I1), s	5.4	13.5	7.3	11.1	10.0	10.3	14.4	10.2
Green Ext Time (p_c), s	0.0	3.3	0.0	4.2	0.0	3.3	0.0	3.0

Intersection Summary	
HCM 2010 Ctrl Delay	62.9
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	352	374	104	68	470	97	183	247	82	85	64	276
Future Volume (veh/h)	352	374	104	68	470	97	183	247	82	85	64	276
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	383	407	113	74	511	105	199	268	89	92	70	300
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	781	1562	429	100	1970	555	109	476	154	161	309	416
Arrive On Green	0.25	0.57	0.57	0.06	0.39	0.39	0.07	0.18	0.17	0.05	0.17	0.17
Sat Flow, veh/h	3170	2728	749	1634	5085	1434	1634	2614	846	3170	1863	2506
Grp Volume(v), veh/h	383	262	258	74	511	105	199	179	178	92	70	300
Grp Sat Flow(s),veh/h/ln	1585	1770	1707	1634	1695	1434	1634	1770	1690	1585	1863	1253
Q Serve(g_s), s	12.4	8.9	9.2	5.3	8.2	4.6	8.0	11.1	11.6	3.4	3.9	8.3
Cycle Q Clear(g_c), s	12.4	8.9	9.2	5.3	8.2	4.6	8.0	11.1	11.6	3.4	3.9	8.3
Prop In Lane	1.00		0.44	1.00		1.00	1.00		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	781	1013	978	100	1970	555	109	322	308	161	309	416
V/C Ratio(X)	0.49	0.26	0.26	0.74	0.26	0.19	1.83	0.56	0.58	0.57	0.23	0.72
Avail Cap(c_a), veh/h	781	1013	978	155	1970	555	109	649	620	209	681	917
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	0.81	0.81	0.81
Uniform Delay (d), s/veh	38.7	12.9	13.0	55.4	25.0	15.2	56.0	44.7	45.1	55.7	43.4	17.4
Incr Delay (d2), s/veh	0.5	0.6	0.7	10.1	0.1	0.2	405.6	1.5	1.7	2.6	0.3	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	4.5	4.5	2.7	3.8	1.8	15.9	5.6	5.5	1.6	2.0	3.0
LnGrp Delay(d),s/veh	39.2	13.5	13.6	65.4	25.1	15.4	461.6	46.2	46.8	58.3	43.7	19.4
LnGrp LOS	D	B	B	E	C	B	F	D	D	E	D	B
Approach Vol, veh/h		903			690			556			462	
Approach Delay, s/veh		24.4			28.0			195.0			30.8	
Approach LOS		C			C			F			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	10.1	25.8	11.4	72.7	12.0	23.9	33.6	50.5
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	7.0	43.1	10.8	40.1	7.1	43.0	7.4	43.5
Max Q Clear Time (g_c+I1), s	5.4	13.6	7.3	11.2	10.0	10.3	14.4	10.2
Green Ext Time (p_c), s	0.0	3.3	0.0	4.2	0.0	3.3	0.0	3.0

Intersection Summary	
HCM 2010 Ctrl Delay	62.8
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	369	391	109	85	585	119	187	251	84	89	67	292
Future Volume (veh/h)	369	391	109	85	585	119	187	251	84	89	67	292
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	401	425	118	92	636	129	203	273	91	97	73	317
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	698	1515	416	121	2082	587	109	482	157	166	317	427
Arrive On Green	0.22	0.56	0.55	0.07	0.41	0.41	0.07	0.18	0.18	0.05	0.17	0.17
Sat Flow, veh/h	3170	2728	749	1634	5085	1434	1634	2611	849	3170	1863	2507
Grp Volume(v), veh/h	401	274	269	92	636	129	203	183	181	97	73	317
Grp Sat Flow(s),veh/h/ln	1585	1770	1707	1634	1695	1434	1634	1770	1690	1585	1863	1254
Q Serve(g_s), s	13.6	9.8	10.0	6.6	10.1	5.5	8.0	11.3	11.8	3.6	4.1	9.2
Cycle Q Clear(g_c), s	13.6	9.8	10.0	6.6	10.1	5.5	8.0	11.3	11.8	3.6	4.1	9.2
Prop In Lane	1.00		0.44	1.00		1.00	1.00		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	698	983	948	121	2082	587	109	327	312	166	317	427
V/C Ratio(X)	0.57	0.28	0.28	0.76	0.31	0.22	1.86	0.56	0.58	0.58	0.23	0.74
Avail Cap(c_a), veh/h	698	983	948	188	2082	587	109	650	621	206	681	917
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	0.76	0.76	0.76
Uniform Delay (d), s/veh	41.8	14.0	14.2	54.5	23.9	14.0	56.0	44.5	44.9	55.6	43.0	19.1
Incr Delay (d2), s/veh	1.2	0.7	0.7	9.3	0.1	0.2	421.5	1.5	1.7	2.5	0.3	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	5.0	4.9	3.3	4.7	2.2	16.4	5.7	5.6	1.6	2.1	3.3
LnGrp Delay(d),s/veh	42.9	14.7	14.9	63.8	24.0	14.2	477.5	46.0	46.6	58.0	43.3	21.1
LnGrp LOS	D	B	B	E	C	B	F	D	D	E	D	C
Approach Vol, veh/h		944			857			567			487	
Approach Delay, s/veh		26.8			26.8			200.7			31.8	
Approach LOS		C			C			F			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	10.3	26.1	12.9	70.6	12.0	24.4	30.4	53.1
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.9	43.2	13.2	37.7	7.1	43.0	7.4	43.5
Max Q Clear Time (g_c+I1), s	5.6	13.8	8.6	12.0	10.0	11.2	15.6	12.1
Green Ext Time (p_c), s	0.0	3.4	0.1	4.3	0.0	3.5	0.0	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	62.2
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	370	391	109	85	585	128	187	255	84	98	71	293
Future Volume (veh/h)	370	391	109	85	585	128	187	255	84	98	71	293
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	402	425	118	92	636	139	203	277	91	107	77	318
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	696	1509	415	121	2075	585	109	487	156	169	321	432
Arrive On Green	0.22	0.55	0.55	0.07	0.41	0.41	0.07	0.19	0.18	0.05	0.17	0.17
Sat Flow, veh/h	3170	2728	749	1634	5085	1434	1634	2621	840	3170	1863	2507
Grp Volume(v), veh/h	402	274	269	92	636	139	203	185	183	107	77	318
Grp Sat Flow(s),veh/h/ln	1585	1770	1707	1634	1695	1434	1634	1770	1691	1585	1863	1254
Q Serve(g_s), s	13.6	9.8	10.1	6.6	10.2	6.0	8.0	11.4	11.9	4.0	4.3	9.2
Cycle Q Clear(g_c), s	13.6	9.8	10.1	6.6	10.2	6.0	8.0	11.4	11.9	4.0	4.3	9.2
Prop In Lane	1.00		0.44	1.00		1.00	1.00		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	696	979	945	121	2075	585	109	329	314	169	321	432
V/C Ratio(X)	0.58	0.28	0.28	0.76	0.31	0.24	1.86	0.56	0.58	0.63	0.24	0.74
Avail Cap(c_a), veh/h	696	979	945	188	2075	585	109	671	641	169	681	917
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	0.76	0.76	0.76
Uniform Delay (d), s/veh	41.8	14.2	14.3	54.5	24.0	14.2	56.0	44.4	44.8	55.6	42.9	19.0
Incr Delay (d2), s/veh	1.2	0.7	0.8	9.3	0.1	0.2	421.5	1.5	1.7	5.7	0.3	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	5.0	4.9	3.3	4.8	2.4	16.4	5.7	5.7	1.9	2.2	3.3
LnGrp Delay(d),s/veh	43.0	14.9	15.0	63.8	24.1	14.4	477.5	45.9	46.5	61.4	43.2	20.9
LnGrp LOS	D	B	B	E	C	B	F	D	D	E	D	C
Approach Vol, veh/h		945			867			571			502	
Approach Delay, s/veh		26.9			26.8			199.5			32.9	
Approach LOS		C			C			F			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	10.4	26.3	12.9	70.4	12.0	24.7	30.4	53.0
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	5.5	44.6	13.2	37.7	7.1	43.0	7.4	43.5
Max Q Clear Time (g_c+I1), s	6.0	13.9	8.6	12.1	10.0	11.2	15.6	12.2
Green Ext Time (p_c), s	0.0	3.5	0.1	4.3	0.0	3.5	0.0	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	62.1
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	379	368	102	108	746	172	191	285	86	115	99	345
Future Volume (veh/h)	379	368	102	108	746	172	191	285	86	115	99	345
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	412	400	111	117	811	187	208	310	93	125	108	375
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	580	1416	388	149	2173	613	109	529	156	188	353	476
Arrive On Green	0.18	0.52	0.51	0.09	0.43	0.43	0.07	0.20	0.19	0.06	0.19	0.19
Sat Flow, veh/h	3170	2729	748	1634	5085	1434	1634	2683	789	3170	1863	2510
Grp Volume(v), veh/h	412	258	253	117	811	187	208	202	201	125	108	375
Grp Sat Flow(s),veh/h/ln	1585	1770	1707	1634	1695	1434	1634	1770	1703	1585	1863	1255
Q Serve(g_s), s	14.6	9.8	10.1	8.4	13.0	7.9	8.0	12.4	12.9	4.6	6.0	11.5
Cycle Q Clear(g_c), s	14.6	9.8	10.1	8.4	13.0	7.9	8.0	12.4	12.9	4.6	6.0	11.5
Prop In Lane	1.00		0.44	1.00		1.00	1.00		0.46	1.00		1.00
Lane Grp Cap(c), veh/h	580	919	886	149	2173	613	109	349	336	188	353	476
V/C Ratio(X)	0.71	0.28	0.29	0.78	0.37	0.31	1.91	0.58	0.60	0.67	0.31	0.79
Avail Cap(c_a), veh/h	580	919	886	227	2173	613	109	661	636	188	681	918
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	0.45	0.45	0.45
Uniform Delay (d), s/veh	46.0	16.2	16.4	53.4	23.4	13.2	56.0	43.7	44.0	55.3	41.8	21.0
Incr Delay (d2), s/veh	4.0	0.8	0.8	9.6	0.1	0.3	441.4	1.5	1.7	4.0	0.2	1.3
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	6.7	5.0	4.9	4.2	6.1	3.1	17.0	6.2	6.2	2.1	3.1	4.1
LnGrp Delay(d),s/veh	50.0	17.0	17.2	62.9	23.5	13.4	497.4	45.2	45.7	59.3	42.0	22.3
LnGrp LOS	D	B	B	E	C	B	F	D	D	E	D	C
Approach Vol, veh/h		923			1115			611			608	
Approach Delay, s/veh		31.8			26.0			199.3			33.4	
Approach LOS		C			C			F			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	11.1	27.7	14.9	66.3	12.0	26.8	26.0	55.3
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.2	43.9	16.1	34.8	7.1	43.0	7.4	43.5
Max Q Clear Time (g_c+I1), s	6.6	14.9	10.4	12.1	10.0	13.5	16.6	15.0
Green Ext Time (p_c), s	0.0	4.1	0.2	4.1	0.0	4.1	0.0	5.2

Intersection Summary	
HCM 2010 Ctrl Delay	61.5
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	380	368	102	108	746	181	191	289	86	124	103	346
Future Volume (veh/h)	380	368	102	108	746	181	191	289	86	124	103	346
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		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	413	400	111	117	811	197	208	314	93	135	112	376
Adj No. of Lanes	2	2	0	1	3	1	1	2	0	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	577	1402	384	149	2152	607	109	534	155	201	363	489
Arrive On Green	0.18	0.51	0.51	0.09	0.42	0.42	0.07	0.20	0.19	0.06	0.19	0.19
Sat Flow, veh/h	3170	2729	748	1634	5085	1434	1634	2692	782	3170	1863	2511
Grp Volume(v), veh/h	413	258	253	117	811	197	208	204	203	135	112	376
Grp Sat Flow(s),veh/h/ln	1585	1770	1707	1634	1695	1434	1634	1770	1704	1585	1863	1255
Q Serve(g_s), s	14.7	9.9	10.2	8.4	13.1	8.3	8.0	12.6	13.0	5.0	6.2	11.4
Cycle Q Clear(g_c), s	14.7	9.9	10.2	8.4	13.1	8.3	8.0	12.6	13.0	5.0	6.2	11.4
Prop In Lane	1.00		0.44	1.00		1.00	1.00		0.46	1.00		1.00
Lane Grp Cap(c), veh/h	577	909	877	149	2152	607	109	351	338	201	363	489
V/C Ratio(X)	0.72	0.28	0.29	0.78	0.38	0.32	1.91	0.58	0.60	0.67	0.31	0.77
Avail Cap(c_a), veh/h	577	909	877	227	2152	607	109	653	629	201	681	919
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	0.55	0.55	0.55
Uniform Delay (d), s/veh	46.2	16.6	16.7	53.4	23.8	13.3	56.0	43.6	44.0	55.0	41.4	20.7
Incr Delay (d2), s/veh	4.2	0.8	0.8	9.6	0.1	0.3	441.4	1.5	1.7	4.8	0.3	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	6.8	5.1	5.0	4.2	6.2	3.4	17.0	6.3	6.3	2.3	3.2	4.1
LnGrp Delay(d),s/veh	50.4	17.4	17.6	62.9	23.9	13.6	497.4	45.1	45.7	59.7	41.6	22.1
LnGrp LOS	D	B	B	E	C	B	F	D	D	E	D	C
Approach Vol, veh/h		924			1125			615			623	
Approach Delay, s/veh		32.2			26.1			198.3			33.8	
Approach LOS		C			C			F			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	11.6	27.8	14.9	65.7	12.0	27.4	25.8	54.8
Change Period (Y+Rc), s	4.9	4.9	4.6	4.6	4.9	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.7	43.4	16.1	34.8	7.1	43.0	7.4	43.5
Max Q Clear Time (g_c+I1), s	7.0	15.0	10.4	12.2	10.0	13.4	16.7	15.1
Green Ext Time (p_c), s	0.0	4.2	0.2	4.1	0.0	4.2	0.0	5.2

Intersection Summary	
HCM 2010 Ctrl Delay	61.5
HCM 2010 LOS	E

HCS Analysis

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave/J St
From/To: Northerly Int/Southerly Int
Jurisdiction: Tulare County
Analysis Year: 2018
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	77	vph	92	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	21		25	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	42	pcphpl	50	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	42	pcphpl	50	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	0.8	pc/mi/ln	1.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	41.8	50.0
Effective width of outside lane, We	35.07	33.72
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	-2.02	-1.46
Bicycle LOS	A	A

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2018
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	273	vph	267	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	74		73	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	151	pcphpl	147	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	151	pcphpl	147	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	3.0	pc/mi/ln	2.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	148.4	145.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.89	1.88
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave
From/To: N Oaks St/SR 99 SB Ramps
Jurisdiction: Tulare County
Analysis Year: 2018
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	512	vph	681	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	139		185	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	283	pcphpl	376	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	283	pcphpl	376	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.7	pc/mi/ln	7.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	278.3	370.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.21	2.36
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2018
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	675	vph	509	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	183		138	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	373	pcphpl	281	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	373	pcphpl	281	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	7.5	pc/mi/ln	5.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	366.8	276.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.35	2.21
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	SR 99 NB Ramps/Akers St
Jurisdiction:	Tulare County
Analysis Year:	2018
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	479	vph	559	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	130		152	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	265	pcphpl	309	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	265	pcphpl	309	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.3	pc/mi/ln	6.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	260.3	303.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.18	2.26
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave
From/To: Akers St/Retherford St
Jurisdiction: Tulare County
Analysis Year: Existing
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	475	vph	465	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	129		126	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	262	pcphpl	257	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	262	pcphpl	257	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.2	pc/mi/ln	5.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	258.2	252.7
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.17	2.16
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Retherford St/Hillman St
Jurisdiction:	Tulare County
Analysis Year:	Existing
Project ID:	

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	446	vph	403	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	121		110	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	246	pcphpl	222	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	246	pcphpl	222	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	4.9	pc/mi/ln	4.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	242.4	219.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.14	2.09
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2018
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	277	vph	267	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	75		73	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	153	pcphpl	147	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	153	pcphpl	147	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	3.1	pc/mi/ln	2.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	150.5	145.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.90	1.88
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

9 N Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2018
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 120 veh/h
Opposing direction volume, Vo 75 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.8		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.984		0.982	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	133	pc/h	83	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	52.8	mi/h
Percent Free Flow Speed, PFFS	96.0	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	131	pc/h	82	pc/h
Base percent time-spent-following,(note-4) BPTSFd	14.9	%		
Adjustment for no-passing zones, fnp	11.0			
Percent time-spent-following, PTSFd	21.7	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.08	
Peak 15-min vehicle-miles of travel, VMT15	16	veh-mi
Peak-hour vehicle-miles of travel, VMT60	60	veh-mi
Peak 15-min total travel time, TT15	0.3	veh-h
Capacity from ATS, CdATS	1669	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1669	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	52.8	mi/h
Percent time-spent-following, PTSFd (from above)	21.7	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	130.4
Effective width of outside lane, We	31.20
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	-0.16
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

9 S Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2018
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd	75	veh/h
Opposing direction volume, Vo	120	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.9		1.8	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.982		0.984	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	83	pc/h	133	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	52.5	mi/h
Percent Free Flow Speed, PFFS	95.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	82	pc/h	131	pc/h
Base percent time-spent-following,(note-4) BPTSFd	9.7	%		
Adjustment for no-passing zones, fnp	11.0			
Percent time-spent-following, PTSFd	13.9	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.05	
Peak 15-min vehicle-miles of travel, VMT15	10	veh-mi
Peak-hour vehicle-miles of travel, VMT60	38	veh-mi
Peak 15-min total travel time, TT15	0.2	veh-h
Capacity from ATS, CdATS	1673	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1673	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	52.5	mi/h
Percent time-spent-following, PTSFd (from above)	13.9	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	81.5
Effective width of outside lane, We	35.25
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	-1.74
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

10 N Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2018
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 137 veh/h
Opposing direction volume, Vo 76 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.7		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.986		0.982	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	151	pc/h	84	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	2.5	mi/h
Average travel speed, ATSd	46.6	mi/h
Percent Free Flow Speed, PFFS	91.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	149	pc/h	83	pc/h
Base percent time-spent-following,(note-4) BPTSFd	16.7	%		
Adjustment for no-passing zones, fnp	51.8			
Percent time-spent-following, PTSFd	50.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.09	
Peak 15-min vehicle-miles of travel, VMT15	30	veh-mi
Peak-hour vehicle-miles of travel, VMT60	110	veh-mi
Peak 15-min total travel time, TT15	0.6	veh-h
Capacity from ATS, CdATS	1669	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1669	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	46.6	mi/h
Percent time-spent-following, PTSFd (from above)	50.0	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	148.9
Effective width of outside lane, We	29.67
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.37
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

10 S Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2018
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	76	veh/h
Opposing direction volume, Vo	137	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.9		1.7	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.982		0.986	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	84	pc/h	151	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	3.3	mi/h
Average travel speed, ATSd	45.9	mi/h
Percent Free Flow Speed, PFFS	90.0	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	83	pc/h	149	pc/h
Base percent time-spent-following,(note-4) BPTSFd	9.8	%		
Adjustment for no-passing zones, fnp	51.8			
Percent time-spent-following, PTSFd	28.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.05	
Peak 15-min vehicle-miles of travel, VMT15	17	veh-mi
Peak-hour vehicle-miles of travel, VMT60	61	veh-mi
Peak 15-min total travel time, TT15	0.4	veh-h
Capacity from ATS, CdATS	1676	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1676	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.9	mi/h
Percent time-spent-following, PTSFd (from above)	28.3	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	82.6
Effective width of outside lane, We	35.16
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	-1.70
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

11 N J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2018
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 351 veh/h
Opposing direction volume, Vo 484 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	384	pc/h	528	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	45.9	mi/h
Percent Free Flow Speed, PFFS	85.1	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	382	pc/h	526	pc/h
Base percent time-spent-following,(note-4) BPTSFd	43.8	%		
Adjustment for no-passing zones, fnp	27.5			
Percent time-spent-following, PTSFd	55.4	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.23	
Peak 15-min vehicle-miles of travel, VMT15	105	veh-mi
Peak-hour vehicle-miles of travel, VMT60	386	veh-mi
Peak 15-min total travel time, TT15	2.3	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.9	mi/h
Percent time-spent-following, PTSFd (from above)	55.4	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	381.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.37
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

11 S J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2018
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 484 veh/h
Opposing direction volume, Vo 351 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	528	pc/h	384	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	45.6	mi/h
Percent Free Flow Speed, PFFS	84.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	526	pc/h	382	pc/h
Base percent time-spent-following,(note-4) BPTSFd	50.3	%		
Adjustment for no-passing zones, fnp	27.5			
Percent time-spent-following, PTSFd	66.2	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.31	
Peak 15-min vehicle-miles of travel, VMT15	145	veh-mi
Peak-hour vehicle-miles of travel, VMT60	532	veh-mi
Peak 15-min total travel time, TT15	3.2	veh-h
Capacity from ATS, CdATS	1690	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1690	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.6	mi/h
Percent time-spent-following, PTSFd (from above)	66.2	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	526.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.54
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2018
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	417	vph	684	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	113		186	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	230	pcphpl	378	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	230	pcphpl	378	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		A	
Density, D	5.1	pc/mi/ln	8.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	226.6	371.7
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.11	2.36
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave/J St
From/To: Northerly Int/Southerly Int
Jurisdiction: Tulare County
Analysis Year: 2020
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	82	vph	103	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	22		28	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	45	pcphpl	56	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	45	pcphpl	56	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	0.9	pc/mi/ln	1.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	44.6	56.0
Effective width of outside lane, We	34.62	32.73
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	-1.82	-1.08
Bicycle LOS	A	A

Overall results are not computed when free-flow speed is less than 45 mph.

2 Cartmill Ave From JSt TO N Oaks St.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	305	vph	287	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	83		78	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	168	pcphpl	158	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	168	pcphpl	158	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	3.4	pc/mi/ln	3.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	165.8	156.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.95	1.92
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave
From/To: N Oaks St/SR 99 SB Ramps
Jurisdiction: Tulare County
Analysis Year: 2020
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	739	vph	556	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	201		151	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	408	pcphpl	307	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	408	pcphpl	307	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	8.2	pc/mi/ln	6.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	401.6	302.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.40	2.25
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	547	vph	709	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	149		193	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	302	pcphpl	392	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	302	pcphpl	392	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.0	pc/mi/ln	7.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	297.3	385.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.25	2.38
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	SR 99 NB Ramps/Akers St
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	593	vph	516	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	161		140	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	328	pcphpl	285	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	328	pcphpl	285	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.6	pc/mi/ln	5.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	322.3	280.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.29	2.22
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

6 Cartmill Ave From Akers St TO Retherford St.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Akers St/Retherford St
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	493	vph	508	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	134		138	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	272	pcphpl	281	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	272	pcphpl	281	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.4	pc/mi/ln	5.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	267.9	276.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.19	2.21
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Retherford St/Hillman St
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	476	vph	430	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	129		117	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	263	pcphpl	237	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	263	pcphpl	237	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.3	pc/mi/ln	4.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	258.7	233.7
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.18	2.12
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	297	vph	321	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	81		87	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	164	pcphpl	177	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	164	pcphpl	177	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	3.3	pc/mi/ln	3.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	161.4	174.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.94	1.97
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

N 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2020
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd	58	veh/h
Opposing direction volume, Vo	100	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.9		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.982		0.982	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	64	pc/h	111	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	53.0	mi/h
Percent Free Flow Speed, PFFS	96.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	63	pc/h	109	pc/h
Base percent time-spent-following,(note-4) BPTSFd	7.6	%		
Adjustment for no-passing zones, fnp	10.6			
Percent time-spent-following, PTSFd	11.5	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.04	
Peak 15-min vehicle-miles of travel, VMT15	8	veh-mi
Peak-hour vehicle-miles of travel, VMT60	29	veh-mi
Peak 15-min total travel time, TT15	0.2	veh-h
Capacity from ATS, CdATS	1669	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1669	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	53.0	mi/h
Percent time-spent-following, PTSFd (from above)	11.5	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	63.0
Effective width of outside lane, We	36.78
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	-2.42
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2020
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd	100	veh/h
Opposing direction volume, Vo	58	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.9		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.982		0.982	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	111	pc/h	64	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	53.1	mi/h
Percent Free Flow Speed, PFFS	96.6	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	109	pc/h	63	pc/h
Base percent time-spent-following,(note-4) BPTSFd	12.6	%		
Adjustment for no-passing zones, fnp	10.6			
Percent time-spent-following, PTSFd	19.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.07	
Peak 15-min vehicle-miles of travel, VMT15	14	veh-mi
Peak-hour vehicle-miles of travel, VMT60	50	veh-mi
Peak 15-min total travel time, TT15	0.3	veh-h
Capacity from ATS, CdATS	1669	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1669	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	53.1	mi/h
Percent time-spent-following, PTSFd (from above)	19.3	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	108.7
Effective width of outside lane, We	33.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	-0.83
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2020
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 180 veh/h
Opposing direction volume, Vo 112 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.8	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.990		0.984	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	198	pc/h	124	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	2.9	mi/h
Average travel speed, ATSd	45.6	mi/h
Percent Free Flow Speed, PFFS	89.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	196	pc/h	122	pc/h
Base percent time-spent-following,(note-4) BPTSFd	21.2	%		
Adjustment for no-passing zones, fnp	54.1			
Percent time-spent-following, PTSFd	54.5	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.12	
Peak 15-min vehicle-miles of travel, VMT15	39	veh-mi
Peak-hour vehicle-miles of travel, VMT60	144	veh-mi
Peak 15-min total travel time, TT15	0.9	veh-h
Capacity from ATS, CdATS	1673	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1673	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.6	mi/h
Percent time-spent-following, PTSFd (from above)	54.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	195.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.04
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2020
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	112	veh/h
Opposing direction volume, Vo	180	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.8		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.984		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	124	pc/h	198	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	4.0	mi/h
Average travel speed, ATSd	44.5	mi/h
Percent Free Flow Speed, PFFS	87.3	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	122	pc/h	196	pc/h
Base percent time-spent-following,(note-4) BPTSFd	13.9	%		
Adjustment for no-passing zones, fnp	54.1			
Percent time-spent-following, PTSFd	34.7	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.07	
Peak 15-min vehicle-miles of travel, VMT15	24	veh-mi
Peak-hour vehicle-miles of travel, VMT60	90	veh-mi
Peak 15-min total travel time, TT15	0.5	veh-h
Capacity from ATS, CdATS	1683	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1683	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.5	mi/h
Percent time-spent-following, PTSFd (from above)	34.7	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	121.7
Effective width of outside lane, We	31.92
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	-0.42
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2020
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 369 veh/h
Opposing direction volume, Vo 516 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	404	pc/h	562	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSd	45.6	mi/h
Percent Free Flow Speed, PFFS	84.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	401	pc/h	561	pc/h
Base percent time-spent-following,(note-4) BPTSFd	45.4	%		
Adjustment for no-passing zones, fnp	26.4			
Percent time-spent-following, PTSFd	56.4	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.24	
Peak 15-min vehicle-miles of travel, VMT15	110	veh-mi
Peak-hour vehicle-miles of travel, VMT60	406	veh-mi
Peak 15-min total travel time, TT15	2.4	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.6	mi/h
Percent time-spent-following, PTSFd (from above)	56.4	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	401.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.40
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2020
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd	516	veh/h
Opposing direction volume, Vo	369	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	562	pc/h	404	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	45.3	mi/h
Percent Free Flow Speed, PFFS	83.8	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	561	pc/h	401	pc/h
Base percent time-spent-following,(note-4) BPTSFd	53.1	%		
Adjustment for no-passing zones, fnp	26.4			
Percent time-spent-following, PTSFd	68.5	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.33	
Peak 15-min vehicle-miles of travel, VMT15	154	veh-mi
Peak-hour vehicle-miles of travel, VMT60	568	veh-mi
Peak 15-min total travel time, TT15	3.4	veh-h
Capacity from ATS, CdATS	1690	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1690	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.3	mi/h
Percent time-spent-following, PTSFd (from above)	68.5	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	560.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.57
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	423	vph	693	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	115		188	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	234	pcphpl	383	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	234	pcphpl	383	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		A	
Density, D	5.2	pc/mi/ln	8.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	229.9	376.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.12	2.37
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave/J St
From/To:	Northerly Int/Southerly Int
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	88	vph	106	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	24		29	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	48	pcphpl	58	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	48	pcphpl	58	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	1.0	pc/mi/ln	1.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	47.8	57.6
Effective width of outside lane, We	34.08	32.46
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	-1.61	-0.97
Bicycle LOS	A	A

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	314	vph	293	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	85		80	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	173	pcphpl	162	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	173	pcphpl	162	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	3.5	pc/mi/ln	3.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	170.7	159.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.97	1.93
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave
From/To: N Oaks St/SR 99 SB Ramps
Jurisdiction: Tulare County
Analysis Year: 2020+Project
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	751	vph	564	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	204		153	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	415	pcphpl	312	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	415	pcphpl	312	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	8.3	pc/mi/ln	6.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	408.2	306.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.41	2.26
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	579	vph	778	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	157		211	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	320	pcphpl	430	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	320	pcphpl	430	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.4	pc/mi/ln	8.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	314.7	422.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.28	2.43
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	SR 99 NB Ramps/Akers St
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	702	vph	578	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	191		157	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	388	pcphpl	319	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	388	pcphpl	319	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	7.8	pc/mi/ln	6.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	381.5	314.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.37	2.27
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

6 Cartmill Ave From Akers St TO Retherford St.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Akers St/Retherford St
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	510	vph	518	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	139		141	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	282	pcphpl	286	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	282	pcphpl	286	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.6	pc/mi/ln	5.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	277.2	281.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.21	2.22
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Retherford St/Hillman St
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	493	vph	440	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	134		120	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	272	pcphpl	243	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	272	pcphpl	243	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.4	pc/mi/ln	4.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	267.9	239.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.19	2.14
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	300	vph	329	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	82		89	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	165	pcphpl	182	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	165	pcphpl	182	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	3.3	pc/mi/ln	3.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	163.0	178.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.94	1.99
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

N 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2020+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 158 veh/h
Opposing direction volume, Vo 100 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.6		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.982	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	174	pc/h	111	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	52.2	mi/h
Percent Free Flow Speed, PFFS	94.9	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	172	pc/h	109	pc/h
Base percent time-spent-following,(note-4) BPTSFd	18.9	%		
Adjustment for no-passing zones, fnp	12.2			
Percent time-spent-following, PTSFd	26.4	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.10	
Peak 15-min vehicle-miles of travel, VMT15	21	veh-mi
Peak-hour vehicle-miles of travel, VMT60	79	veh-mi
Peak 15-min total travel time, TT15	0.4	veh-h
Capacity from ATS, CdATS	1669	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1669	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	52.2	mi/h
Percent time-spent-following, PTSFd (from above)	26.4	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	171.7
Effective width of outside lane, We	27.78
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.99
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2020+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd	100	veh/h
Opposing direction volume, Vo	158	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.9		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.982		0.988	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	111	pc/h	174	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	51.5	mi/h
Percent Free Flow Speed, PFFS	93.7	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	109	pc/h	172	pc/h
Base percent time-spent-following,(note-4) BPTSFd	12.6	%		
Adjustment for no-passing zones, fnp	12.2			
Percent time-spent-following, PTSFd	17.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.07	
Peak 15-min vehicle-miles of travel, VMT15	14	veh-mi
Peak-hour vehicle-miles of travel, VMT60	50	veh-mi
Peak 15-min total travel time, TT15	0.3	veh-h
Capacity from ATS, CdATS	1680	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1680	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	51.5	mi/h
Percent time-spent-following, PTSFd (from above)	17.3	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	108.7
Effective width of outside lane, We	33.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	-0.83
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2020+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	180	veh/h
Opposing direction volume, Vo	112	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.8	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.990		0.984	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	198	pc/h	124	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	2.9	mi/h
Average travel speed, ATSd	45.6	mi/h
Percent Free Flow Speed, PFFS	89.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	196	pc/h	122	pc/h
Base percent time-spent-following,(note-4) BPTSFd	21.2	%		
Adjustment for no-passing zones, fnp	54.1			
Percent time-spent-following, PTSFd	54.5	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.12	
Peak 15-min vehicle-miles of travel, VMT15	39	veh-mi
Peak-hour vehicle-miles of travel, VMT60	144	veh-mi
Peak 15-min total travel time, TT15	0.9	veh-h
Capacity from ATS, CdATS	1673	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1673	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.6	mi/h
Percent time-spent-following, PTSFd (from above)	54.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	195.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.04
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2020+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	112	veh/h
Opposing direction volume, Vo	180	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.8		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.984		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	124	pc/h	198	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	4.0	mi/h
Average travel speed, ATSd	44.5	mi/h
Percent Free Flow Speed, PFFS	87.3	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	122	pc/h	196	pc/h
Base percent time-spent-following,(note-4) BPTSFd	13.9	%		
Adjustment for no-passing zones, fnp	54.1			
Percent time-spent-following, PTSFd	34.7	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.07	
Peak 15-min vehicle-miles of travel, VMT15	24	veh-mi
Peak-hour vehicle-miles of travel, VMT60	90	veh-mi
Peak 15-min total travel time, TT15	0.5	veh-h
Capacity from ATS, CdATS	1683	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1683	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.5	mi/h
Percent time-spent-following, PTSFd (from above)	34.7	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	121.7
Effective width of outside lane, We	31.92
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	-0.42
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2020+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 375 veh/h
Opposing direction volume, Vo 519 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	410	pc/h	565	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSd	45.5	mi/h
Percent Free Flow Speed, PFFS	84.3	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	408	pc/h	564	pc/h
Base percent time-spent-following,(note-4) BPTSFd	45.9	%		
Adjustment for no-passing zones, fnp	26.4			
Percent time-spent-following, PTSFd	57.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.24	
Peak 15-min vehicle-miles of travel, VMT15	112	veh-mi
Peak-hour vehicle-miles of travel, VMT60	413	veh-mi
Peak 15-min total travel time, TT15	2.5	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.5	mi/h
Percent time-spent-following, PTSFd (from above)	57.0	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	407.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.41
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2020+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd	519	veh/h
Opposing direction volume, Vo	375	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	565	pc/h	410	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	45.2	mi/h
Percent Free Flow Speed, PFFS	83.7	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	564	pc/h	408	pc/h
Base percent time-spent-following,(note-4) BPTSFd	52.9	%		
Adjustment for no-passing zones, fnp	26.4			
Percent time-spent-following, PTSFd	68.2	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.33	
Peak 15-min vehicle-miles of travel, VMT15	155	veh-mi
Peak-hour vehicle-miles of travel, VMT60	571	veh-mi
Peak 15-min total travel time, TT15	3.4	veh-h
Capacity from ATS, CdATS	1690	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1690	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.2	mi/h
Percent time-spent-following, PTSFd (from above)	68.2	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	564.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.57
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	425	vph	696	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	115		189	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	235	pcphpl	385	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	235	pcphpl	385	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		A	
Density, D	5.2	pc/mi/ln	8.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	231.0	378.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.12	2.37
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave/J St
From/To:	Northerly Int/Southerly Int
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	104	vph	169	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	28		46	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	57	pcphpl	93	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	57	pcphpl	93	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	1.1	pc/mi/ln	1.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	56.5	91.8
Effective width of outside lane, We	32.64	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	-1.04	1.65
Bicycle LOS	A	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	479	vph	437	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	130		119	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	265	pcphpl	241	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	265	pcphpl	241	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.3	pc/mi/ln	4.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	260.3	237.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.18	2.13
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave
From/To: N Oaks St/SR 99 SB Ramps
Jurisdiction: Tulare County
Analysis Year: 2029
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1107	vph	831	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	301		226	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	612	pcphpl	459	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	612	pcphpl	459	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		A	
Density, D	12.2	pc/mi/ln	9.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	601.6	451.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.60	2.46
Bicycle LOS	C	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	820	vph	1061	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	223		288	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	453	pcphpl	587	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	453	pcphpl	587	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		B	
Density, D	9.1	pc/mi/ln	11.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	445.7	576.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.45	2.58
Bicycle LOS	B	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	SR 99 NB Ramps/Akers St
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	661	vph	919	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	180		250	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	365	pcphpl	508	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	365	pcphpl	508	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	7.3	pc/mi/ln	10.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	359.2	499.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.34	2.51
Bicycle LOS	B	C

Overall results are not computed when free-flow speed is less than 45 mph.

6 Cartmill Ave From Akers St TO Retherford St.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave
From/To: Akers St/Retherford St
Jurisdiction: Tulare County
Analysis Year: 2029
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	659	vph	687	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	179		187	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	364	pcphpl	380	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	364	pcphpl	380	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	7.3	pc/mi/ln	7.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	358.2	373.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.34	2.36
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Retherford St/Hillman St
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	569	vph	679	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	155		185	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	314	pcphpl	375	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	314	pcphpl	375	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.3	pc/mi/ln	7.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	309.2	369.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.27	2.36
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	534	vph	632	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	145		172	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	295	pcphpl	349	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	295	pcphpl	349	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.9	pc/mi/ln	7.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	290.2	343.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.23	2.32
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2029
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 221 veh/h
Opposing direction volume, Vo 138 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.7	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.990		0.986	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	243	pc/h	152	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	50.9	mi/h
Percent Free Flow Speed, PFFS	92.6	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	241	pc/h	150	pc/h
Base percent time-spent-following,(note-4) BPTSFd	25.2	%		
Adjustment for no-passing zones, fnp	13.8			
Percent time-spent-following, PTSFd	33.7	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.14	
Peak 15-min vehicle-miles of travel, VMT15	30	veh-mi
Peak-hour vehicle-miles of travel, VMT60	111	veh-mi
Peak 15-min total travel time, TT15	0.6	veh-h
Capacity from ATS, CdATS	1676	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1676	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.9	mi/h
Percent time-spent-following, PTSFd (from above)	33.7	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	240.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.14
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2029
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 138 veh/h
Opposing direction volume, Vo 221 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.7		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.986		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	152	pc/h	243	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	50.5	mi/h
Percent Free Flow Speed, PFFS	91.8	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	150	pc/h	241	pc/h
Base percent time-spent-following,(note-4) BPTSFd	18.1	%		
Adjustment for no-passing zones, fnp	13.8			
Percent time-spent-following, PTSFd	23.4	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.09	
Peak 15-min vehicle-miles of travel, VMT15	19	veh-mi
Peak-hour vehicle-miles of travel, VMT60	69	veh-mi
Peak 15-min total travel time, TT15	0.4	veh-h
Capacity from ATS, CdATS	1683	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1683	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.5	mi/h
Percent time-spent-following, PTSFd (from above)	23.4	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	150.0
Effective width of outside lane, We	29.58
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.40
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

10 N Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2029
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	195	veh/h
Opposing direction volume, Vo	140	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.7	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.990		0.986	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	214	pc/h	154	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	3.3	mi/h
Average travel speed, ATSd	44.8	mi/h
Percent Free Flow Speed, PFFS	87.9	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	212	pc/h	152	pc/h
Base percent time-spent-following,(note-4) BPTSFd	22.7	%		
Adjustment for no-passing zones, fnp	57.2			
Percent time-spent-following, PTSFd	56.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.13	
Peak 15-min vehicle-miles of travel, VMT15	42	veh-mi
Peak-hour vehicle-miles of travel, VMT60	156	veh-mi
Peak 15-min total travel time, TT15	0.9	veh-h
Capacity from ATS, CdATS	1676	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1676	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.8	mi/h
Percent time-spent-following, PTSFd (from above)	56.0	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	212.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.07
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

10 S Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2029
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 140 veh/h
Opposing direction volume, Vo 195 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.7		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.986		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	154	pc/h	214	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	3.9	mi/h
Average travel speed, ATSd	44.2	mi/h
Percent Free Flow Speed, PFFS	86.7	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	152	pc/h	212	pc/h
Base percent time-spent-following,(note-4) BPTSFd	16.7	%		
Adjustment for no-passing zones, fnp	57.2			
Percent time-spent-following, PTSFd	40.6	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.09	
Peak 15-min vehicle-miles of travel, VMT15	30	veh-mi
Peak-hour vehicle-miles of travel, VMT60	112	veh-mi
Peak 15-min total travel time, TT15	0.7	veh-h
Capacity from ATS, CdATS	1683	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1683	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.2	mi/h
Percent time-spent-following, PTSFd (from above)	40.6	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	152.2
Effective width of outside lane, We	29.40
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.46
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

11 N J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2029
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 494 veh/h
Opposing direction volume, Vo 690 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	539	pc/h	752	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	43.4	mi/h
Percent Free Flow Speed, PFFS	80.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	537	pc/h	750	pc/h
Base percent time-spent-following,(note-4) BPTSFd	56.6	%		
Adjustment for no-passing zones, fnp	21.0			
Percent time-spent-following, PTSFd	65.4	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.32	
Peak 15-min vehicle-miles of travel, VMT15	148	veh-mi
Peak-hour vehicle-miles of travel, VMT60	543	veh-mi
Peak 15-min total travel time, TT15	3.4	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	43.4	mi/h
Percent time-spent-following, PTSFd (from above)	65.4	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	537.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.55
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

11 S J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2029
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 690 veh/h
Opposing direction volume, Vo 464 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	752	pc/h	506	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	43.2	mi/h
Percent Free Flow Speed, PFFS	80.0	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	750	pc/h	504	pc/h
Base percent time-spent-following,(note-4) BPTSFd	64.9	%		
Adjustment for no-passing zones, fnp	21.2			
Percent time-spent-following, PTSFd	77.6	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.44	
Peak 15-min vehicle-miles of travel, VMT15	206	veh-mi
Peak-hour vehicle-miles of travel, VMT60	759	veh-mi
Peak 15-min total travel time, TT15	4.8	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	43.2	mi/h
Percent time-spent-following, PTSFd (from above)	77.6	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	750.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.72
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	448	vph	739	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	122		201	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	247	pcphpl	408	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	247	pcphpl	408	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		A	
Density, D	5.5	pc/mi/ln	9.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	243.5	401.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.14	2.40
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave/J St
From/To: Northerly Int/Southerly Int
Jurisdiction: Tulare County
Analysis Year: 2029+Project
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	119	vph	183	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	32		50	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	65	pcphpl	101	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	65	pcphpl	101	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	1.3	pc/mi/ln	2.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	64.7	99.5
Effective width of outside lane, We	31.29	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	-0.54	1.69
Bicycle LOS	A	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	502	vph	460	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	136		125	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	277	pcphpl	254	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	277	pcphpl	254	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.5	pc/mi/ln	5.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	272.8	250.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.20	2.16
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave
From/To: N Oaks St/SR 99 SB Ramps
Jurisdiction: Tulare County
Analysis Year: 2029+Project
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1137	vph	862	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	309		234	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	629	pcphpl	476	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	629	pcphpl	476	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		A	
Density, D	12.6	pc/mi/ln	9.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	617.9	468.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.62	2.48
Bicycle LOS	C	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	943	vph	1231	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	256		335	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	521	pcphpl	681	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	521	pcphpl	681	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		B	
Density, D	10.4	pc/mi/ln	13.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	512.5	669.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.52	2.66
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave
From/To: SR 99 NB Ramps/Akers St
Jurisdiction: Tulare County
Analysis Year: 2029+Project
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1061	vph	950	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	288		258	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	587	pcphpl	525	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	587	pcphpl	525	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		A	
Density, D	11.7	pc/mi/ln	10.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	576.6	516.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.58	2.53
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Akers St/Retherford St
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	702	vph	727	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	191		198	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	388	pcphpl	402	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	388	pcphpl	402	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	7.8	pc/mi/ln	8.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	381.5	395.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.37	2.39
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Retherford St/Hillman St
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	608	vph	723	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	165		196	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	336	pcphpl	400	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	336	pcphpl	400	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.7	pc/mi/ln	8.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	330.4	392.9
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.30	2.39
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

8 Cartmill Ave From Hillman TO N Mooney.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	551	vph	651	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	150		177	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	304	pcphpl	360	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	304	pcphpl	360	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.1	pc/mi/ln	7.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	299.5	353.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.25	2.33
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

9 N Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2029+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 244 veh/h
Opposing direction volume, Vo 138 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.7	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.986	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	267	pc/h	152	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	50.7	mi/h
Percent Free Flow Speed, PFFS	92.2	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	266	pc/h	150	pc/h
Base percent time-spent-following,(note-4) BPTSFd	27.4	%		
Adjustment for no-passing zones, fnp	13.1			
Percent time-spent-following, PTSFd	35.8	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.16	
Peak 15-min vehicle-miles of travel, VMT15	33	veh-mi
Peak-hour vehicle-miles of travel, VMT60	122	veh-mi
Peak 15-min total travel time, TT15	0.7	veh-h
Capacity from ATS, CdATS	1676	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1676	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.7	mi/h
Percent time-spent-following, PTSFd (from above)	35.8	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	265.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.19
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

9 S Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2029+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 138 veh/h
Opposing direction volume, Vo 244 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.7		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.986		0.992	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	152	pc/h	267	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.4	mi/h
Average travel speed, ATSd	50.3	mi/h
Percent Free Flow Speed, PFFS	91.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	150	pc/h	266	pc/h
Base percent time-spent-following,(note-4) BPTSFd	18.5	%		
Adjustment for no-passing zones, fnp	13.1			
Percent time-spent-following, PTSFd	23.2	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.09	
Peak 15-min vehicle-miles of travel, VMT15	19	veh-mi
Peak-hour vehicle-miles of travel, VMT60	69	veh-mi
Peak 15-min total travel time, TT15	0.4	veh-h
Capacity from ATS, CdATS	1686	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1686	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.3	mi/h
Percent time-spent-following, PTSFd (from above)	23.2	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	150.0
Effective width of outside lane, We	29.58
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.40
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

10 N Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2029+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	506	veh/h
Opposing direction volume, Vo	420	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	552	pc/h	458	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	2.5	mi/h
Average travel speed, ATSd	40.7	mi/h
Percent Free Flow Speed, PFFS	79.8	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	550	pc/h	457	pc/h
Base percent time-spent-following,(note-4) BPTSFd	53.7	%		
Adjustment for no-passing zones, fnp	38.6			
Percent time-spent-following, PTSFd	74.8	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.32	
Peak 15-min vehicle-miles of travel, VMT15	110	veh-mi
Peak-hour vehicle-miles of travel, VMT60	405	veh-mi
Peak 15-min total travel time, TT15	2.7	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.7	mi/h
Percent time-spent-following, PTSFd (from above)	74.8	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	550.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.56
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

10 S Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2029+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 420 veh/h
Opposing direction volume, Vo 506 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	458	pc/h	552	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	2.1	mi/h
Average travel speed, ATSd	41.1	mi/h
Percent Free Flow Speed, PFFS	80.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	457	pc/h	550	pc/h
Base percent time-spent-following,(note-4) BPTSFd	48.8	%		
Adjustment for no-passing zones, fnp	38.6			
Percent time-spent-following, PTSFd	66.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.27	
Peak 15-min vehicle-miles of travel, VMT15	91	veh-mi
Peak-hour vehicle-miles of travel, VMT60	336	veh-mi
Peak 15-min total travel time, TT15	2.2	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.1	mi/h
Percent time-spent-following, PTSFd (from above)	66.3	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	456.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.46
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2029+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 479 veh/h
Opposing direction volume, Vo 704 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	523	pc/h	767	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	43.5	mi/h
Percent Free Flow Speed, PFFS	80.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	521	pc/h	765	pc/h
Base percent time-spent-following,(note-4) BPTSFd	55.9	%		
Adjustment for no-passing zones, fnp	20.8			
Percent time-spent-following, PTSFd	64.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.31	
Peak 15-min vehicle-miles of travel, VMT15	143	veh-mi
Peak-hour vehicle-miles of travel, VMT60	527	veh-mi
Peak 15-min total travel time, TT15	3.3	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	43.5	mi/h
Percent time-spent-following, PTSFd (from above)	64.3	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	520.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.53
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

11 S J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2029+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 704 veh/h
Opposing direction volume, Vo 479 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	767	pc/h	523	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	43.0	mi/h
Percent Free Flow Speed, PFFS	79.6	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	765	pc/h	521	pc/h
Base percent time-spent-following,(note-4) BPTSFd	65.9	%		
Adjustment for no-passing zones, fnp	20.8			
Percent time-spent-following, PTSFd	78.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.45	
Peak 15-min vehicle-miles of travel, VMT15	210	veh-mi
Peak-hour vehicle-miles of travel, VMT60	774	veh-mi
Peak 15-min total travel time, TT15	4.9	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	43.0	mi/h
Percent time-spent-following, PTSFd (from above)	78.3	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	765.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.73
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	462	vph	753	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	126		205	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	255	pcphpl	416	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	255	pcphpl	416	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		A	
Density, D	5.7	pc/mi/ln	9.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	251.1	409.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.16	2.41
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave/J St
From/To:	Northerly Int/Southerly Int
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	158	vph	325	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	43		88	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	87	pcphpl	179	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	87	pcphpl	179	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	1.7	pc/mi/ln	3.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	85.9	176.6
Effective width of outside lane, We	27.78	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	0.64	1.98
Bicycle LOS	A	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	907	vph	642	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	246		174	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	501	pcphpl	355	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	501	pcphpl	355	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	10.0	pc/mi/ln	7.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	492.9	348.9
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.50	2.33
Bicycle LOS	C	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	N Oaks St/SR 99 SB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1772	vph	1370	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	482		372	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	980	pcphpl	757	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	980	pcphpl	757	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	C		B	
Density, D	19.6	pc/mi/ln	15.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	963.0	744.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.84	2.71
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1371	vph	1740	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	373		473	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	758	pcphpl	962	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	758	pcphpl	962	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		C	
Density, D	15.2	pc/mi/ln	19.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	745.1	945.7
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.71	2.83
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	SR 99 NB Ramps/Akers St
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	969	vph	1587	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	263		431	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	536	pcphpl	878	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	536	pcphpl	878	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		B	
Density, D	10.7	pc/mi/ln	17.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	526.6	862.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.54	2.79
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

6 Cartmill Ave From Akers St TO Retherford St.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Akers St/Retherford St
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1081	vph	1129	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	294		307	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	598	pcphpl	624	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	598	pcphpl	624	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		B	
Density, D	12.0	pc/mi/ln	12.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	587.5	613.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.59	2.61
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Retherford St/Hillman St
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	936	vph	1260	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	254		342	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	517	pcphpl	697	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	517	pcphpl	697	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		B	
Density, D	10.3	pc/mi/ln	13.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	508.7	684.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.52	2.67
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1214	vph	1622	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	330		441	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	671	pcphpl	897	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	671	pcphpl	897	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		B	
Density, D	13.4	pc/mi/ln	17.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	659.8	881.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.65	2.80
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

N 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2039
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 620 veh/h
Opposing direction volume, Vo 997 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	675	pc/h	1084	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	40.9	mi/h
Percent Free Flow Speed, PFFS	74.3	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	674	pc/h	1084	pc/h
Base percent time-spent-following,(note-4) BPTSFd	67.2	%		
Adjustment for no-passing zones, fnp	9.8			
Percent time-spent-following, PTSFd	71.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.40	
Peak 15-min vehicle-miles of travel, VMT15	84	veh-mi
Peak-hour vehicle-miles of travel, VMT60	310	veh-mi
Peak 15-min total travel time, TT15	2.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.9	mi/h
Percent time-spent-following, PTSFd (from above)	71.0	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	673.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.66
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2039
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 997 veh/h
Opposing direction volume, Vo 620 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1084	pc/h	675	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	40.6	mi/h
Percent Free Flow Speed, PFFS	73.8	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1084	pc/h	674	pc/h
Base percent time-spent-following,(note-4) BPTSFd	76.9	%		
Adjustment for no-passing zones, fnp	9.8			
Percent time-spent-following, PTSFd	82.9	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.64	
Peak 15-min vehicle-miles of travel, VMT15	135	veh-mi
Peak-hour vehicle-miles of travel, VMT60	499	veh-mi
Peak 15-min total travel time, TT15	3.3	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.6	mi/h
Percent time-spent-following, PTSFd (from above)	82.9	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1083.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.90
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2039
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	384	veh/h
Opposing direction volume, Vo	240	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.992	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	420	pc/h	263	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	3.6	mi/h
Average travel speed, ATSd	42.1	mi/h
Percent Free Flow Speed, PFFS	82.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	417	pc/h	261	pc/h
Base percent time-spent-following,(note-4) BPTSFd	40.4	%		
Adjustment for no-passing zones, fnp	48.4			
Percent time-spent-following, PTSFd	70.2	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.25	
Peak 15-min vehicle-miles of travel, VMT15	83	veh-mi
Peak-hour vehicle-miles of travel, VMT60	307	veh-mi
Peak 15-min total travel time, TT15	2.0	veh-h
Capacity from ATS, CdATS	1686	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1686	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	42.1	mi/h
Percent time-spent-following, PTSFd (from above)	70.2	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	417.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.42
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2039
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	240	veh/h
Opposing direction volume, Vo	384	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	263	pc/h	420	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	2.6	mi/h
Average travel speed, ATSd	43.1	mi/h
Percent Free Flow Speed, PFFS	84.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	261	pc/h	417	pc/h
Base percent time-spent-following,(note-4) BPTSFd	31.6	%		
Adjustment for no-passing zones, fnp	48.4			
Percent time-spent-following, PTSFd	50.2	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.15	
Peak 15-min vehicle-miles of travel, VMT15	52	veh-mi
Peak-hour vehicle-miles of travel, VMT60	192	veh-mi
Peak 15-min total travel time, TT15	1.2	veh-h
Capacity from ATS, CdATS	1690	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1690	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	43.1	mi/h
Percent time-spent-following, PTSFd (from above)	50.2	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	260.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.18
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2039
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 620 veh/h
Opposing direction volume, Vo 997 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	675	pc/h	1084	pc/h

Free-Flow Speed from Field Measurement:
Field measured speed,(note-3) S FM - mi/h
Observed total demand,(note-3) V - veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	39.9	mi/h
Percent Free Flow Speed, PFFS	73.8	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	674	pc/h	1084	pc/h
Base percent time-spent-following,(note-4) BPTSFd	67.2	%		
Adjustment for no-passing zones, fnp	15.0			
Percent time-spent-following, PTSFd	73.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.40	
Peak 15-min vehicle-miles of travel, VMT15	185	veh-mi
Peak-hour vehicle-miles of travel, VMT60	682	veh-mi
Peak 15-min total travel time, TT15	4.6	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	39.9	mi/h
Percent time-spent-following, PTSFd (from above)	73.0	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	673.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.66
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: J St
From/To: Cartmill Ave/Prosperity Ave
Jurisdiction: Tulare County
Analysis Year: 2039+Project w/ Mitigation
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	635	vph	1011	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	173		275	

Trucks and buses	5	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Rolling		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	2.5		1.5	
Recreational vehicles PCE, ER	2.0		1.2	
Heavy vehicle adjustment, fHV	0.930		0.976	
Flow rate, vp	370	pcphpl	563	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	370	pcphpl	563	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		B	
Density, D	8.2	pc/mi/ln	12.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	345.1	549.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.14	3.37
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	559	vph	836	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	152		227	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	309	pcphpl	462	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	309	pcphpl	462	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		A	
Density, D	6.9	pc/mi/ln	10.3	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	303.8	454.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.26	2.46
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave/J St
From/To:	Northerly Int/Southerly Int
Jurisdiction:	Tulare County
Analysis Year:	2039+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	173	vph	339	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	47		92	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	95	pcphpl	187	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	95	pcphpl	187	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	1.9	pc/mi/ln	3.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	94.0	184.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.66	2.00
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2039+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	930	vph	665	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	253		181	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	514	pcphpl	367	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	514	pcphpl	367	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	10.3	pc/mi/ln	7.3	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	505.4	361.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.51	2.34
Bicycle LOS	C	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave
From/To: N Oaks St/SR 99 SB Ramps
Jurisdiction: Tulare County
Analysis Year: 2039+Project
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1802	vph	1401	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	490		381	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	996	pcphpl	775	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	996	pcphpl	775	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	C		B	
Density, D	19.9	pc/mi/ln	15.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	979.3	761.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.85	2.72
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave
From/To: SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction: Tulare County
Analysis Year: 2039+Project
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1494	vph	1910	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	406		519	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	826	pcphpl	1056	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	826	pcphpl	1056	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		C	
Density, D	16.5	pc/mi/ln	21.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	812.0	1038.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.76	2.88
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave
From/To: SR 99 NB Ramps/Akers St
Jurisdiction: Tulare County
Analysis Year: 2039+Project
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1093	vph	1855	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	297		504	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	604	pcphpl	1026	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	604	pcphpl	1026	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		C	
Density, D	12.1	pc/mi/ln	20.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	594.0	1008.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.60	2.87
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

6 Cartmill Ave From Akers St TO Retherford St.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Akers St/Retherford St
Jurisdiction:	Tulare County
Analysis Year:	2039+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1124	vph	1169	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	305		318	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	621	pcphpl	646	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	621	pcphpl	646	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		B	
Density, D	12.4	pc/mi/ln	12.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	610.9	635.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.61	2.63
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: Cartmill Ave
From/To: Retherford St/Hillman St
Jurisdiction: Tulare County
Analysis Year: 2039+Project
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	975	vph	1304	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	265		354	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	539	pcphpl	721	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	539	pcphpl	721	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		B	
Density, D	10.8	pc/mi/ln	14.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	529.9	708.7
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.54	2.69
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2039+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1231	vph	1641	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	335		446	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	681	pcphpl	907	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	681	pcphpl	907	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		C	
Density, D	13.6	pc/mi/ln	18.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	669.0	891.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.66	2.80
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

N 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2039+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 635 veh/h
Opposing direction volume, Vo 1011 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	692	pc/h	1099	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	40.6	mi/h
Percent Free Flow Speed, PFFS	73.8	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	690	pc/h	1099	pc/h
Base percent time-spent-following,(note-4) BPTSFd	67.9	%		
Adjustment for no-passing zones, fnp	9.7			
Percent time-spent-following, PTSFd	71.6	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.41	
Peak 15-min vehicle-miles of travel, VMT15	86	veh-mi
Peak-hour vehicle-miles of travel, VMT60	318	veh-mi
Peak 15-min total travel time, TT15	2.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.6	mi/h
Percent time-spent-following, PTSFd (from above)	71.6	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	690.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.67
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2039+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 1011 veh/h
Opposing direction volume, Vo 635 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1099	pc/h	692	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATSd	40.4	mi/h
Percent Free Flow Speed, PFFS	73.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1099	pc/h	690	pc/h
Base percent time-spent-following,(note-4) BPTSFd	77.5	%		
Adjustment for no-passing zones, fnp	9.7			
Percent time-spent-following, PTSFd	83.5	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.65	
Peak 15-min vehicle-miles of travel, VMT15	137	veh-mi
Peak-hour vehicle-miles of travel, VMT60	506	veh-mi
Peak 15-min total travel time, TT15	3.4	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.4	mi/h
Percent time-spent-following, PTSFd (from above)	83.5	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1098.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.91
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2039+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	407	veh/h
Opposing direction volume, Vo	240	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.992	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	445	pc/h	263	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	3.6	mi/h
Average travel speed, ATSd	41.9	mi/h
Percent Free Flow Speed, PFFS	82.1	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	442	pc/h	261	pc/h
Base percent time-spent-following,(note-4) BPTSFd	42.2	%		
Adjustment for no-passing zones, fnp	45.8			
Percent time-spent-following, PTSFd	71.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.26	
Peak 15-min vehicle-miles of travel, VMT15	88	veh-mi
Peak-hour vehicle-miles of travel, VMT60	326	veh-mi
Peak 15-min total travel time, TT15	2.1	veh-h
Capacity from ATS, CdATS	1686	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1686	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.9	mi/h
Percent time-spent-following, PTSFd (from above)	71.0	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	442.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.45
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2039+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 240 veh/h
Opposing direction volume, Vo 470 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	263	pc/h	513	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	2.3	mi/h
Average travel speed, ATSd	42.7	mi/h
Percent Free Flow Speed, PFFS	83.8	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	261	pc/h	511	pc/h
Base percent time-spent-following,(note-4) BPTSFd	33.3	%		
Adjustment for no-passing zones, fnp	39.4			
Percent time-spent-following, PTSFd	46.6	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.15	
Peak 15-min vehicle-miles of travel, VMT15	52	veh-mi
Peak-hour vehicle-miles of travel, VMT60	192	veh-mi
Peak 15-min total travel time, TT15	1.2	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	42.7	mi/h
Percent time-spent-following, PTSFd (from above)	46.6	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	260.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.18
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2039+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 635 veh/h
Opposing direction volume, Vo 1011 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	692	pc/h	1099	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	39.6	mi/h
Percent Free Flow Speed, PFFS	73.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	690	pc/h	1099	pc/h
Base percent time-spent-following,(note-4) BPTSFd	67.9	%		
Adjustment for no-passing zones, fnp	14.8			
Percent time-spent-following, PTSFd	73.6	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.41	
Peak 15-min vehicle-miles of travel, VMT15	190	veh-mi
Peak-hour vehicle-miles of travel, VMT60	699	veh-mi
Peak 15-min total travel time, TT15	4.8	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	39.6	mi/h
Percent time-spent-following, PTSFd (from above)	73.6	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	690.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.67
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	AM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2039+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 1011 veh/h
Opposing direction volume, Vo 635 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1099	pc/h	692	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATSd	39.4	mi/h
Percent Free Flow Speed, PFFS	73.0	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1099	pc/h	690	pc/h
Base percent time-spent-following,(note-4) BPTSFd	77.5	%		
Adjustment for no-passing zones, fnp	14.8			
Percent time-spent-following, PTSFd	86.6	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.65	
Peak 15-min vehicle-miles of travel, VMT15	302	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1112	veh-mi
Peak 15-min total travel time, TT15	7.7	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	39.4	mi/h
Percent time-spent-following, PTSFd (from above)	86.6	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1098.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.91
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2039+Project
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	573	vph	850	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	156		231	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	317	pcphpl	470	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	317	pcphpl	470	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		A	
Density, D	7.0	pc/mi/ln	10.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	311.4	462.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.27	2.47
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Oaks St
From/To:	Oaksdale Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2039+Project w/ Mitigation
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	55.0	mph	55.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	55.0	mph	55.0	mph

VOLUME

Direction	1		2	
Volume, V	1011	vph	635	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	275		173	

Trucks and buses	5	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.976		0.976	
Flow rate, vp	563	pcphpl	353	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	563	pcphpl	353	pcphpl
Free-flow speed, FFS	55.0	mph	55.0	mph
Avg. passenger-car travel speed, S	55.0	mph	55.0	mph
Level of service, LOS	A		A	
Density, D	10.2	pc/mi/ln	6.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	549.5	345.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.37	3.14
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	AM
Highway:	Akers Ave
From/To:	Pacific Ave/Carmil Ave
Jurisdiction:	Tulare County
Analysis Year:	2039+Project w/ Mitigation
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	55.0	mph	55.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	55.0	mph	55.0	mph

VOLUME

Direction	1		2	
Volume, V	240	vph	407	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	65		111	

Trucks and buses	5	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Grade	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.976		0.976	
Flow rate, vp	133	pcphpl	226	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	133	pcphpl	226	pcphpl
Free-flow speed, FFS	55.0	mph	55.0	mph
Avg. passenger-car travel speed, S	55.0	mph	55.0	mph
Level of service, LOS	A		A	
Density, D	2.4	pc/mi/ln	4.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	130.4	221.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.64	2.91
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: AM
Highway: J St
From/To: Cartmill Ave/Prosperity Ave
Jurisdiction: Tulare County
Analysis Year: 2039+Project w/ Mitigation
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	635	vph	1011	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	173		275	

Trucks and buses	5	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Rolling		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	2.5		1.5	
Recreational vehicles PCE, ER	2.0		1.2	
Heavy vehicle adjustment, fHV	0.930		0.976	
Flow rate, vp	370	pcphpl	563	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	370	pcphpl	563	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		B	
Density, D	8.2	pc/mi/ln	12.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	345.1	549.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.14	3.37
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Cartmill Ave/J St
From/To: Northerly Int/Southerly Int
Jurisdiction: Tulare County
Analysis Year: 2018
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	104	vph	84	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	28		23	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	57	pcphpl	46	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	57	pcphpl	46	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	1.1	pc/mi/ln	0.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	56.5	45.7
Effective width of outside lane, We	32.64	34.44
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	-1.04	-1.75
Bicycle LOS	A	A

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2018
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	227	vph	234	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	62		64	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	125	pcphpl	129	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	125	pcphpl	129	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	2.5	pc/mi/ln	2.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	123.4	127.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.80	1.82
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	N Oaks St/SR 99 SB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2018
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	541	vph	583	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	147		158	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	299	pcphpl	322	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	299	pcphpl	322	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.0	pc/mi/ln	6.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	294.0	316.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.24	2.28
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2018
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	548	vph	582	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	149		158	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	303	pcphpl	321	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	303	pcphpl	321	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.1	pc/mi/ln	6.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	297.8	316.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.25	2.28
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	SR 99 NB Ramps/Akers St
Jurisdiction:	Tulare County
Analysis Year:	2018
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	535	vph	594	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	145		161	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	295	pcphpl	328	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	295	pcphpl	328	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.9	pc/mi/ln	6.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	290.8	322.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.24	2.29
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Akers St/Retherford St
Jurisdiction:	Tulare County
Analysis Year:	Existing
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	471	vph	549	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	128		149	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	260	pcphpl	303	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	260	pcphpl	303	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.2	pc/mi/ln	6.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	256.0	298.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.17	2.25
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Cartmill Ave
From/To: Retherford St/Hillman St
Jurisdiction: Tulare County
Analysis Year: Existing
Project ID:

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	424	vph	452	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	115		123	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	234	pcphpl	250	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	234	pcphpl	250	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	4.7	pc/mi/ln	5.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	230.4	245.7
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.12	2.15
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2018
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	246	vph	313	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	67		85	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	136	pcphpl	173	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	136	pcphpl	173	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	2.7	pc/mi/ln	3.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	133.7	170.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.84	1.96
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

9 N Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2018
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 134 veh/h
Opposing direction volume, Vo 137 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.7		1.7	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.986		0.986	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	148	pc/h	151	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	51.7	mi/h
Percent Free Flow Speed, PFFS	93.9	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	146	pc/h	149	pc/h
Base percent time-spent-following,(note-4) BPTSFd	16.4	%		
Adjustment for no-passing zones, fnp	12.4			
Percent time-spent-following, PTSFd	22.5	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.09	
Peak 15-min vehicle-miles of travel, VMT15	18	veh-mi
Peak-hour vehicle-miles of travel, VMT60	67	veh-mi
Peak 15-min total travel time, TT15	0.3	veh-h
Capacity from ATS, CdATS	1676	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1676	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	51.7	mi/h
Percent time-spent-following, PTSFd (from above)	22.5	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	145.7
Effective width of outside lane, We	29.94
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.28
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

9 S Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2018
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 137 veh/h
Opposing direction volume, Vo 134 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.7		1.7	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.986		0.986	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	151	pc/h	148	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	51.7	mi/h
Percent Free Flow Speed, PFFS	94.0	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	149	pc/h	146	pc/h
Base percent time-spent-following,(note-4) BPTSFd	16.7	%		
Adjustment for no-passing zones, fnp	12.4			
Percent time-spent-following, PTSFd	23.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.09	
Peak 15-min vehicle-miles of travel, VMT15	19	veh-mi
Peak-hour vehicle-miles of travel, VMT60	69	veh-mi
Peak 15-min total travel time, TT15	0.4	veh-h
Capacity from ATS, CdATS	1676	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1676	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	51.7	mi/h
Percent time-spent-following, PTSFd (from above)	23.0	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	148.9
Effective width of outside lane, We	29.67
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.37
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

10 N Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2018
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 128 veh/h
Opposing direction volume, Vo 147 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.7		1.7	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.986		0.986	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	141	pc/h	162	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	3.5	mi/h
Average travel speed, ATSd	45.2	mi/h
Percent Free Flow Speed, PFFS	88.6	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	139	pc/h	160	pc/h
Base percent time-spent-following,(note-4) BPTSFd	15.7	%		
Adjustment for no-passing zones, fnp	57.7			
Percent time-spent-following, PTSFd	42.5	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.08	
Peak 15-min vehicle-miles of travel, VMT15	28	veh-mi
Peak-hour vehicle-miles of travel, VMT60	102	veh-mi
Peak 15-min total travel time, TT15	0.6	veh-h
Capacity from ATS, CdATS	1676	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1676	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.2	mi/h
Percent time-spent-following, PTSFd (from above)	42.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	139.1
Effective width of outside lane, We	30.48
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.10
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

10 S Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2018
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 147 veh/h
Opposing direction volume, Vo 128 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.7		1.7	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.986		0.986	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	162	pc/h	141	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	3.1	mi/h
Average travel speed, ATSd	45.5	mi/h
Percent Free Flow Speed, PFFS	89.2	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	160	pc/h	139	pc/h
Base percent time-spent-following,(note-4) BPTSFd	17.7	%		
Adjustment for no-passing zones, fnp	57.7			
Percent time-spent-following, PTSFd	48.6	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.10	
Peak 15-min vehicle-miles of travel, VMT15	32	veh-mi
Peak-hour vehicle-miles of travel, VMT60	118	veh-mi
Peak 15-min total travel time, TT15	0.7	veh-h
Capacity from ATS, CdATS	1676	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1676	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.5	mi/h
Percent time-spent-following, PTSFd (from above)	48.6	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	159.8
Effective width of outside lane, We	28.77
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.67
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

11 N J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2018
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 307 veh/h
Opposing direction volume, Vo 419 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	336	pc/h	457	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.1	mi/h
Average travel speed, ATSd	46.7	mi/h
Percent Free Flow Speed, PFFS	86.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	334	pc/h	455	pc/h
Base percent time-spent-following,(note-4) BPTSFd	38.7	%		
Adjustment for no-passing zones, fnp	29.9			
Percent time-spent-following, PTSFd	51.4	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.20	
Peak 15-min vehicle-miles of travel, VMT15	92	veh-mi
Peak-hour vehicle-miles of travel, VMT60	338	veh-mi
Peak 15-min total travel time, TT15	2.0	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	46.7	mi/h
Percent time-spent-following, PTSFd (from above)	51.4	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	333.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.31
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

11 S J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2018
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 419 veh/h
Opposing direction volume, Vo 307 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.992	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	457	pc/h	336	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	46.5	mi/h
Percent Free Flow Speed, PFFS	86.2	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	455	pc/h	334	pc/h
Base percent time-spent-following,(note-4) BPTSFd	44.9	%		
Adjustment for no-passing zones, fnp	29.9			
Percent time-spent-following, PTSFd	62.1	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.27	
Peak 15-min vehicle-miles of travel, VMT15	125	veh-mi
Peak-hour vehicle-miles of travel, VMT60	461	veh-mi
Peak 15-min total travel time, TT15	2.7	veh-h
Capacity from ATS, CdATS	1686	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1686	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	46.5	mi/h
Percent time-spent-following, PTSFd (from above)	62.1	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	455.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.46
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

12 Hillman St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2018
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	670	vph	893	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	182		243	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	370	pcphpl	494	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	370	pcphpl	494	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		A	
Density, D	8.2	pc/mi/ln	11.0-	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	364.1	485.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.35	2.49
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Cartmill Ave/J St
From/To: Northerly Int/Southerly Int
Jurisdiction: Tulare County
Analysis Year: 2020
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	110	vph	94	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	30		26	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	60	pcphpl	52	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	60	pcphpl	52	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	1.2	pc/mi/ln	1.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	59.8	51.1
Effective width of outside lane, We	32.10	33.54
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	-0.84	-1.39
Bicycle LOS	A	A

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	254	vph	251	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	69		68	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	140	pcphpl	138	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	140	pcphpl	138	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	2.8	pc/mi/ln	2.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	138.0	136.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.86	1.85
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Cartmill Ave
From/To: N Oaks St/SR 99 SB Ramps
Jurisdiction: Tulare County
Analysis Year: 2020
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	592	vph	637	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	161		173	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	327	pcphpl	352	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	327	pcphpl	352	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.5	pc/mi/ln	7.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	321.7	346.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.29	2.32
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	599	vph	636	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	163		173	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	331	pcphpl	351	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	331	pcphpl	351	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.6	pc/mi/ln	7.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	325.5	345.7
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.29	2.32
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	SR 99 NB Ramps/Akers St
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	628	vph	570	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	171		155	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	347	pcphpl	315	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	347	pcphpl	315	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.9	pc/mi/ln	6.3	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	341.3	309.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.32	2.27
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Akers St/Retherford St
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	503	vph	589	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	137		160	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	278	pcphpl	325	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	278	pcphpl	325	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.6	pc/mi/ln	6.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	273.4	320.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.20	2.28
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Retherford St/Hillman St
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	452	vph	481	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	123		131	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	250	pcphpl	266	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	250	pcphpl	266	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.0	pc/mi/ln	5.3	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	245.7	261.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.15	2.18
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	357	vph	273	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	97		74	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	197	pcphpl	151	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	197	pcphpl	151	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	3.9	pc/mi/ln	3.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	194.0	148.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.03	1.89
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

N 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2020
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 158 veh/h
Opposing direction volume, Vo 167 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.6		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.988	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	174	pc/h	184	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	50.9	mi/h
Percent Free Flow Speed, PFFS	92.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	172	pc/h	182	pc/h
Base percent time-spent-following,(note-4) BPTSFd	18.9	%		
Adjustment for no-passing zones, fnp	14.4			
Percent time-spent-following, PTSFd	25.9	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.10	
Peak 15-min vehicle-miles of travel, VMT15	21	veh-mi
Peak-hour vehicle-miles of travel, VMT60	79	veh-mi
Peak 15-min total travel time, TT15	0.4	veh-h
Capacity from ATS, CdATS	1680	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1680	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.9	mi/h
Percent time-spent-following, PTSFd (from above)	25.9	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	171.7
Effective width of outside lane, We	27.78
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.99
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2020
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 167 veh/h
Opposing direction volume, Vo 158 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.6		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.988	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	184	pc/h	174	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	51.0	mi/h
Percent Free Flow Speed, PFFS	92.7	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	182	pc/h	172	pc/h
Base percent time-spent-following,(note-4) BPTSFd	19.9	%		
Adjustment for no-passing zones, fnp	14.4			
Percent time-spent-following, PTSFd	27.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.11	
Peak 15-min vehicle-miles of travel, VMT15	23	veh-mi
Peak-hour vehicle-miles of travel, VMT60	84	veh-mi
Peak 15-min total travel time, TT15	0.5	veh-h
Capacity from ATS, CdATS	1680	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1680	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	51.0	mi/h
Percent time-spent-following, PTSFd (from above)	27.3	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	181.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.00
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2020
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 141 veh/h
Opposing direction volume, Vo 176 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.7		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.986		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	155	pc/h	193	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	3.9	mi/h
Average travel speed, ATSd	44.4	mi/h
Percent Free Flow Speed, PFFS	87.0	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	154	pc/h	192	pc/h
Base percent time-spent-following,(note-4) BPTSFd	17.2	%		
Adjustment for no-passing zones, fnp	58.5			
Percent time-spent-following, PTSFd	43.2	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.09	
Peak 15-min vehicle-miles of travel, VMT15	31	veh-mi
Peak-hour vehicle-miles of travel, VMT60	113	veh-mi
Peak 15-min total travel time, TT15	0.7	veh-h
Capacity from ATS, CdATS	1683	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1683	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.4	mi/h
Percent time-spent-following, PTSFd (from above)	43.2	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	153.3
Effective width of outside lane, We	29.31
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.49
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2020
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	176	veh/h
Opposing direction volume, Vo	141	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.7	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.990		0.986	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	193	pc/h	155	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	3.4	mi/h
Average travel speed, ATSd	44.9	mi/h
Percent Free Flow Speed, PFFS	88.1	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	192	pc/h	154	pc/h
Base percent time-spent-following,(note-4) BPTSFd	20.8	%		
Adjustment for no-passing zones, fnp	58.5			
Percent time-spent-following, PTSFd	53.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.11	
Peak 15-min vehicle-miles of travel, VMT15	38	veh-mi
Peak-hour vehicle-miles of travel, VMT60	141	veh-mi
Peak 15-min total travel time, TT15	0.8	veh-h
Capacity from ATS, CdATS	1676	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1676	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.9	mi/h
Percent time-spent-following, PTSFd (from above)	53.3	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	191.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.02
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2020
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 323 veh/h
Opposing direction volume, Vo 447 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	353	pc/h	488	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.1	mi/h
Average travel speed, ATSd	46.4	mi/h
Percent Free Flow Speed, PFFS	85.9	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	352	pc/h	486	pc/h
Base percent time-spent-following,(note-4) BPTSFd	41.1	%		
Adjustment for no-passing zones, fnp	28.6			
Percent time-spent-following, PTSFd	53.1	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.21	
Peak 15-min vehicle-miles of travel, VMT15	97	veh-mi
Peak-hour vehicle-miles of travel, VMT60	355	veh-mi
Peak 15-min total travel time, TT15	2.1	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	46.4	mi/h
Percent time-spent-following, PTSFd (from above)	53.1	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	351.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.33
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2020
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 447 veh/h
Opposing direction volume, Vo 323 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	488	pc/h	353	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	46.2	mi/h
Percent Free Flow Speed, PFFS	85.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	486	pc/h	352	pc/h
Base percent time-spent-following,(note-4) BPTSFd	47.8	%		
Adjustment for no-passing zones, fnp	28.6			
Percent time-spent-following, PTSFd	64.4	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.29	
Peak 15-min vehicle-miles of travel, VMT15	134	veh-mi
Peak-hour vehicle-miles of travel, VMT60	492	veh-mi
Peak 15-min total travel time, TT15	2.9	veh-h
Capacity from ATS, CdATS	1690	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1690	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	46.2	mi/h
Percent time-spent-following, PTSFd (from above)	64.4	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	485.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.50
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

12 Hillman St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2020
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	679	vph	906	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	185		246	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	375	pcphpl	501	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	375	pcphpl	501	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		B	
Density, D	8.3	pc/mi/ln	11.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	369.0	492.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.36	2.50
Bicycle LOS	B	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave/J St
From/To:	Northerly Int/Southerly Int
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	127	vph	111	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	35		30	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	70	pcphpl	61	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	70	pcphpl	61	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	1.4	pc/mi/ln	1.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	69.0	60.3
Effective width of outside lane, We	30.57	32.01
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	-0.29	-0.81
Bicycle LOS	A	A

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	279	vph	279	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	76		76	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	154	pcphpl	154	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	154	pcphpl	154	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	3.1	pc/mi/ln	3.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	151.6	151.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.91	1.91
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	N Oaks St/SR 99 SB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	624	vph	675	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	170		183	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	345	pcphpl	373	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	345	pcphpl	373	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.9	pc/mi/ln	7.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	339.1	366.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.31	2.35
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	748	vph	819	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	203		223	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	413	pcphpl	453	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	413	pcphpl	453	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	8.3	pc/mi/ln	9.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	406.5	445.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.41	2.45
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	SR 99 NB Ramps/Akers St
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	918	vph	859	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	249		233	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	507	pcphpl	475	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	507	pcphpl	475	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	10.1	pc/mi/ln	9.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	498.9	466.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.51	2.48
Bicycle LOS	C	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Akers St/Retherford St
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	550	vph	637	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	149		173	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	304	pcphpl	352	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	304	pcphpl	352	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	6.1	pc/mi/ln	7.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	298.9	346.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.25	2.32
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Retherford St/Hillman St
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	499	vph	529	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	136		144	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	276	pcphpl	292	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	276	pcphpl	292	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.5	pc/mi/ln	5.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	271.2	287.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.20	2.23
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

8 Cartmill Ave From Hillman TO N Mooney.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	376	vph	294	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	102		80	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	208	pcphpl	162	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	208	pcphpl	162	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	4.2	pc/mi/ln	3.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	204.3	159.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.06	1.93
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

N 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2020+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 158 veh/h
Opposing direction volume, Vo 167 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.6		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.988	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	174	pc/h	184	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	50.9	mi/h
Percent Free Flow Speed, PFFS	92.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	172	pc/h	182	pc/h
Base percent time-spent-following,(note-4) BPTSFd	18.9	%		
Adjustment for no-passing zones, fnp	14.4			
Percent time-spent-following, PTSFd	25.9	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.10	
Peak 15-min vehicle-miles of travel, VMT15	21	veh-mi
Peak-hour vehicle-miles of travel, VMT60	79	veh-mi
Peak 15-min total travel time, TT15	0.4	veh-h
Capacity from ATS, CdATS	1680	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1680	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.9	mi/h
Percent time-spent-following, PTSFd (from above)	25.9	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	171.7
Effective width of outside lane, We	27.78
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.99
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2020+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 167 veh/h
Opposing direction volume, Vo 158 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.6		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.988	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	184	pc/h	174	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	51.0	mi/h
Percent Free Flow Speed, PFFS	92.7	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	182	pc/h	172	pc/h
Base percent time-spent-following,(note-4) BPTSFd	19.9	%		
Adjustment for no-passing zones, fnp	14.4			
Percent time-spent-following, PTSFd	27.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.11	
Peak 15-min vehicle-miles of travel, VMT15	23	veh-mi
Peak-hour vehicle-miles of travel, VMT60	84	veh-mi
Peak 15-min total travel time, TT15	0.5	veh-h
Capacity from ATS, CdATS	1680	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1680	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	51.0	mi/h
Percent time-spent-following, PTSFd (from above)	27.3	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	181.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.00
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2020+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	141	veh/h
Opposing direction volume, Vo	176	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.7		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.986		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	155	pc/h	193	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	3.9	mi/h
Average travel speed, ATSd	44.4	mi/h
Percent Free Flow Speed, PFFS	87.0	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	154	pc/h	192	pc/h
Base percent time-spent-following,(note-4) BPTSFd	17.2	%		
Adjustment for no-passing zones, fnp	58.5			
Percent time-spent-following, PTSFd	43.2	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.09	
Peak 15-min vehicle-miles of travel, VMT15	31	veh-mi
Peak-hour vehicle-miles of travel, VMT60	113	veh-mi
Peak 15-min total travel time, TT15	0.7	veh-h
Capacity from ATS, CdATS	1683	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1683	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.4	mi/h
Percent time-spent-following, PTSFd (from above)	43.2	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	153.3
Effective width of outside lane, We	29.31
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.49
Bicycle LOS	A

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2020+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	176	veh/h
Opposing direction volume, Vo	141	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.7	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.990		0.986	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	193	pc/h	155	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	3.4	mi/h
Average travel speed, ATSd	44.9	mi/h
Percent Free Flow Speed, PFFS	88.1	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	192	pc/h	154	pc/h
Base percent time-spent-following,(note-4) BPTSFd	20.8	%		
Adjustment for no-passing zones, fnp	58.5			
Percent time-spent-following, PTSFd	53.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.11	
Peak 15-min vehicle-miles of travel, VMT15	38	veh-mi
Peak-hour vehicle-miles of travel, VMT60	141	veh-mi
Peak 15-min total travel time, TT15	0.8	veh-h
Capacity from ATS, CdATS	1676	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1676	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.9	mi/h
Percent time-spent-following, PTSFd (from above)	53.3	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	191.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.02
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2020+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 340 veh/h
Opposing direction volume, Vo 464 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	372	pc/h	506	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	46.1	mi/h
Percent Free Flow Speed, PFFS	85.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	370	pc/h	504	pc/h
Base percent time-spent-following,(note-4) BPTSFd	42.7	%		
Adjustment for no-passing zones, fnp	28.2			
Percent time-spent-following, PTSFd	54.6	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.22	
Peak 15-min vehicle-miles of travel, VMT15	102	veh-mi
Peak-hour vehicle-miles of travel, VMT60	374	veh-mi
Peak 15-min total travel time, TT15	2.2	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	46.1	mi/h
Percent time-spent-following, PTSFd (from above)	54.6	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	369.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.36
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2020+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 464 veh/h
Opposing direction volume, Vo 340 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	506	pc/h	372	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	45.9	mi/h
Percent Free Flow Speed, PFFS	85.0	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	504	pc/h	370	pc/h
Base percent time-spent-following,(note-4) BPTSFd	49.6	%		
Adjustment for no-passing zones, fnp	28.2			
Percent time-spent-following, PTSFd	65.9	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.30	
Peak 15-min vehicle-miles of travel, VMT15	139	veh-mi
Peak-hour vehicle-miles of travel, VMT60	510	veh-mi
Peak 15-min total travel time, TT15	3.0	veh-h
Capacity from ATS, CdATS	1690	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1690	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.9	mi/h
Percent time-spent-following, PTSFd (from above)	65.9	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	504.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.51
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2020+Project
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	690	vph	914	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	187		248	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	381	pcphpl	505	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	381	pcphpl	505	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		B	
Density, D	8.5	pc/mi/ln	11.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	375.0	496.7
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.36	2.51
Bicycle LOS	B	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave/J St
From/To:	Northerly Int/Southerly Int
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	140	vph	154	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	38		42	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	77	pcphpl	85	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	77	pcphpl	85	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	1.5	pc/mi/ln	1.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	76.1	83.7
Effective width of outside lane, We	29.40	28.14
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	0.11	0.53
Bicycle LOS	A	A

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	420	vph	352	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	114		96	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	232	pcphpl	194	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	232	pcphpl	194	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	4.6	pc/mi/ln	3.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	228.3	191.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.11	2.02
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Cartmill Ave
From/To: N Oaks St/SR 99 SB Ramps
Jurisdiction: Tulare County
Analysis Year: 2029
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	887	vph	951	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	241		258	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	490	pcphpl	526	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	490	pcphpl	526	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	9.8	pc/mi/ln	10.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	482.1	516.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.49	2.53
Bicycle LOS	B	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	899	vph	950	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	244		258	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	497	pcphpl	525	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	497	pcphpl	525	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	9.9	pc/mi/ln	10.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	488.6	516.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.50	2.53
Bicycle LOS	B	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	SR 99 NB Ramps/Akers St
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	735	vph	978	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	200		266	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	406	pcphpl	541	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	406	pcphpl	541	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	8.1	pc/mi/ln	10.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	399.5	531.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.40	2.54
Bicycle LOS	B	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Cartmill Ave
From/To: Akers St/Retherford St
Jurisdiction: Tulare County
Analysis Year: 2029
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	672	vph	810	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	183		220	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	371	pcphpl	448	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	371	pcphpl	448	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	7.4	pc/mi/ln	9.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	365.2	440.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.35	2.45
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Cartmill Ave
From/To: Retherford St/Hillman St
Jurisdiction: Tulare County
Analysis Year: 2029
Project ID:

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	635	vph	634	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	173		172	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	351	pcphpl	350	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	351	pcphpl	350	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	7.0	pc/mi/ln	7.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	345.1	344.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.32	2.32
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	642	vph	573	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	174		156	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	355	pcphpl	317	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	355	pcphpl	317	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	7.1	pc/mi/ln	6.3	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	348.9	311.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.33	2.27
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2029
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 247 veh/h
Opposing direction volume, Vo 252 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.992	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	271	pc/h	276	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.4	mi/h
Average travel speed, ATSd	49.3	mi/h
Percent Free Flow Speed, PFFS	89.7	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	269	pc/h	274	pc/h
Base percent time-spent-following,(note-4) BPTSFd	29.8	%		
Adjustment for no-passing zones, fnp	15.9			
Percent time-spent-following, PTSFd	37.7	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.16	
Peak 15-min vehicle-miles of travel, VMT15	34	veh-mi
Peak-hour vehicle-miles of travel, VMT60	124	veh-mi
Peak 15-min total travel time, TT15	0.7	veh-h
Capacity from ATS, CdATS	1686	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1686	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.3	mi/h
Percent time-spent-following, PTSFd (from above)	37.7	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	268.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.19
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2029
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 252 veh/h
Opposing direction volume, Vo 247 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.992	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	276	pc/h	271	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.4	mi/h
Average travel speed, ATSd	49.3	mi/h
Percent Free Flow Speed, PFFS	89.7	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	274	pc/h	269	pc/h
Base percent time-spent-following,(note-4) BPTSFd	30.5	%		
Adjustment for no-passing zones, fnp	15.9			
Percent time-spent-following, PTSFd	38.5	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.16	
Peak 15-min vehicle-miles of travel, VMT15	34	veh-mi
Peak-hour vehicle-miles of travel, VMT60	126	veh-mi
Peak 15-min total travel time, TT15	0.7	veh-h
Capacity from ATS, CdATS	1686	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1686	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.3	mi/h
Percent time-spent-following, PTSFd (from above)	38.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	273.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.20
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

10 N Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2029
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 316 veh/h
Opposing direction volume, Vo 491 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	346	pc/h	536	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	2.2	mi/h
Average travel speed, ATSd	42.0	mi/h
Percent Free Flow Speed, PFFS	82.3	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	344	pc/h	534	pc/h
Base percent time-spent-following,(note-4) BPTSFd	40.3	%		
Adjustment for no-passing zones, fnp	39.0			
Percent time-spent-following, PTSFd	55.6	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.20	
Peak 15-min vehicle-miles of travel, VMT15	69	veh-mi
Peak-hour vehicle-miles of travel, VMT60	253	veh-mi
Peak 15-min total travel time, TT15	1.6	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	42.0	mi/h
Percent time-spent-following, PTSFd (from above)	55.6	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	343.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.32
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

10 S Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2029
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	491	veh/h
Opposing direction volume, Vo	316	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.992	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	536	pc/h	346	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	3.1	mi/h
Average travel speed, ATSd	41.1	mi/h
Percent Free Flow Speed, PFFS	80.6	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	534	pc/h	344	pc/h
Base percent time-spent-following,(note-4) BPTSFd	51.3	%		
Adjustment for no-passing zones, fnp	39.0			
Percent time-spent-following, PTSFd	75.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.32	
Peak 15-min vehicle-miles of travel, VMT15	107	veh-mi
Peak-hour vehicle-miles of travel, VMT60	393	veh-mi
Peak 15-min total travel time, TT15	2.6	veh-h
Capacity from ATS, CdATS	1686	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1686	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.1	mi/h
Percent time-spent-following, PTSFd (from above)	75.0	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	533.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.54
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

11 N J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2029
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 406 veh/h
Opposing direction volume, Vo 598 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	444	pc/h	651	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATSd	44.8	mi/h
Percent Free Flow Speed, PFFS	82.9	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	441	pc/h	650	pc/h
Base percent time-spent-following,(note-4) BPTSFd	49.4	%		
Adjustment for no-passing zones, fnp	23.8			
Percent time-spent-following, PTSFd	59.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.26	
Peak 15-min vehicle-miles of travel, VMT15	121	veh-mi
Peak-hour vehicle-miles of travel, VMT60	447	veh-mi
Peak 15-min total travel time, TT15	2.7	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.8	mi/h
Percent time-spent-following, PTSFd (from above)	59.0	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	441.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.45
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

11 S J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2029
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 598 veh/h
Opposing direction volume, Vo 406 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	651	pc/h	444	pc/h

Free-Flow Speed from Field Measurement:
Field measured speed,(note-3) S FM - mi/h
Observed total demand,(note-3) V - veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	44.3	mi/h
Percent Free Flow Speed, PFFS	82.1	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	650	pc/h	441	pc/h
Base percent time-spent-following,(note-4) BPTSFd	58.6	%		
Adjustment for no-passing zones, fnp	23.8			
Percent time-spent-following, PTSFd	72.8	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.38	
Peak 15-min vehicle-miles of travel, VMT15	179	veh-mi
Peak-hour vehicle-miles of travel, VMT60	658	veh-mi
Peak 15-min total travel time, TT15	4.0	veh-h
Capacity from ATS, CdATS	1690	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1690	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.3	mi/h
Percent time-spent-following, PTSFd (from above)	72.8	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	650.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.64
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2029
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	720	vph	970	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	196		264	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	398	pcphpl	536	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	398	pcphpl	536	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		B	
Density, D	8.8	pc/mi/ln	11.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	391.3	527.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.39	2.54
Bicycle LOS	B	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave/J St
From/To:	Northerly Int/Southerly Int
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	194	vph	207	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	53		56	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	107	pcphpl	114	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	107	pcphpl	114	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	2.1	pc/mi/ln	2.3	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	105.4	112.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.72	1.76
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	501	vph	439	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	136		119	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	277	pcphpl	242	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	277	pcphpl	242	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	5.5	pc/mi/ln	4.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	272.3	238.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.20	2.14
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	N Oaks St/SR 99 SB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	992	vph	1068	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	270		290	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	548	pcphpl	590	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	548	pcphpl	590	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		B	
Density, D	11.0-	pc/mi/ln	11.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	539.1	580.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.55	2.59
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1360	vph	1555	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	370		423	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	752	pcphpl	860	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	752	pcphpl	860	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		B	
Density, D	15.0	pc/mi/ln	17.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	739.1	845.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.71	2.78
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Cartmill Ave
From/To: SR 99 NB Ramps/Akers St
Jurisdiction: Tulare County
Analysis Year: 2029+Project
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1796	vph	1683	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	488		457	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	993	pcphpl	931	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	993	pcphpl	931	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	C		C	
Density, D	19.9	pc/mi/ln	18.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	976.1	914.7
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.85	2.82
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

6 Cartmill Ave From Akers St TO Retherford St.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Akers St/Retherford St
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	827	vph	959	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	225		261	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	457	pcphpl	530	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	457	pcphpl	530	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	9.1	pc/mi/ln	10.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	449.5	521.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.46	2.53
Bicycle LOS	B	C

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Retherford St/Hillman St
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	784	vph	789	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	213		214	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	433	pcphpl	436	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	433	pcphpl	436	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	8.7	pc/mi/ln	8.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	426.1	428.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.43	2.43
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	706	vph	639	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	192		174	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	390	pcphpl	353	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	390	pcphpl	353	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	7.8	pc/mi/ln	7.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	383.7	347.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.38	2.32
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

9 N Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2029+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 332 veh/h
Opposing direction volume, Vo 252 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.992	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	363	pc/h	276	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.4	mi/h
Average travel speed, ATSd	48.6	mi/h
Percent Free Flow Speed, PFFS	88.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	362	pc/h	274	pc/h
Base percent time-spent-following,(note-4) BPTSFd	37.5	%		
Adjustment for no-passing zones, fnp	15.0			
Percent time-spent-following, PTSFd	46.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.21	
Peak 15-min vehicle-miles of travel, VMT15	45	veh-mi
Peak-hour vehicle-miles of travel, VMT60	166	veh-mi
Peak 15-min total travel time, TT15	0.9	veh-h
Capacity from ATS, CdATS	1686	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1686	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.6	mi/h
Percent time-spent-following, PTSFd (from above)	46.0	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	360.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.34
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

9 S Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2029+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 252 veh/h
Opposing direction volume, Vo 332 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	276	pc/h	363	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	48.7	mi/h
Percent Free Flow Speed, PFFS	88.6	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.998		0.998	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	274	pc/h	362	pc/h
Base percent time-spent-following,(note-4) BPTSFd	31.4	%		
Adjustment for no-passing zones, fnp	15.0			
Percent time-spent-following, PTSFd	37.9	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.16	
Peak 15-min vehicle-miles of travel, VMT15	34	veh-mi
Peak-hour vehicle-miles of travel, VMT60	126	veh-mi
Peak 15-min total travel time, TT15	0.7	veh-h
Capacity from ATS, CdATS	1690	veh/h
Capacity from PTSF, CdPTSF	1697	veh/h
Directional Capacity	1690	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.7	mi/h
Percent time-spent-following, PTSFd (from above)	37.9	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	273.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.20
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

10 N Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2029+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 1293 veh/h
Opposing direction volume, Vo 1312 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1405	pc/h	1426	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	28.2	mi/h
Percent Free Flow Speed, PFFS	55.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1405	pc/h	1426	pc/h
Base percent time-spent-following,(note-4) BPTSFd	89.4	%		
Adjustment for no-passing zones, fnp	8.7			
Percent time-spent-following, PTSFd	93.7	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.83	
Peak 15-min vehicle-miles of travel, VMT15	281	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1034	veh-mi
Peak 15-min total travel time, TT15	9.9	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	28.2	mi/h
Percent time-spent-following, PTSFd (from above)	93.7	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1405.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.03
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

10 S Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2029+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 1312 veh/h
Opposing direction volume, Vo 1293 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1426	pc/h	1405	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	28.2	mi/h
Percent Free Flow Speed, PFFS	55.3	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1426	pc/h	1405	pc/h
Base percent time-spent-following,(note-4) BPTSFd	89.5	%		
Adjustment for no-passing zones, fnp	8.7			
Percent time-spent-following, PTSFd	93.9	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.84	
Peak 15-min vehicle-miles of travel, VMT15	285	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1050	veh-mi
Peak 15-min total travel time, TT15	10.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	28.2	mi/h
Percent time-spent-following, PTSFd (from above)	93.9	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1426.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.04
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

11 N J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2029+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 460 veh/h
Opposing direction volume, Vo 651 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	502	pc/h	709	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	44.0	mi/h
Percent Free Flow Speed, PFFS	81.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	500	pc/h	708	pc/h
Base percent time-spent-following,(note-4) BPTSFd	53.6	%		
Adjustment for no-passing zones, fnp	22.2			
Percent time-spent-following, PTSFd	62.8	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.30	
Peak 15-min vehicle-miles of travel, VMT15	138	veh-mi
Peak-hour vehicle-miles of travel, VMT60	506	veh-mi
Peak 15-min total travel time, TT15	3.1	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.0	mi/h
Percent time-spent-following, PTSFd (from above)	62.8	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	500.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.51
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

11 S J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2029+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 651 veh/h
Opposing direction volume, Vo 460 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	709	pc/h	502	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	43.6	mi/h
Percent Free Flow Speed, PFFS	80.7	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	708	pc/h	500	pc/h
Base percent time-spent-following,(note-4) BPTSFd	61.9	%		
Adjustment for no-passing zones, fnp	22.2			
Percent time-spent-following, PTSFd	74.9	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.42	
Peak 15-min vehicle-miles of travel, VMT15	195	veh-mi
Peak-hour vehicle-miles of travel, VMT60	716	veh-mi
Peak 15-min total travel time, TT15	4.5	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	43.6	mi/h
Percent time-spent-following, PTSFd (from above)	74.9	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	707.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.69
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	771	vph	1021	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	210		277	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	426	pcphpl	564	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	426	pcphpl	564	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		B	
Density, D	9.5	pc/mi/ln	12.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	419.0	554.9
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.42	2.56
Bicycle LOS	B	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Cartmill Ave/J St
From/To: Northerly Int/Southerly Int
Jurisdiction: Tulare County
Analysis Year: 2039
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	218	vph	311	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	59		85	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	120	pcphpl	172	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	120	pcphpl	172	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	2.4	pc/mi/ln	3.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	118.5	169.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.78	1.96
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

2 Cartmill Ave From JSt TO N Oaks St.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	769	vph	605	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	209		164	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	425	pcphpl	334	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	425	pcphpl	334	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	8.5	pc/mi/ln	6.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	417.9	328.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.42	2.30
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Cartmill Ave
From/To: N Oaks St/SR 99 SB Ramps
Jurisdiction: Tulare County
Analysis Year: 2039
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1443	vph	1600	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	392		435	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	798	pcphpl	885	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	798	pcphpl	885	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		B	
Density, D	16.0	pc/mi/ln	17.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	784.2	869.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.74	2.79
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1542	vph	1606	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	419		436	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	853	pcphpl	888	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	853	pcphpl	888	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		B	
Density, D	17.1	pc/mi/ln	17.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	838.0	872.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.77	2.79
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	SR 99 NB Ramps/Akers St
Jurisdiction:	Tulare County
Analysis Year:	2029+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	992	vph	1068	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	270		290	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	548	pcphpl	590	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	548	pcphpl	590	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		B	
Density, D	11.0-	pc/mi/ln	11.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	539.1	580.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.55	2.59
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

6 Cartmill Ave From Akers St TO Retherford St.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Akers St/Retherford St
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1191	vph	1422	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	324		386	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	658	pcphpl	786	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	658	pcphpl	786	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		B	
Density, D	13.2	pc/mi/ln	15.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	647.3	772.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.64	2.73
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Retherford St/Hillman St
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1109	vph	1238	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	301		336	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	613	pcphpl	684	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	613	pcphpl	684	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		B	
Density, D	12.3	pc/mi/ln	13.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	602.7	672.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.60	2.66
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1523	vph	1647	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	414		448	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	842	pcphpl	911	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	842	pcphpl	911	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		C	
Density, D	16.8	pc/mi/ln	18.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	827.7	895.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.77	2.81
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

N 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2039
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 557 veh/h
Opposing direction volume, Vo 884 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	607	pc/h	961	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	42.3	mi/h
Percent Free Flow Speed, PFFS	77.0	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	605	pc/h	961	pc/h
Base percent time-spent-following,(note-4) BPTSFd	62.4	%		
Adjustment for no-passing zones, fnp	10.6			
Percent time-spent-following, PTSFd	66.5	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.36	
Peak 15-min vehicle-miles of travel, VMT15	76	veh-mi
Peak-hour vehicle-miles of travel, VMT60	279	veh-mi
Peak 15-min total travel time, TT15	1.8	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	42.3	mi/h
Percent time-spent-following, PTSFd (from above)	66.5	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	605.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.61
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2039
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 884 veh/h
Opposing direction volume, Vo 557 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	961	pc/h	607	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSd	41.9	mi/h
Percent Free Flow Speed, PFFS	76.3	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	961	pc/h	605	pc/h
Base percent time-spent-following,(note-4) BPTSFd	72.5	%		
Adjustment for no-passing zones, fnp	10.6			
Percent time-spent-following, PTSFd	79.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.57	
Peak 15-min vehicle-miles of travel, VMT15	120	veh-mi
Peak-hour vehicle-miles of travel, VMT60	442	veh-mi
Peak 15-min total travel time, TT15	2.9	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.9	mi/h
Percent time-spent-following, PTSFd (from above)	79.0	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	960.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.84
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2039
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 429 veh/h
Opposing direction volume, Vo 439 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	468	pc/h	479	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	2.4	mi/h
Average travel speed, ATSd	41.3	mi/h
Percent Free Flow Speed, PFFS	80.9	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	466	pc/h	477	pc/h
Base percent time-spent-following,(note-4) BPTSFd	48.7	%		
Adjustment for no-passing zones, fnp	42.1			
Percent time-spent-following, PTSFd	69.5	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.28	
Peak 15-min vehicle-miles of travel, VMT15	93	veh-mi
Peak-hour vehicle-miles of travel, VMT60	343	veh-mi
Peak 15-min total travel time, TT15	2.3	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.3	mi/h
Percent time-spent-following, PTSFd (from above)	69.5	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	466.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.47
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2039
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 439 veh/h
Opposing direction volume, Vo 429 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	479	pc/h	468	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	2.4	mi/h
Average travel speed, ATSd	41.2	mi/h
Percent Free Flow Speed, PFFS	80.8	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	477	pc/h	466	pc/h
Base percent time-spent-following,(note-4) BPTSFd	50.1	%		
Adjustment for no-passing zones, fnp	42.1			
Percent time-spent-following, PTSFd	71.4	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.28	
Peak 15-min vehicle-miles of travel, VMT15	95	veh-mi
Peak-hour vehicle-miles of travel, VMT60	351	veh-mi
Peak 15-min total travel time, TT15	2.3	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.2	mi/h
Percent time-spent-following, PTSFd (from above)	71.4	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	477.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.49
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2039
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 557 veh/h
Opposing direction volume, Vo 884 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	607	pc/h	961	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	41.4	mi/h
Percent Free Flow Speed, PFFS	76.6	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	605	pc/h	961	pc/h
Base percent time-spent-following,(note-4) BPTSFd	62.4	%		
Adjustment for no-passing zones, fnp	16.8			
Percent time-spent-following, PTSFd	68.9	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.36	
Peak 15-min vehicle-miles of travel, VMT15	166	veh-mi
Peak-hour vehicle-miles of travel, VMT60	613	veh-mi
Peak 15-min total travel time, TT15	4.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.4	mi/h
Percent time-spent-following, PTSFd (from above)	68.9	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	605.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.61
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2039
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 884 veh/h
Opposing direction volume, Vo 557 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	961	pc/h	607	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	41.0	mi/h
Percent Free Flow Speed, PFFS	75.9	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	961	pc/h	605	pc/h
Base percent time-spent-following,(note-4) BPTSFd	72.5	%		
Adjustment for no-passing zones, fnp	16.8			
Percent time-spent-following, PTSFd	82.8	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.57	
Peak 15-min vehicle-miles of travel, VMT15	264	veh-mi
Peak-hour vehicle-miles of travel, VMT60	972	veh-mi
Peak 15-min total travel time, TT15	6.4	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.0	mi/h
Percent time-spent-following, PTSFd (from above)	82.8	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	960.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.84
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2039
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	892	vph	1125	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	242		306	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	493	pcphpl	622	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	493	pcphpl	622	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		B	
Density, D	11.0-	pc/mi/ln	13.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	484.8	611.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.49	2.61
Bicycle LOS	B	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave/J St
From/To:	Northerly Int/Southerly Int
Jurisdiction:	Tulare County
Analysis Year:	2039+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	272	vph	364	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	74		99	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	150	pcphpl	201	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	150	pcphpl	201	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	3.0	pc/mi/ln	4.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	147.8	197.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	1.89	2.04
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	J St/N Oaks St
Jurisdiction:	Tulare County
Analysis Year:	2039+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	850	vph	692	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	231		188	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	470	pcphpl	382	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	470	pcphpl	382	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	9.4	pc/mi/ln	7.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	462.0	376.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.47	2.37
Bicycle LOS	B	B

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Cartmill Ave
From/To: N Oaks St/SR 99 SB Ramps
Jurisdiction: Tulare County
Analysis Year: 2039+Project
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1548	vph	1717	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	421		467	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	856	pcphpl	949	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	856	pcphpl	949	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		C	
Density, D	17.1	pc/mi/ln	19.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	841.3	933.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.77	2.83
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Cartmill Ave
From/To: SR 99 SB Ramps/SR 99 NB Ramps
Jurisdiction: Tulare County
Analysis Year: 2039+Project
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	2003	vph	2211	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	544		601	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	1108	pcphpl	1223	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	1108	pcphpl	1223	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	C		C	
Density, D	22.2	pc/mi/ln	24.5	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	1088.6	1201.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.90	2.95
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	SR 99 NB Ramps/Akers St
Jurisdiction:	Tulare County
Analysis Year:	2039+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	2337	vph	2256	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	635		613	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	1292	pcphpl	1248	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	1292	pcphpl	1248	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	C		C	
Density, D	25.8	pc/mi/ln	25.0	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	1270.1	1226.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.98	2.96
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

6 Cartmill Ave From Akers St TO Retherford St.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Akers St/Retherford St
Jurisdiction:	Tulare County
Analysis Year:	2039+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1346	vph	1571	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	366		427	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	744	pcphpl	869	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	744	pcphpl	869	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		B	
Density, D	14.9	pc/mi/ln	17.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	731.5	853.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.70	2.78
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

7 Cartmill Ave From Retherford St To Hillman.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Retherford St/Hillman St
Jurisdiction:	Tulare County
Analysis Year:	2039+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1258	vph	1393	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	342		379	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	696	pcphpl	770	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	696	pcphpl	770	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		B	
Density, D	13.9	pc/mi/ln	15.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	683.7	757.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.67	2.72
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Cartmill Ave
From/To:	Hillman St/N Mooney Blvd
Jurisdiction:	Tulare County
Analysis Year:	2039+Project
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	50.0	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1587	vph	1713	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	431		465	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	878	pcphpl	947	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	878	pcphpl	947	pcphpl
Free-flow speed, FFS	50.0	mph	50.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	B		C	
Density, D	17.6	pc/mi/ln	18.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	862.5	931.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.79	2.83
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

N 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2039+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 611 veh/h
Opposing direction volume, Vo 937 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	665	pc/h	1018	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	41.4	mi/h
Percent Free Flow Speed, PFFS	75.3	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	664	pc/h	1018	pc/h
Base percent time-spent-following,(note-4) BPTSFd	65.7	%		
Adjustment for no-passing zones, fnp	10.4			
Percent time-spent-following, PTSFd	69.8	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.39	
Peak 15-min vehicle-miles of travel, VMT15	83	veh-mi
Peak-hour vehicle-miles of travel, VMT60	306	veh-mi
Peak 15-min total travel time, TT15	2.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.4	mi/h
Percent time-spent-following, PTSFd (from above)	69.8	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	664.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.65
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 9 Oaks St FROM Oaksdale TO Pacific Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Oaks St.
From/To	Pacific Ave/Cartmill Ave
Jurisdiction	Tulare County
Analysis Year	2039+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	0	%
Up/down	-	%	Access point density	0	/mi

Analysis direction volume, Vd 937 veh/h
Opposing direction volume, Vo 611 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1018	pc/h	665	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.0	mi/h
Free-flow speed, FFSd	55.0	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	41.2	mi/h
Percent Free Flow Speed, PFFS	74.9	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1018	pc/h	664	pc/h
Base percent time-spent-following,(note-4) BPTSFd	75.6	%		
Adjustment for no-passing zones, fnp	10.4			
Percent time-spent-following, PTSFd	81.9	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.60	
Peak 15-min vehicle-miles of travel, VMT15	127	veh-mi
Peak-hour vehicle-miles of travel, VMT60	469	veh-mi
Peak 15-min total travel time, TT15	3.1	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.2	mi/h
Percent time-spent-following, PTSFd (from above)	81.9	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1018.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.87
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2039+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 514 veh/h
Opposing direction volume, Vo 439 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		0.996	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	560	pc/h	479	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	2.4	mi/h
Average travel speed, ATSd	40.5	mi/h
Percent Free Flow Speed, PFFS	79.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	559	pc/h	477	pc/h
Base percent time-spent-following,(note-4) BPTSFd	54.5	%		
Adjustment for no-passing zones, fnp	38.1			
Percent time-spent-following, PTSFd	75.1	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.33	
Peak 15-min vehicle-miles of travel, VMT15	112	veh-mi
Peak-hour vehicle-miles of travel, VMT60	411	veh-mi
Peak 15-min total travel time, TT15	2.8	veh-h
Capacity from ATS, CdATS	1693	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1693	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.5	mi/h
Percent time-spent-following, PTSFd (from above)	75.1	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	558.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.57
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 10 Akers Ave FROM Pacific Ave TO Cartmill Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	Akers Ave
From/To	Oakdale Ave/Pacific Ave
Jurisdiction	Tulare County
Analysis Year	2039+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 439 veh/h
Opposing direction volume, Vo 514 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.996		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	479	pc/h	560	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	51.0	mi/h
Adjustment for no-passing zones, fnp	2.1	mi/h
Average travel speed, ATSd	40.9	mi/h
Percent Free Flow Speed, PFFS	80.1	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	477	pc/h	559	pc/h
Base percent time-spent-following,(note-4) BPTSFd	50.8	%		
Adjustment for no-passing zones, fnp	38.1			
Percent time-spent-following, PTSFd	68.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.28	
Peak 15-min vehicle-miles of travel, VMT15	95	veh-mi
Peak-hour vehicle-miles of travel, VMT60	351	veh-mi
Peak 15-min total travel time, TT15	2.3	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.9	mi/h
Percent time-spent-following, PTSFd (from above)	68.3	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	477.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.49
Bicycle LOS	B

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

N 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2039+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd	611	veh/h
Opposing direction volume, Vo	937	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.998		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	665	pc/h	1018	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	40.5	mi/h
Percent Free Flow Speed, PFFS	74.9	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	664	pc/h	1018	pc/h
Base percent time-spent-following,(note-4) BPTSFd	65.7	%		
Adjustment for no-passing zones, fnp	16.1			
Percent time-spent-following, PTSFd	72.1	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.39	
Peak 15-min vehicle-miles of travel, VMT15	183	veh-mi
Peak-hour vehicle-miles of travel, VMT60	672	veh-mi
Peak 15-min total travel time, TT15	4.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.5	mi/h
Percent time-spent-following, PTSFd (from above)	72.1	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	664.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.65
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

S 11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Two-Lane Highways Release 6.65

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Shalisha Hodson
Agency/Co.	R&S Civil
Date Performed	10/25/2018
Analysis Time Period	PM
Highway	J St
From/To	Cartmill Ave/Prosperity Ave
Jurisdiction	Tulare County
Analysis Year	2039+Project
Description	Carrtmill Ave

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	2	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 937 veh/h
Opposing direction volume, Vo 611 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.998	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1018	pc/h	665	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	54.0	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATSd	40.2	mi/h
Percent Free Flow Speed, PFFS	74.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1018	pc/h	664	pc/h
Base percent time-spent-following,(note-4) BPTSFd	75.6	%		
Adjustment for no-passing zones, fnp	16.1			
Percent time-spent-following, PTSFd	85.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.60	
Peak 15-min vehicle-miles of travel, VMT15	280	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1031	veh-mi
Peak 15-min total travel time, TT15	7.0	veh-h
Capacity from ATS, CdATS	1697	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1697	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.2	mi/h
Percent time-spent-following, PTSFd (from above)	85.3	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1018.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.87
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Hillman St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2039+Project
Project ID:	Carrtmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	943	vph	1176	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	256		320	

Trucks and buses	2	%	2	%
Recreational vehicles	4	%	4	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.982		0.982	
Flow rate, vp	521	pcphpl	650	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	521	pcphpl	650	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	B		B	
Density, D	11.6	pc/mi/ln	14.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	512.5	639.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.52	2.63
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	Oaks St
From/To:	Oaksdale Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2039+Project w/ Mitigation
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	55.0	mph	55.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	55.0	mph	55.0	mph

VOLUME

Direction	1		2	
Volume, V	937	vph	611	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	255		166	

Trucks and buses	5	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.976		0.976	
Flow rate, vp	521	pcphpl	340	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	521	pcphpl	340	pcphpl
Free-flow speed, FFS	55.0	mph	55.0	mph
Avg. passenger-car travel speed, S	55.0	mph	55.0	mph
Level of service, LOS	A		A	
Density, D	9.5	pc/mi/ln	6.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	509.2	332.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.33	3.12
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Shalisha Hodson
Agency/Co: R&S Civil
Date: 10/25/2018
Analysis Period: PM
Highway: Akers Ave
From/To: Pacific Ave/Carmil Ave
Jurisdiction: Tulare County
Analysis Year: 2039+Project w/ Mitigation
Project ID: Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	55.0	mph	55.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	55.0	mph	55.0	mph

VOLUME

Direction	1		2	
Volume, V	439	vph	514	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	119		140	

Trucks and buses	5	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.976		0.976	
Flow rate, vp	244	pcphpl	286	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	244	pcphpl	286	pcphpl
Free-flow speed, FFS	55.0	mph	55.0	mph
Avg. passenger-car travel speed, S	55.0	mph	55.0	mph
Level of service, LOS	A		A	
Density, D	4.4	pc/mi/ln	5.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	238.6	279.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.95	3.03
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

11 J St FROM Cartmill Ave TO Prosperity Ave.txt

HCS 2010: Multilane Highways Release 6.65

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Shalisha Hodson
Agency/Co:	R&S Civil
Date:	10/25/2018
Analysis Period:	PM
Highway:	J St
From/To:	Cartmill Ave/Prosperity Ave
Jurisdiction:	Tulare County
Analysis Year:	2039+Project w/ Mitigation
Project ID:	Cartmill Ave

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	0		0	
Median type				
Free-flow speed:	Measured		Measured	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.0	mph	0.0	mph
Free-flow speed	45.0	mph	45.0	mph

VOLUME

Direction	1		2	
Volume, V	611	vph	937	vph
Peak-hour factor, PHF	0.92		0.92	
Peak 15-minute volume, v15	166		255	

Trucks and buses	5	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.976		0.976	
Flow rate, vp	340	pcphpl	521	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	340	pcphpl	521	pcphpl
Free-flow speed, FFS	45.0	mph	45.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		B	
Density, D	7.6	pc/mi/ln	11.6	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	332.1	509.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.12	3.33
Bicycle LOS	C	C

Overall results are not computed when free-flow speed is less than 45 mph.

Freeway Segment Analysis

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Cartmill Ave/Ave 264
Jurisdiction: Tulare County
Analysis Year: 2018
Description: Cartmill Ave

Flow Inputs and Adjustments

Volume, V	5151	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	1400	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1414	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

LOS and Performance Measures

Flow rate, vp	1414	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	69.5	mi/h
Number of lanes, N	4	
Density, D	20.4	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Cartmill Ave/Ave 264
Jurisdiction: Tulare County
Analysis Year: 2020
Description: Cartmill Ave

Flow Inputs and Adjustments

Volume, V	5415	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	1471	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1486	pc/h/ln

_____Speed Inputs and Adjustments_____

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

_____LOS and Performance Measures_____

Flow rate, vp	1486	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	69.1	mi/h
Number of lanes, N	4	
Density, D	21.5	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Cartmill Ave/Ave 264
Jurisdiction: Tulare County
Analysis Year: 2020+Project
Description: Cartmill Ave

Flow Inputs and Adjustments

Volume, V	5443	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	1479	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1494	pc/h/ln

_____Speed Inputs and Adjustments_____

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

_____LOS and Performance Measures_____

Flow rate, vp	1494	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	69.0	mi/h
Number of lanes, N	4	
Density, D	21.7	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Cartmill Ave/Ave 264
Jurisdiction: Tulare County
Analysis Year: 2029
Description: Cartmill Ave

Flow Inputs and Adjustments

Volume, V	6780	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	1842	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1241	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

LOS and Performance Measures

Flow rate, vp	1241	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	6	
Density, D	17.7	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Cartmill Ave/Ave 264
Jurisdiction: Tulare County
Analysis Year: 2029+Project
Description: Cartmill Ave

Flow Inputs and Adjustments

Volume, V	6865	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	1865	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1256	pc/h/ln

_____Speed Inputs and Adjustments_____

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

_____LOS and Performance Measures_____

Flow rate, vp	1256	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	6	
Density, D	18.0-	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Cartmill Ave/Ave 264
Jurisdiction: Tulare County
Analysis Year: 2039
Description: Cartmill Ave

Flow Inputs and Adjustments

Volume, V	8705	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	2365	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1593	pc/h/ln

_____Speed Inputs and Adjustments_____

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

_____LOS and Performance Measures_____

Flow rate, vp	1593	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	68.2	mi/h
Number of lanes, N	6	
Density, D	23.4	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Cartmill Ave/Ave 264
Jurisdiction: Tulare County
Analysis Year: 2039+Project
Description: Cartmill Ave

Flow Inputs and Adjustments

Volume, V	8790	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	2389	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1608	pc/h/ln

_____Speed Inputs and Adjustments_____

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

_____LOS and Performance Measures_____

Flow rate, vp	1608	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	68.1	mi/h
Number of lanes, N	6	
Density, D	23.6	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Prosperity Ave/Cartmill Ave
Jurisdiction: Tulare County
Analysis Year: 2018
Description: Cartmill Ave

Flow Inputs and Adjustments

Volume, V	5099	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	1386	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1399	pc/h/ln

_____Speed Inputs and Adjustments_____

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

_____LOS and Performance Measures_____

Flow rate, vp	1399	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	69.5	mi/h
Number of lanes, N	4	
Density, D	20.1	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

_____Operational Analysis_____

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Prosperity Ave/Cartmill Ave
Jurisdiction: Tulare County
Analysis Year: 2020]
Description: Cartmill Ave

_____Flow Inputs and Adjustments_____

Volume, V	5360	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	1457	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1471	pc/h/ln

_____Speed Inputs and Adjustments_____

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

_____LOS and Performance Measures_____

Flow rate, vp	1471	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	69.1	mi/h
Number of lanes, N	4	
Density, D	21.3	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Prosperity Ave/Cartmill Ave
Jurisdiction: Tulare County
Analysis Year:
Description: Cartmill Ave

Flow Inputs and Adjustments

Volume, V	5471	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	1487	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1502	pc/h/ln

_____Speed Inputs and Adjustments_____

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

_____LOS and Performance Measures_____

Flow rate, vp	1502	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	68.9	mi/h
Number of lanes, N	4	
Density, D	21.8	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Prosperity Ave/Cartmill Ave
Jurisdiction: Tulare County
Analysis Year: 2029
Description: Cartmill Ave

Flow Inputs and Adjustments

Volume, V	6712	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	1824	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1228	pc/h/ln

_____Speed Inputs and Adjustments_____

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

_____LOS and Performance Measures_____

Flow rate, vp	1228	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	6	
Density, D	17.5	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Prosperity Ave/Cartmill Ave
Jurisdiction: Tulare County
Analysis Year:
Description: Cartmill Ave

Flow Inputs and Adjustments

Volume, V	8617	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	2342	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1577	pc/h/ln

_____Speed Inputs and Adjustments_____

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

_____LOS and Performance Measures_____

Flow rate, vp	1577	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	68.4	mi/h
Number of lanes, N	6	
Density, D	23.1	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.65

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Shalisha Hodson
Agency or Company: R&S Civil
Date Performed: 10/26/2018
Analysis Time Period: Peak Hour
Freeway/Direction: SR 99
From/To: Prosperity Ave/Cartmill Ave
Jurisdiction: Tulare County
Analysis Year:
Description: Cartmill Ave

Flow Inputs and Adjustments

Volume, V	8961	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	2435	v
Trucks and buses	2	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	

Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.990	
Driver population factor, fp	1.00	
Flow rate, vp	1640	pc/h/ln

_____Speed Inputs and Adjustments_____

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Measured	
FFS or BFFS	70.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	70.0	mi/h

_____LOS and Performance Measures_____

Flow rate, vp	1640	pc/h/ln
Free-flow speed, FFS	70.0	mi/h
Average passenger-car speed, S	67.8	mi/h
Number of lanes, N	6	
Density, D	24.2	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Vehicle Turn Movement Data

VEHICLE TURNING MOVEMENT COUNT

#1 N Oaks St & E Oakdale Ave - AM PEAK HOUR

LOCATION #:	1	PEAK HOUR	7:30 AM to 8:30 AM
NORTH / SOUTH:	N Oaks St	DATE:	09/26/2018
EAST / WEST:	E Oakdale Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
7:30 AM	0	30	1	3	12	0	0	0	0	1	2	6	55
7:45 AM	0	42	1	9	23	0	0	0	0	3	2	7	87
8:00 AM	0	22	1	10	17	0	0	0	0	1	6	6	63
8:15 AM	0	23	0	2	17	0	0	0	0	1	3	4	50
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	0	117	3	24	69	0	0	0	0	6	13	23	255
[1]PHF:		0.698			0.727			0.000			0.808		0.733

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#1 N Oaks St & E Oakdale Ave - PM PEAK HOUR

LOCATION #:	1	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	N Oaks St	DATE:	09/26/2018
EAST / WEST:	E Oakdale Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	0	26	1	5	35	0	0	0	0	0	0	3	70
4:45 PM	0	31	0	5	35	0	0	0	0	0	4	3	78
5:00 PM	0	42	0	8	32	0	0	0	0	2	2	1	87
5:15 PM	2	32	0	5	30	0	0	0	0	3	6	3	81
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	2	131	1	23	132	0	0	0	0	5	12	10	316
[1]PHF:		0.798			0.969			0.000			0.563		0.908

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#3 J St & Cartmill Ave - AM PEAK HOUR

LOCATION #:	3	PEAK HOUR	7:30 AM to 8:30 AM
NORTH / SOUTH:	J St	DATE:	09/26/2018
EAST / WEST:	Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
7:30 AM	0	65	14	1	91	0	0	0	0	15	0	3	189
7:45 AM	0	72	15	3	115	0	0	0	0	23	0	2	230
8:00 AM	0	91	21	2	110	0	0	0	0	25	0	4	253
8:15 AM	0	62	11	1	95	0	0	0	0	10	0	3	182
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	0	290	61	7	411	0	0	0	0	73	0	12	854
[1]PHF:		0.783			0.886			0.000			0.733		0.844

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#3 J St & Cartmill Ave - PM PEAK HOUR

LOCATION #:	3	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	J St	DATE:	09/26/2018
EAST / WEST:	Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	0	45	19	1	84	0	0	0	0	15	0	2	166
4:45 PM	0	71	22	4	91	0	0	0	0	16	0	3	207
5:00 PM	0	61	23	5	96	0	0	0	0	21	0	3	209
5:15 PM	0	49	17	1	82	0	0	0	0	14	0	1	164
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	0	226	81	11	353	0	0	0	0	66	0	9	746
[1]PHF:		0.825			0.901			0.000			0.781		0.885

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#4 J St & Cartmill Ave - AM PEAK HOUR

LOCATION #:	4	PEAK HOUR	7:30 AM to 8:30 AM
NORTH / SOUTH:	J St	DATE:	09/26/2018
EAST / WEST:	Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
7:30 AM	0	0	0	15	0	2	2	54	0	0	38	16	127
7:45 AM	0	0	0	12	0	4	2	49	0	0	47	25	139
8:00 AM	0	0	0	13	0	2	1	55	0	0	51	28	150
8:15 AM	0	0	0	8	0	4	2	51	0	0	38	16	119
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	0	0	0	48	0	12	7	209	0	0	174	85	535
[1]PHF:		0.000			0.882			0.964			0.820		0.892

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#4 J St & Cartmill Ave - PM PEAK HOUR

LOCATION #:	4	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	J St	DATE:	09/26/2018
EAST / WEST:	Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	0	0	0	19	0	3	2	34	0	0	39	15	112
4:45 PM	0	0	0	29	0	4	2	40	0	0	43	19	137
5:00 PM	0	0	0	24	0	3	3	42	0	0	45	28	145
5:15 PM	0	0	0	20	0	2	2	14	0	0	26	10	74
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	0	0	0	92	0	12	9	130	0	0	153	72	468
[1]PHF:		0.000			0.788			0.772			0.771		0.885

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#5 N Oaks St / M St & E Cartmill Ave - AM PEAK HOUR

LOCATION #:	5	PEAK HOUR	7:30 AM to 8:30 AM
NORTH / SOUTH:	N Oaks St / M St	DATE:	09/26/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
7:30 AM	6	8	127	18	5	7	7	48	9	44	71	22	372
7:45 AM	13	12	115	18	3	4	5	65	6	50	59	34	384
8:00 AM	10	11	77	15	6	6	7	57	5	56	49	34	333
8:15 AM	6	6	73	19	6	4	7	49	8	47	32	14	271
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	35	37	392	70	20	21	26	219	28	197	211	104	1360
[1]PHF:		0.823			0.925			0.898			0.895		0.885

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#5 N Oaks St / M St & E Cartmill Ave - PM PEAK HOUR

LOCATION #:	5	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	N Oaks St / M St	DATE:	09/26/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	10	7	65	25	5	6	6	33	11	70	35	24	297
4:45 PM	3	4	63	25	4	6	5	39	15	83	27	21	295
5:00 PM	7	7	65	38	14	14	4	40	12	77	54	27	359
5:15 PM	1	4	64	26	5	7	9	42	11	91	64	12	336
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	21	22	257	114	28	33	24	154	49	321	180	84	1287
[1]PHF:		0.915			0.663			0.915			0.876		0.885

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#6 SR 99 SB Off Ramp & E Cartmill Ave - AM PEAK HOUR

LOCATION #:	6	PEAK HOUR	7:30 AM to 8:30 AM
NORTH / SOUTH:	SR 99 SB Off Ramp	DATE:	09/26/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
7:30 AM	0	0	0	14	0	24	0	160	23	26	112	0	359
7:45 AM	0	0	0	18	0	25	0	174	29	26	130	0	402
8:00 AM	0	0	0	10	0	21	0	131	16	21	107	0	306
8:15 AM	0	0	0	13	0	22	0	128	14	10	68	0	255
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	0	0	0	55	0	92	0	593	82	83	417	0	1322
[1]PHF:		0.000			0.855			0.831			0.801		0.822

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#6 SR 99 SB Off Ramp & E Cartmill Ave - PM PEAK HOUR

LOCATION #:	6	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	SR 99 SB Off Ramp	DATE:	09/26/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	0	0	0	29	0	18	0	96	25	22	106	0	296
4:45 PM	0	0	0	31	0	31	0	115	13	15	96	0	301
5:00 PM	0	0	0	26	0	39	0	138	18	19	131	0	371
5:15 PM	0	0	0	29	1	26	0	118	18	23	136	0	351
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	0	0	0	115	1	114	0	467	74	79	469	0	1319
[1]PHF:		0.000			0.885			0.867			0.862		0.889

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#7 SR 99 NB Off Ramp & E Cartmill Ave - AM PEAK HOUR

LOCATION #:	7	PEAK HOUR	7:30 AM to 8:30 AM
NORTH / SOUTH:	SR 99 NB Off Ramp	DATE:	09/26/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
7:30 AM	19	0	12	0	0	0	0	128	43	0	115	14	331
7:45 AM	24	0	18	0	0	0	0	165	29	0	134	13	383
8:00 AM	14	0	15	0	0	0	0	101	39	0	115	9	293
8:15 AM	16	0	10	0	0	0	0	110	32	0	63	16	247
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	73	0	55	0	0	0	0	504	143	0	427	52	1254
[1]PHF:		0.762			0.000			0.834			0.815		0.819

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#7 SR 99 NB Off Ramp & E Cartmill Ave - PM PEAK HOUR

LOCATION #:	7	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	SR 99 NB Off Ramp	DATE:	09/26/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	13	0	27	0	0	0	0	103	21	0	115	11	290
4:45 PM	17	0	34	0	0	0	0	131	17	0	98	27	324
5:00 PM	22	0	36	0	0	0	0	121	39	0	126	7	351
5:15 PM	26	0	23	0	0	0	0	119	29	0	130	21	348
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	78	0	120	0	0	0	0	474	106	0	469	66	1313
[1]PHF:		0.853			0.000			0.906			0.886		0.935

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#8 N Oaks St / & E Cartmill Ave - AM PEAK HOUR

LOCATION #:	8	PEAK HOUR	7:30 AM to 8:30 AM
NORTH / SOUTH:	N Oaks St /	DATE:	09/26/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
7:30 AM	0	0	0	4	0	9	25	108	0	0	121	14	281
7:45 AM	0	0	0	4	0	24	29	142	0	0	119	8	326
8:00 AM	0	0	0	5	0	12	25	112	0	0	109	8	271
8:15 AM	0	0	0	6	0	12	20	95	0	0	75	8	216
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	0	0	0	19	0	57	99	457	0	0	424	38	1094
[1]PHF:		0.000			0.679			0.813			0.856		0.839

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#8 N Oaks St / & E Cartmill Ave - PM PEAK HOUR

LOCATION #:	8	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	N Oaks St /	DATE:	09/26/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	0	0	0	15	0	18	30	104	0	0	110	1	278
4:45 PM	0	0	0	22	0	19	22	122	0	0	96	7	288
5:00 PM	0	0	0	10	0	25	29	143	0	0	112	10	329
5:15 PM	0	0	0	17	0	21	23	116	0	0	129	6	312
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	0	0	0	64	0	83	104	485	0	0	447	24	1207
[1]PHF:		0.000			0.896			0.856			0.872		0.917

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#9 Retherford St & E Cartmill Ave - PM PEAK HOUR

LOCATION #:	9	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	Retherford St	DATE:	09/26/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	6	0	0	0	0	0	0	97	15	0	132	0	250
4:45 PM	2	0	0	0	0	0	0	127	19	1	129	0	278
5:00 PM	5	0	1	0	0	0	0	97	20	0	112	0	235
5:15 PM	8	0	0	0	0	0	0	81	19	1	71	0	180
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	21	0	1	0	0	0	0	402	73	2	444	0	943
[1]PHF:		0.688			0.000			0.813			0.845		0.848

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#9 Retherford St & E Cartmill Ave - PM PEAK HOUR

LOCATION #:	9	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	Retherford St	DATE:	09/26/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	18	0	10	0	0	0	0	86	30	8	95	0	247
4:45 PM	14	0	5	0	0	0	0	111	35	9	93	0	267
5:00 PM	24	0	10	0	0	0	0	123	29	5	94	0	285
5:15 PM	17	0	5	0	0	0	0	102	31	6	114	0	275
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	73	0	30	0	0	0	0	422	125	28	396	0	1074
[1]PHF:		0.757			0.000			0.900			0.883		0.942

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#10 N Hillman St & E Cartmill Ave - AM PEAK HOUR

LOCATION #:	10	PEAK HOUR	7:30 AM to 8:30 AM
NORTH / SOUTH:	N Hillman St	DATE:	09/26/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
7:30 AM	6	100	18	15	61	53	34	50	9	3	65	11	425
7:45 AM	20	107	1	13	80	49	64	52	10	12	55	15	478
8:00 AM	9	78	4	11	75	54	39	48	8	4	49	8	387
8:15 AM	14	74	6	7	56	18	26	42	17	8	37	10	315
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	49	359	29	46	272	174	163	192	44	27	206	44	1605
[1]PHF:		0.854			0.866			0.792			0.845		0.839

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#10 N Hillman St & E Cartmill Ave - PM PEAK HOUR

LOCATION #:	10	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	N Hillman St	DATE:	09/26/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	21	77	9	13	61	48	33	44	18	10	39	6	379
4:45 PM	11	81	14	15	83	39	25	60	21	10	43	7	409
5:00 PM	21	106	6	11	70	33	50	62	12	14	41	10	436
5:15 PM	21	87	10	14	95	51	49	55	16	7	50	9	464
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	74	351	39	53	309	171	157	221	67	41	173	32	1688
[1]PHF:		0.872			0.833			0.897			0.932		0.909

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#11 North Mooney Boulevard & E Cartmill Ave - AM PEAK HOUR

LOCATION #:	11	PEAK HOUR	7:30 AM to 8:30 AM
NORTH / SOUTH:	North Mooney Boulevard	DATE:	09/25/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
7:30 AM	9	58	5	8	68	17	19	34	10	4	31	8	271
7:45 AM	12	69	8	9	73	22	26	46	11	5	54	9	344
8:00 AM	8	75	10	12	81	23	28	30	8	6	44	8	333
8:15 AM	4	43	4	6	54	19	24	16	8	4	35	6	223

VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	33	245	27	35	276	81	97	126	37	19	164	31	1171
[1]PHF:		0.820			0.845			0.783			0.787		0.851

VEHICLE TURNING MOVEMENT COUNT

#11 North Mooney Boulevard & E Cartmill Ave - PM PEAK HOUR

LOCATION #:	11	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	North Mooney Boulevard	DATE:	09/25/2018
EAST / WEST:	E Cartmill Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	8	79	6	8	58	9	12	45	9	6	38	4	282
4:45 PM	9	89	5	9	69	6	17	51	14	6	46	5	326
5:00 PM	7	74	6	12	72	15	16	68	10	7	58	3	348
5:15 PM	7	61	7	6	68	8	13	49	9	4	23	5	260

VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	31	303	24	35	267	38	58	213	42	23	165	17	1216
[1]PHF:		0.869			0.859			0.832			0.754		0.874

VEHICLE TURNING MOVEMENT COUNT

#12 J St & Prosperity Ave - AM PEAK HOUR

LOCATION #:	12	PEAK HOUR	7:30 AM to 8:30 AM
NORTH / SOUTH:	J St	DATE:	09/26/2018
EAST / WEST:	Prosperity Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
7:30 AM	19	55	9	1	62	56	50	76	18	6	84	6	442
7:45 AM	20	44	6	0	83	65	59	121	40	5	104	5	552
8:00 AM	20	56	12	1	58	27	34	109	30	10	56	3	416
8:15 AM	21	46	8	2	48	17	24	83	14	11	39	6	319
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	80	201	35	4	251	165	167	389	102	32	283	20	1729
[1]PHF:		0.898			0.709			0.748			0.735		0.783

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#12 J St & Prosperity Ave - PM PEAK HOUR

LOCATION #:	12	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	J St	DATE:	09/26/2018
EAST / WEST:	Prosperity Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	11	60	10	13	42	22	29	75	21	6	100	5	394
4:45 PM	23	60	18	13	47	35	17	93	18	7	105	9	445
5:00 PM	33	73	15	3	53	53	22	67	14	6	94	7	440
5:15 PM	17	55	15	4	40	42	24	91	18	7	126	4	443
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	84	248	58	33	182	152	92	326	71	26	425	25	1722
[1]PHF:		0.806			0.842			0.919			0.869		0.967

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#13 N Hillman St & E Prosperity Ave - AM PEAK HOUR

LOCATION #:	13	PEAK HOUR	7:30 AM to 8:30 AM
NORTH / SOUTH:	N Hillman St	DATE:	09/26/2018
EAST / WEST:	E Prosperity Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
7:30 AM	38	56	15	19	13	68	70	58	11	11	106	26	491
7:45 AM	59	69	19	27	11	90	86	101	26	10	136	22	656
8:00 AM	46	62	21	22	18	68	107	105	38	22	96	27	632
8:15 AM	39	57	27	15	20	46	86	106	28	22	110	16	572
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	182	244	82	83	62	272	349	370	103	65	448	91	2351
[1]PHF:		0.864			0.814			0.822			0.899		0.896

[1]Peak Hour Factor (directional aggregate)

VEHICLE TURNING MOVEMENT COUNT

#13 N Hillman St & E Prosperity Ave - PM PEAK HOUR

LOCATION #:	13	PEAK HOUR	4:30 PM to 5:30 PM
NORTH / SOUTH:	N Hillman St	DATE:	09/26/2018
EAST / WEST:	E Prosperity Ave	VICINITY:	Bakersfield, CA

DIRECTION:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTALS:
4:30 PM	54	73	26	59	14	79	112	134	28	19	133	29	760
4:45 PM	38	64	25	43	32	90	107	129	30	37	133	43	771
5:00 PM	56	67	24	55	28	100	122	131	31	18	126	33	791
5:15 PM	53	84	33	55	25	90	123	161	28	25	156	36	869
VOLUME STATS:	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
TOTAL:	201	288	108	212	99	359	464	555	117	99	548	141	3191
[1]PHF:		0.878			0.915			0.910			0.908		0.918

[1]Peak Hour Factor (directional aggregate)